

# 4.9 Wastewater

## 4.9.1 Infrastructure Needs or Deficiencies

### Performance Standard

The City of Holtville recently adopted City Standard Details and Specifications for wastewater facilities. The City Standard Details and Specifications were adopted by Holtville City Council Resolution No. 05 22 on June 13, 2005. The City of Holtville Sewer Master Plan prepared by Kennedy/Jenks Consultants (Appendix "D" – 1998) was also used as a basis for the recommendations of the wastewater section of this document.

In analyzing a wastewater system, it is necessary to derive standards regarding the amount of flow that may be efficiently covered by a wastewater pipeline. In general, the design and analysis of wastewater pipelines is based upon a depth to diameter ratio that will safely and efficiently convey wastewater from its point of origin to the treatment facilities. At the time of wastewater pipeline design, there is often some uncertainty as to future development patterns within the area to be served. To deal with the uncertainty, provision is usually made for some extra pipeline capacity to allow for the possibility of actual wastewater flows being slightly higher than the anticipated flows.

### *Hydraulic Evaluation Criteria*

Design capacity of a pipeline is the calculated capacity of the pipeline using the Manning formula. For system analysis, peak dry weather flow (PDWF) does not exceed 75 percent of the design capacity of the pipeline. Accordingly, 25 percent of the pipeline capacity is reserved to accommodate peak wet weather flow (PWWF) incurred during wet weather conditions. The 25 percent reserve is therefore provided to account for groundwater infiltration and rainfall dependent inflow (I & I), plus additional sewer capacity reserve allowance. This 25 percent reserve contingency factor is a commonly used allowance in evaluating wastewater utilities.

### *Gravity Pipelines*

From an operational perspective, a minimum peak flow velocity of 2.0 fps at PDWF is desirable to adequately scour the pipeline and prevent significant solids deposition. Pipelines in the system that do not develop adequate cleansing velocity (flat pipelines, low spots, or pipelines with low flows) are given priority status in the City's pipeline cleaning program.

### *Pump Stations*

Pump station adequacy is based on two criteria: 1) the ability of the pump station to pump the PWWF and 2) wet well adequacy for pump cycling.

Pumping Capacity: A pump station is considered over-capacity if it cannot pump the PDWF with one pump out of service and the remaining pumps operating at 75 percent of the stations rated capacity. The remaining 25 percent capacity is allocated for I & I, reserve capacity contingency, and variation in wastewater flow.

Wet Well Size/Cycling Requirement: Wet well adequacy is analyzed in terms of maximum pump cycles per hour. A typical pump motor is designed for a maximum of six starts or cycles per hour. If the motor is started more than six times in an hour, it may overheat the motor starters causing them to wear prematurely and fail. The maximum number of cycles per hour corresponds to the minimum cycle time, which is calculated using the pumping rate, the wet well dimensions, and the pump on/off control points.

#### *Future Waste Discharge Requirements*

Title 22 guidelines require the following design features:

- Each individual treatment process must consist of multiple units capable of producing the required effluent quality with one unit out of service.
- The facility must include sufficient alarms to indicate failure of individual unit processes and loss of plant power supply.

Reliability provisions at the facility must include either a standby power source or automatically actuated emergency storage or disposal alternative.

#### *Inventory of Existing Facilities/Personnel*

The City's existing sewer collection system serves the majority of its residential, commercial and industrial population base within the City Limits. The City collection system is composed of branch sanitary sewer pipelines, collector sanitary sewer pipelines and an outfall pipeline. The majority of the branch sanitary sewer pipelines within the City of Holtville are located in alleys.

The majority of the branch sanitary sewer pipelines flow from south to north and connect to the collector pipeline located along Ninth Street. The branch sanitary sewer pipelines collect wastewater from the residences, commercial businesses and industrial areas of the City. The sanitary sewer collector main along Ninth Street directs wastewater flow from east to west from a point west of Towland Road to Olive Avenue. This trunk main intercepts the majority of the wastewater flow from the branch pipelines within the City of Holtville.

The outfall pipeline conveys the wastewater flow from the City of Holtville Collection System to the Holtville Wastewater Treatment Plant. The outfall pipeline commences at the intersection of Olive Avenue and Ninth Street and flows north and west along County and State roadways to the Holtville Wastewater Treatment Plant. The existing Holtville outfall pipeline is 3.2 miles long. The collection system also extends outside of the City's boundary to serve a small residential customer base within the City's S.O.I.

