SUMMARY OF RESPONSIBILITIES

DESCRIPTION OF ITEM	PREPARED BY	APPROVED BY
Development Forecast	Robert Goldman, Angus McDonald & Associates	Greg Werner, Director of Community Development
Assignment of Burden to Land Use	David Tompkins, P.E., City of Vacaville	Dale Pfeiffer, P.E., Director of Public Works
Project Cost Estimates		
• *Water*	Stan Dean, P.E., Nolte & Associates	Dale Pfeiffer, P.E., Director of Public Works
• *Sewer*	Bruce West, P.E., West Yost & Associates	Dale Pfeiffer, P.E., Director of Public Works
Allocation of Project Costs Among Construction Years	David Tompkins, P.E., City of Vacaville	Dale Pfeiffer, P.E., Director of Public Works
Development Impact Fee Estimates	Geoffrey Richman, Angus McDonald & Associates	Dale Pfeiffer, P.E., Director of Public Works
Legal Adequacy and Form		Chuck Lamoree, City Attorney
Approved for Transmittal to City Council	David Van Kirk, Assistant City Manager	John Thompson, City Manager

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I. INTRODUCTION AND SUMMARY

A. Introduction

The enactment of AB 1600, codified in Government Code §66000 *et seq.*, outlined a set of formal stringent requirements on the process of preparing and imposing development impact fees in California. In response to the changing legal climate, as well as the desire to have a comprehensive financing plan for sewer and water facilities in the City of Vacaville, the Water Fee and Sewer Fee have been revised.

The goal of the Water and Sewer Fee update is to present a valid development impact fee, along with other appropriate financing mechanisms, which will provide funds sufficient to construct water and sewer facilities such that the City of Vacaville's Level of Service standards are maintained throughout the planning period. This goal will be attained consistent with the requirements put forth in Government Code §66000.

B. Purpose of the Fee

The purpose of the Water Fee and Sewer Fee is to provide adequate financing for water and sewer facilities required to implement the City's General Plan.

The fees collected will be used to finance the design, construction, and inspection of the water and sewer projects (described in detail in Appendix A and Appendix B respectively). In addition, a 4 percent administrative charge has been included, which will be used for City staff time to collect, monitor, and account for the fee revenues, perform an annual update of the fee programs, and prepare a major update of the fee program, to be performed every five years.

C. Summary of Fees and Recommendations

The proposed Water Fee is presented by major land use category in Table I-1, and the proposed Sewer Fee is presented by major land use category in Table I-2. The fee is imposed citywide throughout the entire planning period (1992 - 2009), and a portion of each fee is subject to contingent reimbursement. A detailed analysis of the cash flow forecast is presented in Table V-1 for water and Table V-2 for sewer.

The fee programs are based on a market rate of growth constrained by the limits of the existing General Plan. The fee programs will be fine-tuned annually to reflect inflation and other changes in the cost estimates, and will be subjected to a major revision every five

years or every time an event occurs, such as a General Plan update, which could have a significant effect on the fee. A major update should reflect changes in the development forecast, timing of proposed projects, the project list itself, and cost changes since the last revision. A major revision in the financing plan should also extend the time frame so that no less than twenty years worth of growth, and required projects, are used as a basis for the financing program.

Table I-1

SUMMARY FEE TABLE
City of Vacaville - Water Fee

07-Feb-92
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	Portion Not Subject To Contingent Reimbursement	Portion Subject To Contingent Reimbursement	Total
Per EDU:	$3,978	$979	$4,957

			Charge Per Unit			Per Building Square Foot Non Residential Land Uses		
Land Use Categories	Unit	EDU	Portion Not Subject To Contingent Reimbursement	Portion Subject To Contingent Reimbursement	Total	Portion Not Subject To Contingent Reimbursement	Portion Subject To Contingent Reimbursement	Total
RESIDENTIAL								
Single Family	Dwelling Unit	1.00	$3,978	$979	$4,957			
Multi-Family	Dwelling Unit	0.76	$3,031	$746	$3,777			
NON-RESIDENTIAL								
Retail	1,000 Sq Ft	0.26				$1.02	$0.25	$1.27
Service	1,000 Sq Ft	0.26				$1.02	$0.25	$1.27
Office	1,000 Sq Ft	0.26				$1.02	$0.25	$1.27
Industrial	1,000 Sq Ft	0.27				$1.09	$0.27	$1.36
INSTITUTIONAL								
Hospital	1,000 Sq Ft	0.55				$2.18	$0.54	$2.71
Church	Acre	3.33	$13,261	$3,264	$16,524			
Schools - Elem/JHS	Students	0.04	$142	$35	$177			
Schools - HS	Students	0.05	$189	$47	$236			

Note: Figures are expressed in July 1, 1992 dollars.

Source: Angus McDonald & Associates.

