Providing Sewer Service to Commercial Properties in Miami-Dade County

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Miami-Dade Water and Sewer Department (Department), with assistance from Black & Veatch Corp., developed a plan, including planning-level cost estimates and project schedules, for the addition of sewer infrastructure to commercial and industrial properties within the Department's service area currently not connected to these systems. The plan and cost estimates will be utilized to comply with the requirements of the Miami-Dade County Board of County Commissioners' Resolution R-597-13, directing the county mayor or mayor's designee to provide a plan to extend sewer service to commercial areas and industrial areas within the county. The recommended improvements identified in the plan and respective cost estimates have been included in the Department's capital improvement plan (CIP).

Background

In April 2013, the Department issued an estimate of the costs to extend water and sewer infrastructure to various commercial properties within its service area. The methodology for the costing used a Class 5 Opinion of Probable Cost, which includes a 40 percent contingency and a +/- 40 percent accuracy appropriate for planning-level projects. The implementation schedule and potential financing approaches for funding were also determined.

Site Loadings

Wet weather loads were the basis for determining the diameters of the sewer site loadings, included dry weather wastewater flows, wet weather flows, and corresponding peaking factors. The average dry weather wastewater loadings for each commercial property were determined by applying a unit factor of 1,500 gal per day per acre (gpd/acre) to the property area being evaluated. This factor was determined jointly in coordination with Department staff. The peak weather flow from each property was determined by utilizing the Department's pump station flow database. This database contains the dry weather flows, wet weather flow hydrographs, and peaking factors for the existing and future loading conditions for the collection system. The respective commercial property's peaking factor was assigned by looking up the connecting pump station's basin peaking factor. The pump station flow database contained separate peaking factors for the existing and future loading conditions for each pump station basin. Accordingly, separate peak wet weather loads were determined for each planning year. These wet weather loads were the basis for determining the diameters of the sewer extensions to serve these properties.

Sewer Extensions

The Department provided a geographic information system (GIS) shape file of the approximately 3,000 commercial properties that were under consideration for being connected to the existing sewer system. To evaluate the feasibility and relative cost of connecting each commercial property, GIS databases and satellite imagery were reviewed to locate the nearest existing manhole, and available roadways and routes, for the sewer system extension. In order to focus on the most cost-effective solutions, preference was given to connecting properties to existing gravity lines and avoiding the addition of pump stations, unless necessary. The crossing of major highways, railroad tracks, and canals was also avoided, unless it was required to serve a high-priority area. Single, isolated properties that could not be easily or cost-effectively connected to gravity lines were also excluded from the improvements.

The new sewer extensions were drawn in a separate GIS layer following the most direct path along the roadways. It was assumed that sufficient space and clearance from other utilities within the roadway was available to construct the sewer extensions, which would be verified during detailed design.

In several locations, the sewer extension would likely connect below the invert of the existing collection system. In these cases, a pump station was recommended to pump the flow to the closest force main. The pump stations were sized to have sufficient firm capacity to convey the peak wet weather flow.

The rim and invert elevations were provided by the Department at the connection points for subsequent review to verify if the sewer extension could connect directly or would require a pump station; it was determined that 45 proposed Department pump stations would be required. There are also some areas that could potentially be served by 24 private pump stations. All Department-proposed pump station force mains were routed to the manifold with the nearest force main.

The wet weather loads contributing to each sewer extension were summed to determine the peak wet weather flow in each sewer. The sewer extension should be able to convey the peak flow without surcharging the sewer above its crown. It was assumed that the sewers would be installed at minimum slope based on the Department's design standards. To determine the required diameter, Manning's formula (an empirical formula that estimates the average velocity of a liquid flowing in a conduit that doesn't completely enclose the liquid) was used with a roughness coefficient of 0.013 to determine the capacity for the pipe when flowing full, under gravity flow, at the required minimum slope. The results of the analysis showed that the peak flows in the sewer extensions would be less than 0.50 mil gal per day (mgd); therefore, every gravity sewer extension identified will be 8 in. in diameter.

Pump Station Basin Capacity Assessment

Extraction of Sub-Basins

The all-pipe modeling database was supplied by the Department for analysis of the impact of the

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proposed commercial property's additional loadings on the collection system. The pump station basins, where the commercial property extensions connected, were extracted to establish smaller submodels to facilitate analysis. Any pump station basins discharging into the extracted basin were also extracted and placed into the submodel. Similarly, basins downstream of the extracted basin were also placed into the submodel, as were connecting pump stations and force mains. Basins were extracted into the submodel until the connection with the pressure network that conveys wastewater to the wastewater treatment plants was made.