Sewer service is also provided approximately 1.5 miles outside of the City limits to the Barbara Worth Country Club, and surrounding residential community. This development is located south of the Alamo River, in the southwest corner of the City's SOI. Wastewater is conveyed from this development to the City's wastewater treatment plant through a dedicated pump station and force main system.

### *Wastewater Collection System*

The City's existing wastewater collection system is predominantly gravity flow, flowing from southeast to northwest within the City. Wastewater generated in the City is conveyed through approximately 17 miles of sewer pipeline with diameters ranging from 4-inch to 18-inch. The pipe materials are predominantly vitrified clay, although a short section of the City's trunk system has been replaced with PVC pipe. Force main pipe materials are cast iron or PVC. The diameter of pipeline serving the City ranges from 4 to 18 inches. The corresponding pipeline lengths range from 555 to 27,060 feet.

Construction of the City's collection system began in the 1920's. As the City developed, more and more service pipelines were built and connected to the existing system. The majority of pipelines were constructed during the 40's and 50's, when the City experienced a significant increase in new development. The precise condition of the City's sewer pipelines is unknown as a televised inspection of all collection system facilities has not been conducted.

A review of the collection system inventory indicated that the City's gravity pipelines are predominantly vitrified clay pipe (VVCV). Although the projected life of VCP is comparable to that of polyvinyl chloride (PVC) and asbestos cement pipe (ACP), VCP is generally considered superior. VCP facilities often provide reliable collection service beyond 80 years of age. This life of wastewater facilities depends on many factors such as the quality of construction and the characteristics of sewage discharge.

Since the majority of the collection system is approximately 30 to 50 years old, the City should not anticipate a significant level of repair/replacement of these facilities due to normal deterioration. However, an ongoing City-wide replacement/rehabilitation program is recommended to continue system reliability.

One specific area of concern is the main trunk line located in Ninth Street. The City had experienced operational problems in this pipeline and in 1989 commissioned a remedial investigation which revealed several problems with the trunk sewer line including:

- Very low slopes providing inadequate scour velocities;
- Reverse grade conditions due to settlement of a manhole; and
- Variable pipe diameters causing flow restrictions.

In 2005, an analysis of the City of Holtville sanitary sewer outfall pipeline was conducted. The existing sanitary sewer outfall main consists of 15 inch diameter and 18-inch diameter vitrified clay pipe. The outfall pipeline extends from the intersection of Olive Avenue and Ninth Street. The outfall pipeline extends northerly and westerly along County and State roads to the Holtville Wastewater Treatment Plant. The outfall pipeline is 3.2 miles in length. The slopes of the pipeline segments comprising the existing outfall pipeline are inconsistent. Portions of the slopes are relatively steep, while other pipeline segment slopes are flat. There is one segment of the outfall pipeline at the intersection of Theisen Road and State Highway 115 which possesses a reverse grade. The inconsistent slopes of the pipeline segments allow for adequate flow velocities along given pipeline segments and less than adequate flow velocities along other pipeline segments.

The existing sanitary sewer outfall pipeline is placed adjacent to concrete-lined and earth-lined Imperial Irrigation District water supply laterals along Theisen Road. The existing sanitary sewer outfall pipeline is placed along flood-irrigated agricultural fields along Kamm Road. There is a risk of

infiltration into the aged wastewater outfall pipeline from the Imperial Irrigation District earth-lined laterals and flood-irrigated agricultural fields.

The existing 3.2 miles City of Holtville sanitary sewer outfall pipeline is in extremely poor condition. The majority of the 49 manholes along the length of the outfall pipeline are extremely deteriorated and unsalvageable. It is estimated the existing outfall pipeline is 75 years old. It is recommended the existing City of Holtville sanitary sewer outfall pipeline be replaced.

#### *Wastewater Pumping System*

The City owns and operates two (2) sewage pump stations. The sanitary sewer pump stations accept flow from a portion of the wastewater collection system. The pump stations direct the wastewater flow through downstream forcemains to branch and collector pipelines of the Holtville Collection System. The Sixth Street pump station is located south of Zenos Road between Tamarack and Palo Verde Roads. The Sixth Street pump station serves the residences of the Smith Subdivision. The Ninth Street pump station is located west of Webb Avenue along Ninth Street. The Ninth Street pump station serves the residences of the Angel Park Subdivision and the Desert View Subdivision, which is currently under construction.