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Table I-2

SUMMARY FEE TABLE
City of Vacaville - Sewer Fee

10-Jan-92
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	Portion Not Subject To Contingent Reimbursement	Portion Subject To Contingent Reimbursement	Total
Per EDU:	$2,626	$1,366	$3,992

			Charge Per Unit			Per Building Square Foot Non Residential Land Uses		
Land Use Categories	Unit	EDU	Portion Not Subject To Contingent Reimbursement	Portion Subject To Contingent Reimbursement	Total	Portion Not Subject To Contingent Reimbursement	Portion Subject To Contingent Reimbursement	Total
RESIDENTIAL								
Residential	Dwelling Unit	1.00	$2,626	$1,366	$3,992			
NON-RESIDENTIAL								
Retail	1,000 Sq Ft	0.28				$0.74	$0.38	$1.12
Service	1,000 Sq Ft	0.35				$0.92	$0.48	$1.39
Office	1,000 Sq Ft	0.25				$0.66	$0.34	$1.00
Industrial	1,000 Sq Ft	0.42				$1.10	$0.57	$1.67
INSTITUTIONAL								
Hospital	1,000 Sq Ft	0.67				$1.76	$0.91	$2.67
Church	Acre	4.07	$10,695	$5,562	$16,256			
Schools - Elem/JHS	Students	0.04	$115	$60	$174			
Schools - HS	Students	0.06	$153	$79	$232			

Note: Figures are expressed in July 1, 1992 dollars.

Source: Angus McDonald & Associates.

[A]C:\P\1751\SEWER\SEWER-F4.WK1

II. DEVELOPMENT FORECAST

A. Purpose of the Forecast

Preparing a forecast of the timing and rate at which an area will develop is the first step in calculating a development impact fee. The development forecast serves two purposes:

- The development forecast provides the basis for determining when the projects must be completed to maintain the targeted level of service.
- The development forecast plays a significant role in forecasting cash flow. The amount of development that occurs in any particular year determines, along with the amount of the fee, the total dollars that are available to fund improvement projects.

B. Background for the Development Forecast Used in the 1992 Fee Update

The development forecast for the City of Vacaville was prepared based on market trends and current City development policies. The forecast presented here builds upon, and refines, work done by Blayney Dyett Greenberg (R-1), the City's principal consultant for the 1990 General Plan, and the Association of Bay Area Governments (ABAG) (R-2).[1] The development forecast is an update of the forecast prepared for the 1989 Major Streets and Interchange (MS&I) Fee Study adjusted for changes related to the adoption of the 1990 General Plan.

It should be understood that the development forecasts

- Are based on, and confined by the limits of, the current Vacaville General Plan, adopted in 1990.
- Are market forecasts, given the policies of the 1990 General Plan and the Planned Growth Ordinance. They are not necessarily policy targets of the City of Vacaville.

The development forecast relates to the entire City because most fees are utilized to mitigate the impacts of development in the entire City. An alternative forecast is, however, provided for the purpose of the MS&I Fee which excluded development in the Lower Lagoon sector as defined in the 1990 General Plan.

[1] Underscored numbers in parentheses refer to references listed at the end of this report.

A specific financing district will be established to provide all circulation facilities to service that area. Therefore, the Lagoon Valley Area is considered to be a separate zone of benefit for the MS&I Fee.

C. Summary of Results

The forecast for the entire City is shown in Table II-1. The forecast for the City, not including Lower Lagoon Valley, for the purpose of determining the MS&I Fee, is shown in Table II-2. These forecasts are stated in terms of average annual demand for each of the major land use categories from January 1, 1992 through January 1, 2009.

D. Methodology and Sources of Development Forecasts

1. Residential

The Planned Growth Ordinance, which is based upon the 1990 General Plan and ABAG projections, establishes a "Planning Standard" of 920 dwelling units per year. The policy of the General Plan is that approximately 60 percent of the new dwelling units will be single family detached, 20 percent will be moderate density (zero lot line, cluster, mobile home, townhouses, duplexes, etc.) and 20 percent will be apartment-type units (apartments and condominiums). Of this total it is projected that 70 percent will be detached units referred to as single family for the purposes of this projection. The remaining 30 percent of the units are projected to be attached units referred to as multiple family.

The Planning Standard of 920 units per year is incorporated as the annual total of residential development for the entire City over the term of the forecast. The one exception is 1992. The City Council established a lower residential allocation of 750 units for 1992 due to limitations in school facilities, public services and the impact of the ongoing drought. In the interest of accuracy, the 750 total is utilized for 1992.

The residential development of the Lower Lagoon Valley area is limited to 730 dwelling units. That development is forecast to occur over a period of five years in the late 1990's. As a result the forecast of development for purposes of the MS&I Fee is reduced to 776 dwelling units per year from 1995 through 1999.

Table II-1

CITY OF VACAVILLE DEVELOPMENT FORECAST
WATER AND SEWER DEVELOPMENT FEE PROGRAMS

Land Use Category	Units	1992	Annual Increment 1993-2002	Annual Increment 2003-2009
Residential				
Single Family	Dwelling Unit	738	644	644
Multi Family	Dwelling Unit	12	276	276
Non-Residential				
Retail	1,000 SqFt	98.0	133.0	98.0
Service	1,000 SqFt	27.1	27.1	27.1
Office	1,000 SqFt	80.0	327.0	256.0
Industrial	1,000 SqFt	234.0	234.0	234.0
Institutional				
Hospital/Congregate Care	1,000 SqFt	12.0	12.0	12.0
Church	Acre	0.5	0.5	0.5
Schools - Elem/JHS	Students	375	460	460
Schools - HS	Students	150	184	184

Source: City of Vacaville, Community Development Director.