Updated Dry Weather Loadings

The dry weather loadings in the all-pipe modeling database were updated using the following two data sources:

- Geocoded water consumption data
- Pump station basin dry weather loads

There is a geocoded water consumption GIS layer for all of the Department's sewer customers. This database was joined to the manhole database in the submodel to determine the water consumption records for the contributing customer for each manhole. The pump station flow spreadsheet supplied by the Department contained the dry weather loads for the basins for each planning year. This dry weather loading was then allocated spatially on a geocoded water consumption weighted-average basis.

Wet Weather Flow Patterns

The pump station flow database also contained the wet weather flow hydrographs for each pump station basin corresponding to a two-year storm event. A wet weather flow pattern was developed by dividing the wet weather flow hydrograph to the dry weather flow for the basin. This pattern was then applied to the allocated dry weather loadings in the pump station basin.

Baseline Improvements

A baseline model was developed for the existing loading conditions without the commercial property loads. The flow path from the connection points downstream was analyzed under wet weather conditions. If a sewer was surcharged and the hydraulic grade line rose to be within 4 ft of grade elevation, a sewer improvement was recommended.

It should be noted that the sewer inverts and rim elevations were not updated from the as-built/record drawing database. The inverts in the all-pipe model (and therefore the submodel) were assumed. It is recommended that the inverts and rim elevations in these basins be reviewed and updated in the future to verify the sewer improvements that are required.

Table 1. District 1 Improvements

Project name	PROPOSED Gravity Pipe Size	Length	PROPOSED PUMP STATIONS	PROPOSED ForceMain Size	Length
District 1					
D1-A	8-in.	7,451 lf	2	8-in.	1,851 lf
D1-B	8-in.	6,381 lf	1	8-in.	3,104 lf
District 2					
D2-A	8-in.	36,151 lf	2	8-in.	6,879 lf
D2-B	8-in.	26,169 lf	3	8-in.	1,553 lf
D2-C	8-in.	16,944 lf	1	8-in.	410 lf
D2-D	8-in.	23,588 lf	2	8-in.	4,068 lf
D2-E	8-in.	10,956 lf	1	8-in.	1,230 lf
District 3					
D3-A	8-in.	13,613 lf	2	8-in.	4,807 lf
D3-B	8-in.	7,725 lf	1	8-in.	796 lf
District 4					
D4-A	8-in.	16,059 lf	5	8-in.	3,966 lf
D4-B	8-in.	7,805 lf	3	8-in.	4,879 lf
District 6					
D6-A	8-in.	13,242 lf	1	8-in.	1,203 lf
D6-B	8-in.	7,683 lf	2	8-in.	6,985 lf
D6-C	8-in.	1,136 lf			
District 7					
D7-A	8-in.	14,238 lf	3	8-in.	4,544 lf
D7-B	8-in.	2,887 lf	1	8-in.	14,317 lf
D7-C	8-in.	1,377 lf	1	8-in.	1,231 lf
D7-Future[1]	12-in.	702 lf			
District 8					
D8-A	8-in.	8,649 lf	2	8-in.	3,815 lf
District 9					
D9-A	8-in.	6,629 lf	3	8-in.	4,008 lf
District 10					
D10-A	8-in.	784 lf			
D10-B	8-in.	2,016 lf	1	8-in.	787 lf
D10-C	8-in.	3,045 lf	2	8-in.	1,817 lf
D10-D/Future[2, 3]	12-in.	607 lf			
District 12					
D12-A	8-in.	6,026 lf	2	8-in.	1,717 lf
D12-B	8-in.	3,523 lf	1	8-in.	625 lf
D12-C	8-in.	6,342 lf	3	8-in.	3,792 lf
D12-D	8-in.	5, 086 lf			

Extensions Improvements

The baseline model, with the improvements, was updated with the commercial property loadings; the existing planning year was used for this analysis. Similar to the baseline improvements, if any sewer along the flow path from the proposed developments surcharged within 4 ft of grade elevation, an improvement was recommended. Additionally, locations with a baseline improvement were reviewed to determine if the additional loading caused the sewer to be surcharged above the crown of the pipe. If any surcharging was observed, an additional improvement was recommended to avoid installing an improvement that would cause surcharging conditions. In cases where surcharging was observed that resulted from ca-

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pacity limited pump stations, the station was expanded within the model to convey the peak flow.