The Sixth Street and Ninth Street pump stations are small, package-type stations which discharge 4-inch to 6-inch diameter forcemains. The Ninth Street Pump Station is considered to be in satisfactory condition for continued service through the Year 2015. The Sixth Street pump station wet well is in poor condition. It shall be necessary to replace the Sixth Street pump station within the next 5-year period.

It is noted that the City of Holtville accepts flow from the Barbara Worth pump station and forcemain. The wastewater flow from the Barbara Worth pump station is conveyed through a 16,000-foot forcemain which connects to the City of Holtville outfall pipeline along Kamm Road upstream of the wastewater plant. The City of Holtville does not own or operate the Barbara Worth pump station or forcemain.

A fourth wastewater pump station is located at the Orchard View Apartment Complex on east 5th Street. It is a 6"-inch force main that discharges into the manhole at the corner of 4th St. and Grape Avenue. It is owned and operated by the Orchard View Apartment Complex.

#### *Wastewater Treatment Facilities*

The City of Holtville Wastewater Treatment Plant is located approximately 3 miles west of the City of Holtville at 1250 Kamm Road. The wastewater treatment plant is located along the Alamo River and immediately south of the Pear Drain. The capacity of the Holtville Wastewater Treatment Plant is 0.85 MGD, or 850,000 gallons per day. The average daily flow entering the Holtville Wastewater Treatment Plant is 0.65 MGD, or 650,000 gallons per day.

The City of Holtville has recently received tentative maps for the construction of new residences. There is a potential for 2,400 housing units and 81 apartment units to be constructed within the City of Holtville within the next 3-year period. Based on a 400-gallon per day per housing unit or apartment unit, the total estimated flow increase from the potential developments would be 992,400 gallons per day. Based on the projected increase in wastewater flow, the current wastewater plant capacity is insufficient.

The Holtville Wastewater Treatment Plant is nearing its maximum capacity. The Regional Water Quality Control Board and the City of Holtville are currently preparing the new National Pollution Discharge Elimination System (NPDES) permit. The NPDES permit will establish the discharge capacity of the wastewater plant and the operation and testing requirements required for the treatment of wastewater. The new NPDES discharge permit is scheduled to be approved in June, 2006 and will remain in effect until approximately June, 2011. The draft portion of the discharge permit has been prepared. The Regional Board is requiring nitrogen removal with regard to the effluent discharged from the wastewater plant. There is a possibility that select priority pollutants may also be required to be treated as a part of the new NPDES permit.

The new requirements of the NPDES discharge permit, coupled with the wastewater treatment plant nearing its design capacity, prompted the City of Holtville to initiate the preparation of an engineering report. In October, 2005 the City of Holtville commissioned Lee & Ro to prepare a wastewater treatment plant report for the City of Holtville. The wastewater treatment plant report will offer alternatives with regard to expanding the City of Holtville Wastewater Treatment Plant to accommodate an increased capacity and to allow the plant to address the updated requirements in the new NPDES discharge permit. The first draft copy of the report was reviewed in February, 2006. The 95% report is scheduled to be forwarded to the City of Holtville in April, 2006. It is anticipated that the report will be completed and approved by the City of Holtville in June, 2006. The purpose of the report is to offer recommendations with regard to the expansion of the wastewater plant in terms of capacity (to meet expected growth projections) and to identify the treatment systems necessary to address the new requirements of the NPDES discharge permit. The report is also to identify the costs of the recommended wastewater treatment plant improvements.

#### *Personnel*

The City maintains a staff of four full-time employees to oversee wastewater collection and treatment operations. These include a Water Works Supervisor and Wastewater Treatment Plant Lead Operator II, Operator I, and Maintenance Worker I.

#### *Inventory of Approved Facilities/Personnel*

The City of Holtville is currently preparing a wastewater treatment plant engineering report for the expansion of the wastewater treatment plant facility. It is the intent of the City of Holtville to upgrade and expand the wastewater treatment plant within the next 3-year period.

The City of Holtville completed an analysis of the sanitary sewer outfall pipeline in February, 2005. The analysis included recommendations for the replacement of the 3.2-mile outfall pipeline extending from the City of Holtville City Limits to the Holtville Wastewater Treatment Plant.