Table II-2

CITY OF VACAVILLE DEVELOPMENT FORECAST
EXCLUDING LOWER LAGOON VALLEY

Land Use Category	Units	Annual Increment 1992	Annual Increment 1993-1994	Annual Increment 1995-1999	Annual Increment 2000-2009
Residential					
Single Family	Dwelling Unit	738	644	514	644
Multi Family	Dwelling Unit	12	276	262	276
Non-Residential					
Retail	1,000 SqFt	98.0	98.0	98.0	98.0
Service	1,000 SqFt	27.1	27.1	27.1	27.1
Office	1,000 SqFt	80.0	80.0	80.0	80.0
Industrial	1,000 SqFt	234.0	234.0	234.0	234.0
Institutional					
Hospital/Congregate Care	1,000 SqFt	12.0	12.0	12.0	12.0
Church	Acre	0.5	0.5	0.5	0.5
Schools - Elem/JHS	Students	375	460	389	460
Schools - HS	Students	150	184	155	184

Source: City of Vacaville, Community Development Director.

2. Retail

The Retail category includes all uses whose primary activity is over-the-counter sale of merchandise. Such commercial activity might be located in regional, community, neighborhood or strip shopping centers, be free-standing on a single land parcel, or be located in a mixed-use development. Among the types of stores included under retail are the following:

Apparel
General merchandise
Drug stores
Food stores
Liquor stores
Eating and drinking places
Home furnishings and appliances
Building materials
Auto dealers and supplies
Service stations

Blayney Dyett Greenberg estimated that the growth in population and income in Vacaville, as forecast by ABAG, would support the addition of 2,142,000 square feet of retail space between 1987 and 2010. Over this 23-year forecast period, this averages slightly over 93,000 square feet per year. A separate analysis by Angus McDonald & Associates (AM&A) estimates that between July 1989 and 2011, an additional 1,567,000 square feet of retail floor space would be supportable by Vacaville residents. This translates into an average annual addition of approximately 76,500 square feet.

Both of these forecasts looked only at resident supportable retail floor space. Blayney Dyett Greenberg noted that two additional factors need to be considered: (1) sales to visitors/travelers and (2) sales to rural residents, which they estimated would add demand for an additional 260,000 square feet of retail space over a 20 year period (13,000 square feet per year).

Part of the difference between the AM&A and the Blayney Dyett Greenberg forecasts above reflects the effects of retail purchases by business, government and other institutions: the Blayney Dyett Greenberg forecast implicitly includes this component while the AM&A forecast explicitly excludes it. While a relatively small part of overall demand for retail space, this component can be significant for some types of retail activity (e.g. office products and supplies).

An analysis of commercial building permit activity in Vacaville performed by the City Community Development Department and Angus McDonald & Associates yielded an estimate of 517,410 square feet of retail floor space permitted during the period 1985 through 1988 (an average annual addition of 129,400 square feet). However, it should be noted that a large component of the additional retail space permitted during this period was for the Factory Stores, a very large region-serving retailer. Excluding the Factory Stores from the analysis yields an average annual estimate of about 82,500 square feet of retail space permitted during this period.

The following table reflects a synthesis of the analysis summarized above, with locally supportable retail space being an average of the Blayney Dyett Greenberg and the Angus McDonald & Associates forecasts:

Table II-3

ANNUAL DEMAND FOR RETAIL FLOOR SPACE
(NOT INCLUDING LOWER LAGOON VALLEY)
CITY OF VACAVILLE 1992-2009
(in square feet)

Locally supportable	85,000
Regional & visitor supportable	13,000
Total	98,000

Source: Angus McDonald & Associates; Blayney Dyett Greenberg.

A separate forecast of development potential was prepared for the Lower Lagoon Valley Area by Economics Research Associates (R-3). That analysis predicts substantial near-term retail development in that area in addition to that previously described. The forecast development would be supported by the internally created demand in the valley and the additional regional market that the valley will tap. Adjusted for the updated development schedule for the valley, it is forecast that 350,000 square feet of retail building space will be constructed over the initial ten years of development, 1993 through 2002. This development is spread over the ten year period for the purpose of this forecast and added to the base forecast of retail building for the remainder of the City.

3. Commercial Services

Commercial services include land uses primarily associated with the provision of retail services such as the following:

Personal care services (e.g. barber shops, beauty parlors)
Apparel services (e.g. cleaners, laundries)
Repair services (e.g. auto repair, electrical repair)
Rental services (e.g. small equipment rental, video rental)
Health/Fitness services (e.g. exercise, weight loss)

Floor space demand for such services typically ranges from 15 to 20 percent of retail floor demand. Blayney Dyett Greenberg estimated this demand to be 20 percent of retail space in Vacaville. Applying 20% to the Retail forecast yields approximately 19,600 square feet of building space each year.

Hotel/motel space will be aggregated into commercial services, but was forecasted separately. This category includes land uses primarily associated with providing lodging to the public. Blayney Dyett Greenberg estimates that there are slightly over 400 hotel and motel rooms currently in the City. A major hotel project, already approved by the City, will add 195 rooms, bringing the total inventory to about 600 rooms. The last major addition of hotel/motel rooms in the City prior to the recent project was the construction of the Quality Inn (120 rooms) in the mid-1980's. Prior to that the Brigadoon expanded, adding about 30 rooms in the early 1980's.