Future Planning Year Improvements

The extensions model, with the improvement, was updated for the future planning year conditions. The update includes both the dry weather flows, as well as the wet weather flow patterns. Similar to the extension improvement, any surcharged conditions within 4 ft of grade elevation initiated an improvement to relieve the surcharging to be below the crown of the pipe. Also, any surcharged condition at an improvement identified in the baseline or the extension improvement models was relieved to eliminate the surcharging.

Manifold Pressure System Capacity Assessment

Design flows were developed and simulated in the Department model where proposed pump stations were identified. The analysis indicated that no major upgrades to the manifold pressure system were required to accommodate the proposed improvements to connect the commercial properties included in this evaluation.

Improvements

The projects were grouped by major commercial corridors along a main avenue or street and included the infrastructure needs of nearby commercial areas that were not located directly on the main avenue or street, but were close enough so that it was practical to include them in a single construction project. Table 1 shows a summary of the individual improvements that would be required to provide sewer connections to the commercial properties. Improvements listed by the Miami-Dade County Commission District encompass gravity sewer pipe extensions, new pump stations, and new force mains. Also, some existing pump stations in the existing system would need to be increased in capacity. The pump stations requiring capacity expansion are included in Table 2.

The improvements proposed would provide sewer service to a total of 2,194 commercial properties, covering an area of 1,189 acres within Miami-Dade County.

Opinion of Probable Construction Cost

The Opinion of Probable Construction Cost covers the improvements identified and includes the construction, engineering, and land acquisition costs as needed. Each commission district cost is summarized in Table 3.

Schedule

Table 4 presents an eight-year timeline, as requested by the Department, after preliminary activities, including land acquisition and architectural/engineering selection, are performed.

Potential Financing Alternatives

This section summarizes the options available for financing wastewater system improvements, how these options could be applied for financing the projects, and the financial implications of developing these projects to both the potential new customers, as well as the Department.

Procedures for Financing Wastewater Projects

The basic procedures for financing wastewater projects, as well as water projects, are described in the Department's Implementing Order No. 10-8; the financing procedures are different for wastewater collection facilities and wastewater transmission facilities.

Wastewater collection facilities are defined as those lines and pump stations that are needed to provide service only to retail customers, and are generally referred to as local facilities, or assets. Wastewater transmission facilities are those pump stations and lines that are needed to serve all customers, both retail and wholesale, and are often referred to as regional facilities, or assets.

Wastewater transmission and collection facilities are defined as follows:

"The Water and Sewer Department's definition of wastewater transmission facilities is all interceptor lines and all pump stations and force

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Table 2. Improvements to Existing Pump Stations

PROJECT NAME	EXISTING Department PUMP STATION	CAPACITY EXISTING	PROPOSED
D9-A	MD 661	0.06 mgd	0.2 mgd
D10-A	MD 612	0.7 mgd	1.13 mgd
D10-A	MD 632	0.75 mgd	0.91 mgd

Table 3. Opinion of Probable Construction Cost Summary

District	Project Cost	FUNDED PROJECTS	unFUNDED PROJECTS
District 1 Projects Subtotal	$12737222	-	$12737222
District 2 Projects Subtotal	$96752522	$6221000	$90531522
District 3 Projects Subtotal	$16148107	-	$16148107
District 4 Projects Subtotal	$26466768	-	$26466768
District 6 Projects Subtotal	$19994369	$2011269	$17983100
District 7 Projects Subtotal	$29495978	$3057046	$26438932
District 8 Projects Subtotal	$8634447	-	$8634447
District 9 Projects Subtotal	$12134923	-	$12134923
District 10 Projects Subtotal	$40090686	-	$40090686
District 12 Projects Subtotal	$22435538	-	$22435538
TOTALS	$284890558	$11289315	$273601243

Notes:
1 Projects listed under the "Funded Projects" category have been allocated funding by the 2004 Building Better Communities General Obligation Bond Program and are currently in execution.