The City of Holtville prepared a report in 1989 for the replacement of the main collector pipeline along Ninth Street. A portion of the main collector pipeline was replaced in 1990. The remainder of the main collector pipeline requires replacement. The 1989 report and its recommendations remain valid.

A Sewer Master Plan was prepared by Kennedy/Jenks in 1998. Portions of this Master Plan are valid and may require implementation to accommodate future growth.

## Year 2020 Demand for Facilities/Personnel

Projected wastewater flows for the year 2020, are estimated at 1.028 mgd. While the residential per capita wastewater flow factor of 79 gallons per day will be held constant to the year 2020, the flow factors for other land uses categories are expected to change over time. **Table 4.9-1** depicts projected year 2020 wastewater flows.

### *Phasing of Facilities/Services*

The City of Holtville is currently preparing an updated wastewater treatment plant report. It is anticipated that the wastewater flows will be 2.2 MGD by the Year 2020. The City of Holtville is currently projecting sewer/wastewater treatment demands to focus on the following issues:

- Expansion of the wastewater treatment plant in a first phase to 1.1 MGD
- Expansion of the Holtville wastewater plant in a second phase to 2.2 MGD when the first phase expansion reaches capacity
- Replacement of the 3.2-mile outfall pipeline
- Replacement of the main collector sewer pipeline along Ninth Street
- Inspection of the remaining City of Holtville wastewater collection system and completion of rehabilitation work with regard to the manholes and pipelines comprising the system.

Table 4.9-1  
Year 2020 Wastewater Flows

Land Use Designations	Sphere of Influence Acres	DU/ AC	FAR	Building Sq. Ft. Per Acre	Ultimate DUs	Population SCAG (a)			Sewer		
						pph	Water Total	Sewer Total	Sewer Use (d) (gpcd)	Sewer Use (Gal/Net Ac/Day)	Average Sewer Use (c) (gpd)
Residential											
Agricultural	329	0.2	--	--	66	3.73	245	--	79	--	0
Rural Residential	276	1	--	--	276	3.73	1,029	1,029	79	--	81,329
Low Density Residential	322	2.2	--	--	708	3.73	2,642	2,642	79	--	208,744
Medium Density Residential	73	7.7	--	--	562	3.73	2,097	2,097	79	--	165,634
High Density Residential	67	13.			884	3.73	3,299	3,299	79	--	260,606
Subtotal	1,067	2			2,497		9,313	9,067			716,313
<b>Sq. Ft. Per Acre</b>											
Non-Residential											
Commercial	84	--	0.24	10,454	878,170				--	360/1134 (e)	52,686
Industrial	245	--	0.22	9,583	2,347,884				--	330/1040 (f)	215,655
Community Facilities (Schools)	67	--	0.2	8,712	583,704				--	300	20,100
Open Space/Recreation	78	--	0.05	2,178	169,884				--	300	23,400
Subtotal	474	--			3,979,642						311,841
<b>TOTAL</b>	<b>1,541</b>										<b>1,028,154</b>

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### *Sewer Collection Pipelines*

Deficiencies: The City of Holtville wastewater collection system outfall pipeline is in poor condition. The majority of the manholes along the 3.2-mile long outfall pipeline are dilapidated and beyond repair. The main collector pipeline along Ninth Street is hydraulically overloaded and in poor condition. Reports for the replacement of the outfall pipeline and main collector pipeline have been prepared. The reports offer recommendations with regard to the replacement of the outfall pipeline and main collector pipeline. The condition of the branch pipelines comprising the majority of the City of Holtville sewer collection system require inspection. The majority of the collection system appears to be adequate at this time in terms of conveying wastewater flow.

Improvements: It is recommended the 3.2-mile outfall pipeline extending from the intersection of Olive Avenue and Ninth Street in Holtville to the wastewater treatment plant be replaced. It is recommended that the remainder of the main collector pipeline along Ninth Street in the City of Holtville be replaced. It is recommended that the branch pipelines within the City of Holtville be inspected. It is recommended that the manholes within the collection system be inspected. It is recommended that a report be prepared evaluating the condition of the existing branch lines within the collection system and proposing required improvements.

Infrastructure improvements such as manhole replacement represent long-term requirements and are based on the attainment of localized growth and economic development conditions.

### *Sewer Pumping Stations*

Deficiencies: The wet well of the Sixth Street pump station is in poor condition.