At the time the major hotel would be expected to be completed, the ratio of rooms per 1000 population would be slightly less than 9, and the ratio per 1000 jobs would be a little over 30. Based on trends over the past 10 years and expected future growth of population and employment in the City, about 500 new hotel and motel rooms will be added in the City over the next 20 years. This is an annual average addition of 25 rooms. Using an estimate of 300 square feet per room, hotel/motel rooms will add 7,500 square feet per year to commercial services for a annual total of 27,100 square feet.

4. Office

The Office category includes land uses primarily associated with the provision of finance, insurance, real estate, business, professional and medical services. Office uses also include headquarters and administrative functions of manufacturing and other types of enterprises. Offices housing such services may be located on a single-use parcel of land, in a shopping center, or in a mixed-use development.

Demand for office space can be generated either to serve the local population or to serve a larger area. Local market-serving office tenants are usually small in size with space demands typically in the 1,000 to 10,000 square foot range. Region-serving office tenants are typically larger in size with single tenants sometimes requiring space in excess of 50,000 square feet.

Local-serving office uses generally can be expected to generate demand for 5 to 10 square feet of space per resident. An analysis of U.S. data by Angus McDonald & Associates indicated that office space related to direct local population-serving activities averaged about 7 square feet per capita. In addition to the local population-serving activities, some office use relates to local demand from other business enterprises. Angus McDonald & Associates estimates this component averages about 14 square feet per local job. The nature and characteristics of the Vacaville economy would suggest that Vacaville would be above the national averages.

Using 10 square feet per capita for local population-serving office space demand, an additional 450,000 square feet of space would be required between July 1989 and 2011 (about 22,000 square feet per year). Using 17 square feet per job for local business-serving office space demand, an additional 350,000 square feet of space would be required between July 1989 and 2011 (about 17,000 square feet per year). Thus, the total demand for new office space to serve local needs would be about 800,000 square feet over approximately 20 years, or approximately 40,000 square feet per year.

Vacaville currently does not have any significant amount of region-serving office users. However, the analysis done by Blayney Dyett Greenberg indicates that the City can be expected to become an attractive location for such office users and that it can expect an annual average demand in the range of 17,500 to 52,000 square feet in this market segment between 1990 and 2010. Blayney Dyett Greenberg indicate that 40,000 square feet per year would be a reasonable forecast.

Combining the local and regional components of office demand yields an annual average office absorption of 80,000 square feet.

An analysis of commercial building permit activity in Vacaville performed by the City Planning Department and Angus McDonald & Associates yielded an estimate of 136,000 square feet of office floor space permitted during the period 1985 through 1988 (an average annual addition of 34,000 square feet). All of the space permitted in this period was local-serving. A substantial portion was for medical offices.

Economics Research Associates (R-3) estimates that Lower Lagoon Valley will be a major attractor of regional office expansion. The projection of this major office business park

development in the valley significantly increases the forecast of office space. During the initial ten years of development, a total of 189 acres, or about 2,470,000 square feet of office space is projected. Spread over the ten year period, this increases the City total to 327,000 square feet of office space per year. During the remaining period of development, a reduced total of 176,000 square feet of office space per year is projected, which brings the City total to 256,000 square feet per year over that term.

5. Industrial

This category includes manufacturing, research and development, warehousing, distribution, and heavy equipment storage and repair activities.

Vacaville has been experiencing very substantial industrial growth. Blayney Dyett Greenberg estimate that an average of 150,000 square feet of space has been added annually since 1980. Based on historical trends, and consistent with ABAG employment projections, Blayney Dyett Greenberg forecast industrial construction to be 234,000 square feet annually over the next 20 years.

6. Institutional

Institutional uses include hospitals, nursing homes, dormitories, churches, and schools. Based on an analysis of land available under the existing General Plan, and past development patterns, the Community Development Department estimated the yearly Institutional development shown in Table II-1.

E. The Monitoring Program

The annual update of the City of Vacaville Sewer and Water Fees will include an assessment of the extent to which development has been occurring as forecast. If rates of development begin to depart substantially from expectations, the development impact fee will be updated with a forecast that reflects then-current market expectations.

As previously noted, this development forecast is a refinement of the forecast prepared for the 1989 MS&I Fee Study. A review of the rate of development during the intervening year indicated that the 1989 forecast was generally valid. Adjustments were made, however, to adjust for public policy changes related to public facilities.

III. WATER CAPITAL IMPROVEMENTS PROGRAM

This section contains a description of the projected capital improvements to the City of Vacaville's (City's) water system for the next eighteen years. In addition, the process used to develop, schedule, and assign the cost of these improvements is explained in detail.

A. Nexus Tests

The nexus tests which serve as the basis for development of capital improvements and assignment of the costs of these projects to impact fees are described below.

1. Service and Timing Standard

This section outlines the basic assumptions and criteria used to assess the facilities needs and costs for water supply, distribution, storage and treatment facilities. A study completed in 1990 by Nolte and Associates, entitled *1990 Water System Master Plan* (Nolte Report), developed a computer model of the City's system as well as certain criteria and findings which were the basis of subsequent work. The Nolte Report was the basis for identifying required system improvements. Additional efforts using the system model as a basis for work have been completed to include the new City General Plan Areas into the analysis.

2. Water Demands

Existing Citywide Average Demands. The following are approximate citywide average day demands for various types of development.