Table 4. Capital Expenditures: Proposed Plan

	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21
Funded	$1575968	$2589728	$7123619	-	-	-	-	-
Unfunded	-	$2101354	$14401153	$12694839	$42029412	$68182447	$62955271	$71236767
TOTALS	$1575968	$4691082	$21524772	$12694839	$42029412	$68182447	$62955271	$71236767

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mains receiving wastewater flows that are pumped from wastewater collection systems. Transmission force mains convey wastewater that has been collected and pumped from more than one collection basin. Pump stations and lines that connect to these facilities are classified as wastewater collection."

The minimum size of a force main for purposes of defining regional facilities was listed at 8 in.

The essential provision of the procedures as they apply to new sewer service, either to existing or new developments, is provided in Section 3.02(3) of the order. This rule stipulates that the customer is responsible for the expense of installing any new laterals, or collection lines, required for providing the wastewater service. For new developments, the new collection lines are generally installed by the developer following specifications established by the Department, and turned over to it, upon completion of the development. For existing developments where collection facilities must be installed, the rule requires the new customers to fund the cost of the new collection facilities either through the creation of a special taxing district or the establishment of fees and charges, through which the Department recovers its costs of installing the collection system.

For wastewater transmission facilities (part of the regional system), the procedures stipulated in Section 3.04 state that the Department may require the developer, or customer, to also provide main or transmission lines, or the Department may recover its investment in these facilities through connection fees, which are currently $5.60 per average-day gal of wastewater expected to be produced by each new customer.

By collecting this connection charge from each new customer, the Department is presumed to be able to provide the necessary wastewater transmission and treatment facilities needed to serve an average new customer, recognizing that the Department's actual cost of transmission facilities varies considerably from one part of the county to another.

This section of the implementing order also stipulates that the extension of transmission facilities may be paid for through a special taxing district; this has rarely been used by the Department, but it is widely used in the county for other purposes. In general, the establishment of a special taxing district requires the concurrence of a majority of the property owners within the district.

As described, the concept of project financing is closely associated with the concept of recovering all costs of new service from the new customers themselves. Application of this concept necessitates consideration of County Ordinance 93-134, Section 613, which is part of the Department's bond ordinance known as "no free service." This section prohibits providing free services or preferential charges to any customer.

In evaluating the application of the Department's financing methods and financing alternatives, it is recommended that the no-free service section of the ordinance be evaluated by an appropriate legal authority to assess the impact it may have when utilizing any of the financing alternatives described.

Application of Financing Methods to the Projects

Based on the guidance of the Department's bond ordinance, implementing orders, and supporting information, the projects are classified as either wastewater collection or wastewater transmission facilities. The unfunded costs of the projects, in aggregate, estimated during the course of this study, are as follows:

- Local costs (wastewater collection facilities): $232.9 million
- Regional costs (wastewater transmission facilities): $40.7 million
- Total costs: $273.6 million

Table 5 shows the estimated wastewater collection (local) and wastewater transmission (regional) costs by district.

The aggregate cost of providing these service extensions on a per gal basis is very high due to the infill nature of the work and the fact that the economies of scale achieved with new developments is not present in these smaller, developed project areas. As additional refinement of planning and design is done, some cost reductions may be realized through the use of low-pressure sewers or other nonstandard design features, and conservative cost estimates are to be provided; these costs do not include the cost of wastewater transmission facilities already included in the Department's CIP. It is also important to note that the regional costs include only transmission costs, not additional costs or repayment of the Department's imbedded costs for wastewater treatment and disposal of treated effluent. Connection charges from the Department are intended to address both wastewater transmission and wastewater treatment costs.

Financing of Wastewater Collection and Transmission Facilities

As noted, based on the Department's regulations, new customers would be required to directly fund the local (collection) costs to reimburse the Department for the cost of installing wastewater collection lines and pump stations. Based on the information provided by the Department, new customers would generate a total wastewater flow of approximately 1.64 mgd, which is based on their current average daily water purchases.

Customers are billed for wastewater service based on their metered water use. Based on this additional wastewater service, the new customers would be required to pay an average of approximately $25 per gal of expected wastewater use to fund the new wastewater transmission (regional) facilities. The calculation of this charge, as well as the other figures referenced, is shown in Table 6.

This amount would differ among corridors and, possibly, within corridors, inasmuch as the charge is based on the cost of serving each new customer or group of customers. The information provided by the Department indicates that the average flow from the new customers to be served by the projects evaluated in this analysis is about 800 gpd.