Improvements: It is recommended that the Sixth Street wastewater pump station be replaced within the next 5-year period.

Similar to the SOI trunk pipeline requirements, a new pumping station and force main is needed to lift sewage from the Orchard Road service area across the Main Channel Canal. The new lift station is to be located south of the Evan Hewes Highway and east of the Barbara Worth Country Club. The wastewater will be discharged to a new local interceptor and ultimately conveyed to the new Barbara Worth Country Club Pumping station.

### *Wastewater Treatment Plant*

Deficiencies: The Holtville wastewater treatment plant is near design capacity. The City of Holtville wastewater treatment plant is receiving 650,000 gallons per day of wastewater flow. The capacity of the wastewater plant is 850,000 gallons per day. A new wastewater discharge permit is currently being drafted for the Holtville wastewater plant. The discharge permit will be valid for the next 5-year period from June, 2006 to approximately June, 2011. The new discharge permit will establish minimum nitrogen discharge limits. It will be necessary to upgrade the wastewater treatment plant for nitrogen removal. The current Holtville wastewater treatment plant is not capable of addressing the nitrogen removal which will be required by the new discharge permit.

Improvements: Although the Holtville wastewater treatment plant engineering report and the 2006 NPDES discharge permit requirements have not been formally approved, it is anticipated that the following improvements will be required:

#### Major Phase One Project Components

- Construct new headworks (septage receiving manhole, influent flowmeter and auger-monster screenings removal system)
- Construct one of the two Biolac aeration basins/secondary clarifiers and return activated sludge (RAS)/waste activated sludge (WAS) pumps (1st train)
- Construct Blower/Motor Control Center Building (Install two blowers)
- Construct flow distribution boxes and wastewater and sludge piping
- Install Variable Frequency Drive secondary effluent pumps
- Add No. 4 DynaSand Filter
- Construct No. 2 Ultraviolet Disinfection Channel / Bank
- Convert a small Primary Clarifier to WAS Thickener
- Modify existing Sludge Drying Beds or construct new larger Sludge Drying Beds
- Construct new 480 volt electrical service, motor control centers and programmable logic control system.

#### Major Phase Two Project Components

- Construct No. 2 Aeration Basin, another Secondary Clarifier, one RAS Pump and No. 3 Aeration Blower (2nd train)
- Modify existing Primary Clarifiers: One small primary clarifier (which was converted as WAS Thickener Under Phase One) as digested WAS Thickener; the other small primary clarifier as Grit Removal Tank; and large Primary Clarifier as WAS Thickener
- Add two upflow filters
- Install 2nd aerobic digester
- Install a sludge dewatering centrifuge

#### *Personnel*

The City has not identified the need for additional personnel to maintain wastewater facilities needed to meet estimated Year 2020 demand as identified in the 1998 Wastewater Master Plan. However, should development of the planning area exceed that projected in the Wastewater Master Plan, additional personnel may be required.

## 4.9.2 Financing Constraints and Opportunities

### Sewer Collection Pipelines

Collection system improvements are generally established based on two distinct categories - facility condition and hydraulic adequacy. Conditions improvements are required to upgrade/improve aging facilities and are corrected by pipeline/manhole replacement or pipeline repair. Hydraulic improvements are required to accommodate the current projected flows within the City's sewer facilities.

In addition to the need to plan for rehabilitation of aging infrastructure, the City will design and construct new facilities to eliminate current or projected hydraulic deficiencies. Projects with existing deficiencies should be given priority over future deficiencies.

A summary of pipeline replacement project costs is depicted in **Table 4.9-2**.

Table 4.9-2  
Pipeline Replacement  
Cost Estimate

Existing Improvement Need		Estimated Cost (1998 Dollars)
30" Sewer Line	16,798 Feet	\$3,690,000
15" Sewer Line	1,400 Feet	\$380,000
TOTAL		\$4,070,000
System Improvements - Year 2020 Flows		
10" Sewer Line	3,300 Feet	\$660,000
8" Sewer Line	17,400 Feet	\$3,132,000
6" Sewer Line	7,100 Feet	\$1,136,000
TOTAL		\$4,928,000

### Sewer Pumping Stations

Pumping system improvements can also generally be classified into two categories - improvements required to increase system hydraulic capacity or reliability and improvements to correct unsafe conditions or meet code requirements. Both of these categories are important and expose the City to a degree of liability if identified deficiencies are not corrected. Improvements directly related to safety issues are most in need of immediate correction. Pump station capacity and reliability improvements are also high priority, as substantial fines can be imposed if a sewage spill does occur. Pumping system improvements and their respective cost estimates are summarized in **Table 4.9-3**.