Single Family Residential	420 gpd/du
Multiple Family Residential	320 gpd/du
Commercial, Retail, Office, Public	1,400 gpd/ac
Industrial	1,500 gpd/ac
Hospitals	3,000 gpd/ac
Schools	1,000 gpd/ac

These values were developed from a detailed compilation of water consumption data in 1984. Analysis of data since 1984 has not been performed in order to identify significant shifts in water demand patterns. However, it is assumed that these values still reflect general citywide conditions.

On a given parcel or within a given local area, average water demands may vary significantly from those cited above. In certain portions of the city where single family

homes and lot sizes are generally larger, average water demands of approximately 800 gpd/du have been measured. Similar deviations from the citywide average are expected in certain commercial and industrial developments as a result of different water use activities.

Planning Level Demands. During design and planning of new water system facilities, the City will use projected water demands from the best available source along with factors of safety to assure that facilities are adequately sized.

Selection of factors of safety will take into consideration the certainty of projected demands, the size of the area, and distribution system hydraulics. Generally, higher factors of safety will be needed in smaller project areas while lower factors of safety will be needed to plan regional or citywide facilities.

Maximum day demands will be estimated as 2.0 times average day demands and peak hour demands will be estimated as 4.0 times average day demands, unless more accurate information is available for specific projects.

Water Conservation. The City will promote water conservation to assure that water is put to efficient use thereby maximizing beneficial use of existing water supplies. Where water intensive development is proposed, the City will consider whether providing service is in its best interest.

Land Use. The water system capital improvements listing presented in Appendix A to this report is based on the 1990 General Plan and, in the future, the 1990 General Plan land uses will be employed to size and plan water system facilities, unless more accurate information for specific projects is available. It is expected that a comprehensive Water System Master Plan update will occur in the near future which may further refine facility requirements. Growth projections through 2009 are summarized in Table II-1.

Phasing. Phasing of the improvements to the distribution system and treatment facilities is based on citywide water demand projections, using the eighteen-year growth projections contained in Table II-1 and the demand factors previously presented. Yearly increases in water demand were calculated based on this information, and system capacity improvements were scheduled to coincide with actual need, based on capacity of existing facilities and projected demand increases.

3. Service Pressures

Recommended Pressures. The 1990 Water System Master Plan contains recommendations that service connections be located no lower than 204 feet below reservoir high water levels

and no higher than 80 feet below reservoir low water levels. With a typical 24 foot high reservoir, static pressures will be in the range of 35 to 88 psi. Pressures as low as 30 psi are considered acceptable under non-emergency conditions when headloss in the distribution system is taken into account. Under fire conditions, pressures as low as 20 psi are acceptable.

Deviations from Recommended Pressures. Certain developed areas in the City do not comply with the recommended building pad elevations and pressures. Where economically feasible, the City plans to correct or mitigate deficiencies in currently developed areas. In future development areas, the recommended criteria will be employed. An exception is future development on the east side of the City in the zone 1 pressure zone. Zone 1 is the main pressure zone in the City and reservoir elevations are already established. Much of the existing and future development on the east side of the City is below recommended elevations for the zone 1 reservoirs, so pressures are and will continue to be high. Construction of a new pressure zone for the east side of the City would be prohibitively expensive, so zone 1 will continue to be used for development to the east. Pressure reduction facilities will be needed to mitigate this situation.

4. Emergency Provisions and Other Design Criteria

Distribution System Storage. Storage in the distribution system will be provided in sufficient quantity to meet the sum of the following needs.

- Operational Storage (25 percent maximum day).
- Fire Storage (most critical combination of flow and duration).
- Emergency Storage (50 percent maximum day in primary pressure zones and 75 percent maximum day in secondary pressure zones).

Fire Flows. The water system will be designed to accommodate the fire conditions cited in the following table.

FIRE FLOWS AND DURATIONS

Type of Development	Flow (gpm)	Duration (hrs)
Single Family Residence	1,500	2
Medium Density Residential and Schools	3,000	3
High Density Residential, Industrial and Commercial	4,500	4

Additional fire protection requirements will be mitigated with construction provisions in individual buildings.

Multiple Sources of Water Supply. The City will maintain multiple sources of water supply to minimize potential impacts from the loss of any one source. Currently, there are three sources: Putal South Canal, the North Bay Aqueduct and groundwater.

Water Production Capacity. The City has a goal of maintaining a 10 percent to 20 percent reserve water production capacity at all times. This will provide a level of safety during emergency conditions and will also provide flexibility in being able to serve new development.

Distribution System Pipelines. Distribution system pipelines will be sized to meet fire protection and residual pressure performance criteria. Additionally, new pipelines shall not be less than eight inches in single family residential areas and not less than twelve inches in medium and high density residential areas, school locations, and commercial and industrial areas. Distribution system pipelines will be looped whenever possible.

Pumping Facilities. Pumping station facilities will be sized to meet design demands with the largest pump out of service.

Phasing of Improvements. The timing of construction of the capital improvements was developed to allow for completion of construction as existing facilities are reaching full capacity, consistent with the growth projections of the City Planning Department, and the following:

1. Payment for facilities is assumed to be at the beginning of construction. Money for project initiation must therefore be available before award of a construction project.

2. Project initiation is scheduled sufficiently in advance of actual need to allow for a comfortable construction period. At the completion of the expansion project, a small increment of "existing" capacity would remain.