Financing Collection Facilities

The standard practice for the Department to recover the cost of new wastewater collection facilities is to have new customers construct the fa-

Table 5. Local and Regional Costs by District

Commission District	Total Estimated Project Cost	Local		Regional
		Breakdown of Funded Allocation	Breakdown of Unfunded Allocation	Breakdown of Unfunded Allocation
District 1	$12738222		$10409196	$2328026
District 2	$96752520	$6221000	$81718073	$8813449
District 3	$16148107		$13515629	$2632478
District 4	$26466768		$22311089	$4155679
District 6	$19994369	$2011269	$14136101	$3846999
District 7	$29495978	$3057046	$16999032	$9439899
District 8	$8634447		$6842031	$1792416
District 9	$12134923		$10251829	$1883094
District 10	$40090686		$37197239	$2893447
District 12	$22435538		$19553578	$2881960
TOTALS	$284890558	$11289315	$232933796	$40667447

cilities, as in the case of a new development, or reimburse the Department the full cost of the facilities. Based on the estimated $140 average cost per gal for wastewater collection facilities, the average new customer would pay about $111,000 for those additional collection facilities. This cost is far greater than is typical for new connections in the Department's service area, and upfront payment of the connection cost would present a serious financial burden to new customers. To mitigate the high costs, the Department has several potential alternative methods for recovering them:

- Funding by the county using general obligation bonds
- Funding by the Department using revenue bonds
- Rate surcharge
- Special taxing district
- Tax increment financing

Each of these funding methods and their implications are described as follows:

General Obligation Bonds Issued by the County

The County has funded Department improvements, including local collection systems for new customers, with general obligation bond proceeds. Funding for the local collection system component of the project from general obligation bonds would provide the greatest relief to property owners. Assignment of available general obligation bond funds for this purpose would require approval by the board of county commissioners.

Revenue Bonds Issued by the Department

Revenue bonds are routinely issued by the Department to finance capital improvements to water and wastewater systems. The proceeds from these bonds are generally used to fund projects benefitting all or a large number of customers, both retail and wholesale. The bonds are amortized through payments made by utility customers through water and sewer rates. While revenue bond proceeds have routinely been allocated to fund new wastewater transmission facilities, they historically have not been used to provide funding for local collection systems to service new customers. Pursuant to Implementing Order 10-8, the use of Department funds for the extension of local collection systems must be reimbursed to the Department through a special taxing district, with fees and charges paid by the customers benefiting from the service, or from other revenues not collected by the Department.

Rate Surcharge

The Department could recover the high cost of the wastewater collection improvements by imposing a surcharge on new customers. It has implemented such a program, but only in association with the acquisition of utility systems. However, in the case of the improvements considered in this study, implementing a surcharge would place the Department at risk of failing to recover the anticipated amount of revenue as a result of lower than expected water, and wastewater, sales. The risk would probably render this alternative unattractive compared to formation of a special taxing district, which would not incur this type of risk.

A variation of the rate surcharge is the basin fee, recently utilized to increase collection system capacity in several areas with services that are redeveloping and intensifying their uses. This is a per-gal-of-capacity charge that is added to the regular connection charge to support expansion of the local collection system.

Special Taxing District

Funding and financing could be provided through a special taxing district. Under this method, the Department would fund the improvements with bond proceeds and recover the debt service through a recurring tax on the project's beneficiaries—the new customers. The impact to each customer would vary according to how much of the total project cost was financed in this way, the size or frontage of the parcels comprising the special taxing district, and the interest rate and duration of the bonds; the costs, however, would be substantial based on the high cost of the collection and transmission system improvements.

Tax Increment Financing

This financing method is used mainly to provide broad assistance to blighted areas through community redevelopment agencies. Bonds are sold to make improvements to a designated tax increment financing area, and the bonds are repaid from the increased property value and corresponding property tax revenues that result in part from the improvements that have been made. Because of the very high costs associated with bringing sewers to these areas, it appears to be unlikely that property values would increase sufficiently due to the presence of sewers to recover their costs within any reasonable time period. Presumably, separate financing districts would need to be established for each of the project areas to utilize this financing approach, and the process of qualifying and establishing these districts could be time-consuming. This financing alternative does not appear to be practical or applicable to this project.