Table 4.9-3  
Pumping System Improvement  
Cost Estimate

Pump Station Description	Priority	Estimated Cost (1998 Dollars)
Sixth Street Pump Station	1	\$350,000
TOTAL		\$350,000

### Wastewater Treatment Plant

Based on growth projections, these improvements will need to be on-line by 2010. Probable costs of wastewater treatment facility improvements and their corresponding costs are summarized in **Table 4.9-4**.

Table 4.9-4 Treatment Facility Improvement Cost Estimate	
Improvements (Year)	Estimated Cost (1998 Dollars)
<b>PHASE ONE (Based on 2006 Cost)</b>	
Headworks (Manhole, Parshall Flume, Screening Chopper)	\$276,000
Aeration Basins	\$856,260
Blower/MCC Building	\$596,000
Circular Secondary Clarifier	\$612,916
RAS/WAS Pump Station	\$224,400
Distribution Box 1 and 2	\$54,500
SE Pump Station	\$122,780
Upflow Sand Filter	\$224,650
UV Channel	\$400,520
Sludge Drying Beds	\$412,500
Conversion of Small Primary Clarifiers as WAS Thickeners	\$105,000
Yard Piping and Miscellaneous	\$210,000
PHASE ONE Total W/O Electrical and Instrumentation	\$4,194,926
Electrical and Instrumentation (20%)	\$838,985
PHASE ONE SUBTOTAL	\$5,033,911
CONTINGENCY (15%)	\$755,087
CONTRACTOR'S OVERHEAD & PROFIT (17%)	\$855,765
PHASE ONE PROBABLE CONSTRUCTION COST	\$6,644,763
ENGINEERING/CONSTRUCTION MANAGEMENT (15% of Construction Cost) % of Construction Cost)	\$996,714
PHASE ONE PROBABLE PROJECT COST	\$7,641,477
<b>PHASE ONE PROBABLE PROJECT COST (Rounded)</b>	<b>\$7,640,000</b>
<b>PHASE TWO (Based on 2006 Cost)</b>	
No. 2 Aeration Basin	\$810,900
Blower Building	\$195,000
Circular Secondary Clarifiers	\$527,630
RAS/WAS System	\$44,100
Upflow Sand Filters	\$531,000
Sludge Dewatering Centrifuge	\$463,000
Sludge Dewatering Centrifuge	\$463,000
Demolition and Removal	\$65,000
Other Miscellaneous Works	\$295,000
PHASE TWO TOTAL W/O Electrical Instrumentation	\$2,931,780
Electrical and Instrumentation (20%)	\$586,356
PHASE TWO SUBTOTAL	\$3,518,136
CONTINGENCY (15%)	\$527,720
CONTRACTOR'S OVERHEAD AND PROFIT (17%)	\$598,083
PHASE TWO PROBABLE CONSTRUCTION COST	\$4,643,940
ENGINEERING AND CONSTRUCTION MANAGEMENT (15% of Construction Cost)	\$696,591
PHASE TWO PROBABLE PROJECT COST	\$5,340,530
<b>PHASE TWO PROBABLE PROJECT COST (ROUNDED)</b>	<b>\$5,340,000</b>
<b>TOTAL (PHASE ONE + PHASE TWO)</b>	
TOTAL PROBABLE CONSTRUCTION COST (PHASE ONE & TWO)	\$11,288,702
TOTAL PROBABLE CONSTRUCTION COST (PHASE ONE & TWO) (ROUNDED)	\$11,300,000
<b>PHASE TWO PROBABLE PROJECT COST (ROUNDED)</b>	<b>\$12,980,000</b>

## Internal Financing

Internal financing is a commonly used pay-as-you-go financing method used by many communities to fund capital improvements. The following represent common internal financing methods utilized by communities to fund capital projects:

### User Charges

These are charges applied to customers for use of service provided by a utility and generally provide most or all of a utility's revenue. Charges are collected through an established set of rate schedules based on a combination of costs of providing service and on local policies related to financial inducements for water conservation and other community goals. Water conservation results in increase demand for sewer collection and treatment. Current wastewater rates are listed in **Table 4.9-5**.