3. Project initiation and phasing of distribution system improvements is based on assumed construction phasing. Actual phasing will be based on future development patterns within the City and actual timing of development.

5. Responsibility to Pay

Costs for required improvements have been allocated between citywide and local impact. Those projects which primarily serve growth in the entire City, and that do not primarily benefit specific Sectors or Policy Plan Areas of the City, have been designated as citywide impacts. For these projects, costs are spread citywide and are part of the citywide fee structure. Projects which are primarily required to serve growth in specific Sectors are designated as "Local Impact" projects, and costs associated with these improvements are the responsibility of the developer. Local improvement projects are to accommodate growth within those Sectors.

In some cases, improvements may be triggered by growth in Sectors and citywide in near-equal proportions. For these cases, project costs are split between citywide and Local Impacts.

6. Rehabilitation Projects

Projects that correct existing system deficiencies, and are not primarily related to providing capacity to accommodate growth, are accounted for separately and are tabulated as System Rehabilitation projects. These projects are to be funded from service charges and not from impact fees.

7. Expansion Projects

Projects designed as "Expansion" are those projects which provide additional capacity and related upgrades to accommodate "citywide" or "local" development within the City and resulting flow increases and capacity requirements. Such projects are therefore directly related and assignable to development in the City and are appropriately included for impact fee assessment.

8. Relationship to Land Use

The various land use categories and the unit flow rates used in modeling the system to identify deficiencies and to size improvements are described above under "Service and Timing Standard," Section III.A.1.

B. Relative Impacts

The impact of various connections to the water system is dependent on the relative water usage of each connection. A single family home, served by a 5/8" or 3/4" meter, has been established as the standard for comparison purposes. Based on 1990 consumption data, a single family home uses 410 gallons/day/unit. Citywide averages for a single family home, over a longer term, have been slightly higher at 420 gallons/day/unit. This higher figure has been used for previous facilities master planning work and is used as the basis for determining the Equivalent Dwelling Unit (EDU) factors presented in Table III-1.

1. Planning Level Estimates

Facilities planning efforts used to project long term water demands and facilities needs are based on projected changes in land use and citywide average consumption by land use type and "quantity" of development, usually stated as acres. The City has established water demands for various land uses and has developed a model that closely estimates average water use by land use category. These various water demand factors are normally converted to an EDU basis.

Because substantial variation exists in water usage patterns among various users in each land use category, the City has historically charged impact fees based on water meter size rather than land use, acreage or building size. This tends to account for such variations in water usage and considers the difference in water consumption differences between "wet" and "dry" users.

2. Basis for Impact fee

Water system impact fees are to be assessed based on water meter size and average citywide consumption for each meter size. The basis for charges will be on an EDU basis, with the single family home used as the basis for relative charges. The relationship between relative impacts from planning level estimates and the impacts projected for impact fee assessments are as follows:

Water Demand (Land Use) = EDU = Average Water Use (Meter Size)

EDU SUMMARY BY LAND USE AND METER SIZE
CITY OF VACAVILLE WATER FEE PROGRAM

Land Use Category	Units	Consumption (gpd)	Equivalent Dwelling Unit (EDU) Factor	Equivalent Dwelling Units for Each Meter Size[4]					
				3/4"	1"	1-½"	2"	3"	4"
RESIDENTIAL									
Single Family	Dwelling Unit	420	1.00	1.0	2.5	5.0	8.0	--	--
Multi-Family[5]	Dwelling Unit	320	0.76	2.0	2.6	7.0	13.4	23.2	37.4
COMMERCIAL									
Retail	1,000 sq.ft.	108[1]	0.26	2.0	2.6	7.0	13.4	23.2	37.4
Commercial Services	1,000 sq.ft.	108[1]	0.26	2.0	2.6	7.0	13.4	23.2	37.4
Office	1,000 sq.ft.	108[1]	0.26	2.0	2.6	7.0	13.4	23.2	37.4
Industrial	1,000 sq.ft.	115[2]	0.27	2.0	2.6	7.0	13.4	23.2	37.4
INSTITUTIONAL									
Hospital/Congregate Care	1,000 sq.ft.	230[3]	0.55	2.0	2.6	7.0	13.4	23.2	37.4
Church	Acre	1,400[1]	3.33	2.0	2.6	7.0	13.4	23.2	37.4
Schools - Elem/JHS	Students	15	0.04	2.0	2.6	7.0	13.4	23.2	37.4
Schools - HS	Students	20	0.05	2.0	2.6	7.0	13.4	23.2	37.4

[1] Based on 1400 gpad and FAR of 0.3.
[2] Based on 1500 gpad and FAR of 0.3.
[3] Based on 3000 gpad and FAR of 0.3.
[4] EDU equivalents for single family meter sizes larger than 5/8" are based on AWWA meter capacity ratios. EDU equivalents for other land uses and meter sizes are based on 1990 citywide consumption data. In the future, 5/8" meters will not be available.
[5] Multiple units served by one meter.
[6] EDU equivalents apply to dedicated irrigation meters as well as meters serving both irrigation and potable uses.
[7] Meters 6" and larger will be based on EDU equivalencies (420 gal/day).

The EDU is the common link between planning level estimates, used for facilities planning, and the assessment of impact fees for various users.

Average water consumption by meter size in terms of EDU for various land use categories, based on 1990 consumption data, is summarized in Table III-1.