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Financing Transmission Facilities

The total cost for wastewater transmission facilities to serve the new customers is estimated to be approximately $40.7 million, which averages out to about $25 per gal of new wastewater service. It is important to note that this per-gal transmission cost is far greater than the Department's average cost for providing wastewater transmission services to its customers. The Department's current methods for recovering and financing wastewater transmission facilities include the methods described previously, as well as two other financing methods: connection charges, and connection charge surcharge/basin charge.

Each of these funding methods and their implications are described as:

Connection Charges

The Department has established connection charges for new wastewater customers of $5.60 per gal of expected average day water use. Based on this amount, the Department would recover about $4,500 from the average new customer served by these projects. Connection charges are deposited into the Department's plant expansion fund and can be used to support capacity improvements to the regional wastewater transmission system, so to the extent that the funds are available, the regional system costs can be funded in that way.

Connection Charge Surcharge

The Department could impose a connection charge surcharge on each new customer as a condition of connection to recover system expansion costs for some or all of the regional and local collection systems. To recover the full cost of the transmission facilities not covered by standard connection charges, the typical new customer would be assessed about $15,000.

Table 6. Calculation of Estimated Costs and Charges to Commercial Properties

Calculation of Estimated Costs and Charges to Commercial Properties	
Recovery of Collection - Local Costs	
Collection Costs for Average New Customer	
Collection facilities estimated cost	$232900000
Gal per day new service	1640000
Average cost per gal for collection facilities	$142.10
Average gal per day used by new customer	800
Collection cost for average new customer	$113610
Financing of Collection Costs	
Annual interest rate	6%
Number of years of financing	30
TOTAL ANNUAL COST	$16919931
Annual cost per gal	$10.32
Annual cost for typical new customer	$8253.63
Recovery of Transmission - Regional Costs	
Estimated Connection Costs for Average New Customer	
Connection charge per gal	$5.60
Connection charge for typical new customer	$4480
Transmission - Regional Costs	
Transmission facilities estimated cost - excludes projects already in Department capital improvement plan	$40700000
Average cost per gal for regional projects	$24.82
Regional Costs Not Recovered through Connection Charge Per Gal	
Average cost per gal for regional projects less $5.60	$19.22
Regional costs not recovered through connection charges	$31516000
Amount per typical new customer	$15374
Financing of Regional Costs Not Recovered through Connection Charges	
Annual interest rate	6%
Number of years of financing	30
TOTAL ANNUAL COST	$2289603
Annual cost per gal	$1.40
Annual cost for typical new customer	$1116.88

Conclusions

Using currently available financing methods, the Department's alternatives for financing the projects discussed here are limited to the use of general obligation bonds and/or revenue bonds, the collection of the costs for wastewater collection lines from the new customers, collection of the Department's standard connection charges from new customers, establishment of a special taxing district or districts, and tax increment financing. Tax increment financing does not appear to be a promising source of revenue, though such an approach might be applicable in some project areas. The availability of grant funds and State Revolving Funds could be helpful, but it is not possible to anticipate availability.

It is important to recognize that the difficulties in finding suitable financing methods for these projects is due to the fact that the cost of providing wastewater service to the contemplated new customers is very high, measured on a per-gal or per-customer basis. Recognizing these high costs, exploring alternative designs and technologies and/or construction methods could be considered as alternatives for lowering the costs of these projects. Similarly, recognizing that the cost estimates presented here are high, more detailed analysis of individual projects may enable the Department to identify projects or corridors where the cost per gal or per customer are closer to its norm. Moreover, some of the individual projects can be expected to be substantially more cost-effective than others by virtue of their proximity to existing wastewater transmission lines or a larger concentration of new customers or near-term development potential.

Selecting the more cost-effective projects for early implementation would facilitate financing, as well as reduce the Department's financial burden. Based on these factors, it is recommended that the Department assess the individual projects and corridors addressed and identify those that could be cost-effectively implemented in an early timeframe. Cost-effective areas requiring only new collection facilities may be funded through a combination of direct payment by new customers to partially fund the cost of collection facilities, connection charges, a rate surcharge or special taxing district, and currently available general obligation bond proceeds. Other economically attractive projects may be funded using these same methods, as well as by county-issued general obligation bonds or Department-issued revenue bonds.

Inasmuch as the use of Department-issued revenue bonds to fund new wastewater collection facilities would be a departure from established Department practices, it is important for the county to obtain a clear legal opinion on the use of this funding method.