Table 4.9-5  
Current Wastewater Rates

Categories	Consumption Factor	Rate (Monthly)
Single Family Residential	n/a	\$28.12
Multi-Family Residential	n/a	\$28.12
Offices, Hardware, Pharmacy, Auto Supply, Banks, Savings & Loan, Post Office, Fast Food, Quick Service Stores, Food Markets, Grocery Stores, Card Rooms, Barber Shops, Beauty Shops, Nursery (botanical), and other Small Retail Businesses.	\$2.25/10,000 gallons	\$25.67
Churches, Meeting Rooms	\$2.25/25,000 gallons	\$25.67
Service Stations, Garage, Farm Shops, Car Washes, Milling Company, Ag Spray Shop, Lumber Yard, Wood Refinish, Mill & Cabinet Shop, Machine Shop, Newspaper, Print Shop, Ag Machine Shop & Distribution, Auto Dealership, new or used, A/C & Electrical Shop, Day Care and Nursery Schools.	\$2.25/15,000 gallons	\$37.02
Restaurants, Bars & Taverns. Under 30 seats	\$2.25/30,000 gallons	\$75.09
Over 30 seats	\$2.25/60,000 gallons	\$136.67
Hotels, Motels, Inns, and Rest Homes. Under 30 rooms	\$2.25/50,000 gallons	\$122.52
Over 30 rooms	\$2.25/175,000 gallons	\$231.52
Laundromats	\$2.25/100,000 gallons	\$128.57
Schools	\$2.25/150,000 gallons	\$184.41
Meat Processing Plants, Produce Packing Sheds, Coolers, Ice Plant	\$2.25/500,000 gallons	\$184.41

### Property Taxes

County ad valorem (property) taxes are appropriated by many utilities. Taxes are collected from users in proportion to the assessed property value. While no California utilities rely heavily on tax funds to cover utility operating and capital costs, property-based taxes may be used to fund capital projects wherein a user's property value may be increased by the improvements.

### Capital Facility Charges

These fees, also known as front footage fees, connection fees, line extension fees and contributions in aid of construction, are sources of capital project funds which can be provided by new customers requesting service. The City currently charges a connection fee of \$1,000 to cover the actual cost of materials and labor. These moneys cannot be used for operating expenses, and based on applicable state law must be segregated from other fund reserves.

Based on applicable state law, a capital facility fee can compensate the utility for the cost of a new customer's demand on the projected and available system capacity to provide service, but cannot exceed the cost that the new customer places on an existing system. Contributions in aid of construction can be requested from customers or developers causing a large capital investment to be made on-premise or off-premise for their specific benefit.

Capital facility fee revenues represent changes in asset type rather than utility revenues, and are therefore excluded from annual financial reporting revenue and expenditure statements.

### Capital Reserve Funds and Interest Earnings

Funds for capital improvements are accumulated from user charges or other income sources and retained in a reserve fund in advance of construction. This method is commonly called pay-as-you-go financing, and is supported by budgeting depreciating as a non-cash expense. Capital reserve funding eliminates interest costs incurred for financing and earns interest on funds deposited.

### Development Impact Fees

The City charges development impact fees to new development to help defray the cost of growth. Fees are charged on a per-unit or square footage basis by land use type (**Table 4.9-6**).

Table 4.9-6  
Development Impact Fee Schedule  
Sewer

Land Use	Fees
<i>Residential (per dwelling unit)</i>	
Single-family/duplex	\$5,007
Multifamily	\$2,713
Mobile Home	\$4,470
<i>Non-residential (per 1,000 square feet)</i>	
Retail	\$2,823
Restaurants	
Sit-down	\$6,105
Fast food	\$4,580
Motel (per room)	\$2,117
Laundromat	\$6,391
Office	\$1,880
General industrial	\$678
Water-intensive industrial	\$2,451

Source: City of Holtville, 2006.

Development impact fees charged to new development are necessary to offset the costs incurred by the City to provide wastewater collection and treatment services to new development. The City's fee schedule reflects the different costs associated with different land uses. In 2004, the City commissioned a *Water and Wastewater Rate Study* that will include an evaluation of the existing wastewater development impact fees and possibly recommend adjustments to ensure the fee for new development is proportional to the impact on wastewater facilities.