C. Project Descriptions

A computer model of the City's water system was developed by Nolte and Associates in the 1990 Water System Master Plan Study. Using the findings of this study and this model, land use provided for under the recently adopted General Plan, and water demand factors described above, the improvements to the existing water system necessary to solve existing deficiencies and to accommodate future growth were developed and their costs estimated. In addition, improvements and associated cost estimates were developed for the North Bay Regional Water Treatment Plant.

1. Capital Improvements Summary

The capital improvements resulting from this analysis are listed in Appendix A of this report by year in which they will be required to accommodate future growth. As described above, the costs of these improvements are assigned to either citywide or local impact. Projects under citywide impact are further categorized as improvements needed for facilities expansion, or for rehabilitation to correct existing deficiencies (which are funded by user fees). In certain cases, where capacity improvements also provide for rehabilitation of deteriorated facilities, costs may be shared between Expansion and Rehabilitation. Local impact improvements are assigned to a City General Plan sector or policy planning area. These local impact improvements are summarized in Appendix A.

Some improvements to the NBR Water Treatment Plan, for treatment plan expansion facilities not built during original construction of expansion facilities, are also assigned under citywide impact, and footnoted as such in Appendix A.

IV. SEWER CAPITAL IMPROVEMENTS PROGRAM

This section contains a description of the projected capital improvements to the City of Vacaville's (City's) sewer system for the next eighteen years. In addition, the process used to develop, schedule and assign the costs of these improvements has been included.

A. Nexus Tests

The nexus tests which have served as the basis for development of capital improvements and assignment of costs to impact fees are described below.

1. Service and Timing Standard

This section outlines the basic assumptions and criteria used to assess the facilities needs and costs for sewer collection and treatment facilities. A study prepared in 1987 by Brown and Caldwell, entitled *Vacaville Trunk Sewer Study* (BC Report), has developed a computer model of the City's sewer system as well as certain criteria and findings which were the basis of subsequent work. The study and model have been updated to include the new City General Plan Area. This update, along with those changes identified herein, was the basis of the level of service definition. The City of Vacaville has recently awarded West Yost & Associates (WYA) a contract to prepare a sewer master plan for the City. However, this work will not be completed until late 1991, and the results will not be available for this impact fee study.

The criteria and assumptions used in preparation of the capital improvements program are outlined below.

Estimation of Flow. Sewer flow was estimated using the factors, data and procedures described below.

- Flow Generation Factors. Flow generation factors, based on average dry weather flow, are as developed by BC and summarized in Table IV-1.

  Note that these flow generation factors are representative of citywide averages and do not reflect sufficient conservatism for facilities planning purposes. A level of safety has thus been incorporated in this impact fee study in facilities sizing and design criteria for pipelines, as discussed later in this section.

Table IV-1

SEWER FLOW GENERATION FACTORS
City of Vacaville Sewer Fee

Land Use[a]	Population Per Acre	GPCD[b]	GPAD[c]	Land Use Type[d]
PP	--	--	100	R
A-20	0.3	70	20	R
A-40	0.1	70	10	R
UR-20	0.2	70	15	R
H-20	0.2	70	15	R
H-LS-5	0.4	70	30	R
RS	--	--	425	R
R-1	2.8	70	195	R
R-2 1/2	1.1	70	80	R
R-1/2	5.6	70	390	R
FLM	9.4	70	660	R
RMD	17.6	70	1,230	R
RHD	28.6	70	2,015	R
CC	--	--	1,000	NR
CG	--	--	1,000	NR
CO	--	--	1,000	NR
CN	--	--	1,000	NR
CS	--	--	1,000	NR
CH	--	--	1,500	NR
CR	--	--	500	NR
OP	--	--	1,000	NR
I	--	--	1,000	NR
I-RR	--	--	1,000	NR
PE	--	--	1,500	NR
PJ	--	--	1,500	NR
PH	--	--	1,500	NR
PS	--	--	1,500	NR
P	--	--	1,000	NR

Source: Table 4-3, Vacaville Trunk Sewer Study, Brown & Caldwell, 1987.
[a] From Vacaville General Plan, see Table 3-1 for description.
[b] Gallons per capita per day.
[c] Gallons per acre per day.
[d] Land use types: R = residential; NR = nonresidential.

- Peaking Factors. Peaking factors included in the BC system model vary depending on tributary area and resulting flow. Generally, peaking factors range from approximately 2.0 at low flows to about 1.5 at relatively high flows. A plot of the assumed flow/peaking factor relationship is included as Figure IV-2. An allowance of 500 gallons/acre/day is also included to account for infiltration/inflow.

- Land Use Data. Brown and Caldwell was retained, under separate contract with the City, to perform sewer system analysis associated with Vacaville's General Plan Update. As part of this work, BC revised their computer model to account for changes in land use and an expanded General Plan Area to accommodate the updated General Plan. The basis for capital improvements identified in this summary is the 1990 General Plan. Eighteen-year growth projections are summarized in Table II-1.

- Flows. The BC model uses the above flow factors to produce estimates of average and peak flows within the existing system and also identifies the size and capacity of relief and replacement sewers required within the existing service area. The BC model takes into consideration the flow generated by new development accommodated within the draft general plan by introducing the entire flow from a given area outside the existing General Plan Area into a single node on the existing collection system. It does not currently include sizing or routing information for future pipelines which must be extended into these outlying areas (including the new General Plan Areas) to serve them in the future. Sizing of these extension facilities was performed manually, where needed to supplement the model.