### External Financing

External financing is a commonly used financing method to fund capital improvements under a pay-as-you-use approach. Unlike internal financing, this approach is based on the repayment of debt on borrowed capital over the life of the asset. As such, external financing methods employ a pay-as-you-go strategy. The primary benefit of external financing is that projects need not be pre-funded through a long period of sinking fund-based cash accumulation. The disadvantages are that there are limited grant monies available for utility projects, low interest loans from government agencies require significant and time consuming documentation, and financially insecure projects have high interest rate assessments by the financial markets.

Several common debt financing instruments utilized to support capital project funding are provided in **Table 5-1** of Section 5. In addition to the programs listed, some growing utilities in urban communities have developed financing using special assessment bonds or Mello-Roos bonds approved by property owners in the utility service areas.

To summarize, various sources of revenue are available to finance sewer facilities and services. In general, sources of revenue available to finance wastewater facilities include parcel tax, motor vehicle license fee, benefit assessment, and development impact fees and exactions.

### Capital Improvement Plan (Near-Term)

The City commissioned a *Water and Wastewater Rate Study* in 2004 to identify potential modifications that could be made to water and wastewater user rates and capacity fees through FY 2010 to enable the City to continue to serve its customers well. A Capital Improvement Plan was developed during the formation of the rate study and identified the wastewater collection and treatment facilities slated for expansion to serve new developments and improve service to existing customers through 2010. The developed capital cost and estimated 10 percent annual inflation estimates are reflected in a Proposed Wastewater Capital Improvement Plan as shown in **Table 4.9-7**.

## 4.9.3 Cost Avoidance Opportunities

Cross-utilization of maintenance workers between sewer and water functions is encouraged when an employee has certifications in both water and sewer. Only the Wastewater Plant Lead Operator II has certifications in both sewer and water. The City provides incentives to employees willing to cross-train.

The City rehabilitates its Wastewater Treatment Plant on a five to seven year cycle and uses the services of a private sector engineer to complete the project.

Table 4.9-7  
Proposed Wastewater Capital Improvement Plan (Near-Term)

Project	2006 Estimated Price	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	Estimated Total Cost
<i>Wastewater Treatment Plant</i>							
Engineering			\$996,714	--	--	\$877,504	\$1,874,218
Construction			\$6,643,286	--	--	\$5,849,358	\$12,492,644
<i>Estimated Cost</i>			\$7,640,00	--	--	\$6,726,862	\$14,366,862
<i>Wastewater Collection System</i>							
New Pump Station	\$350,000	--	\$385,000	--	--	--	\$385,000
Sewer Outfall Pipeline*	\$3,690,000	--	--	\$351,000	\$4,525,000	--	\$4,876,000
New Sewer Collector Main	\$380,000			\$505,780			\$505,780
Sewer Line Maintenance	\$1,221,000	\$200,000	\$220,000	\$242,000	\$266,000	\$293,000	\$1,221,000
Sewer Fund (Annual Set-a-side)	\$1,750,000	\$250,000	\$300,000	\$350,000	\$400,000	\$450,000	\$1,750,000
<i>Estimated Cost</i>	<i>\$7,011,000</i>	<i>\$450,000</i>	<i>\$905,000</i>	<i>\$943,000</i>	<i>\$5,191,000</i>	<i>\$743,000</i>	<i>\$8,232,000</i>
<b>Total Estimated Cost</b>	<b>\$15,391,000</b>	<b>\$1,242,500</b>	<b>\$7,784,850</b>	<b>\$4,571,570</b>	<b>\$5,191,000</b>	<b>\$743,000</b>	<b>\$19,532,920</b>

Source: City of Holtville, Capital Improvement Plan, March 2005.

#### 4.9.4 Opportunities for Rate Restructuring

Wastewater rates listed in **Table 4.9-5** above were set in 2003 by the Holtville City Council and do not increase annually to keep pace with rising costs of energy, materials, labor, or expanded system needs. In 2004, the City commissioned a *Water and Wastewater Rate Study* to identify potential modifications that could be made to water and wastewater user rates and capacity fees through FY 2010 to enable the City to continue to serve its customers well.

#### 4.9.5 Opportunities for Shared Facilities

The City of Holtville is located 12 miles from El Centro and 15 miles from the City of Imperial, the nearest urban communities. Currently, there are no wastewater collection and treatment facilities shared with these cities and due to the geographical separation, there are not any plans or opportunities for future integration and sharing of facilities.