- Phasing. Phasing of improvements to the distribution system and treatment facilities is based on citywide sewage generation projections, using the growth projections contained in Table II-1 and the sewage generation factors previously presented. Conversions from building square footage to gross acreage were done assuming a Floor Area Ratio (FAR) of 0.3. Yearly increases in sewage flows were calculated based on this information, and system capacity improvements were scheduled to coincide with actual need, based on capacity of existing facilities and projected demand increases.

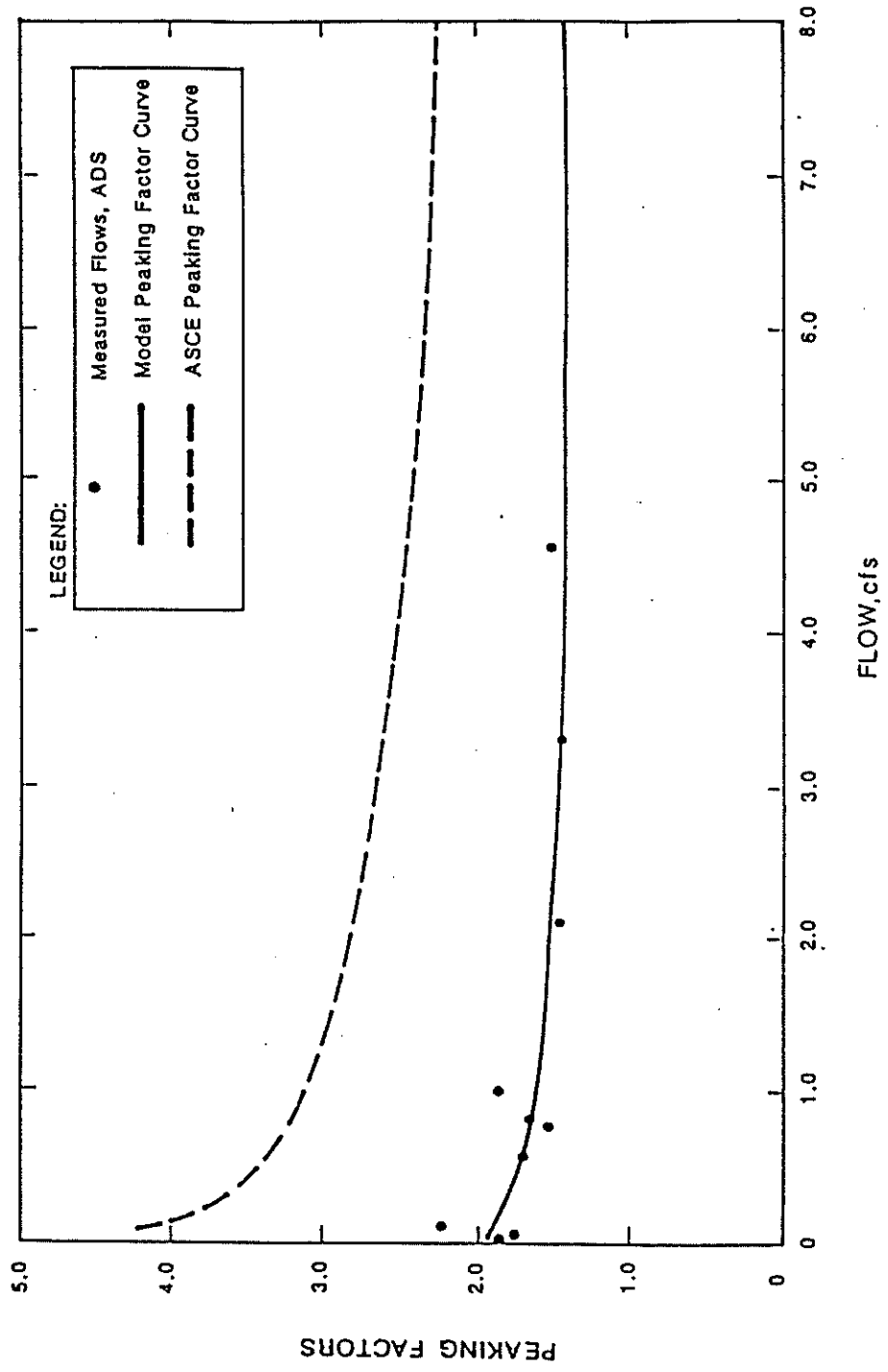
Facility Sizing. Pipelines, pump stations and treatment facilities were sized using the procedures described below.

- Pipelines. The basis for pipeline sizing is the flow data generated by the BC model. Because the flow generation factors used in this model are not sufficiently conservative for facilities planning purposes, a conservative approach to facilities

Fi IV-2

COMPARSON OF MODEL PEAKING FACTOR CURVE TO ADS MEASURED PEAKING FACTORS AND ASCE PEAKING FACTOR CURVE

City of Vacaville Sewer Fee



Source: Figure 4-1, Vacaville Trunk Sewer Study, Brown & Caldwell, 1987.

sizing has been used for the impact fee study. Pipelines have been sized to flow at the following percentage of full flow capacity:

Range of Pipe Diameter (Inches)	Design Capacity (Percent Full Flow)
8 to 18	50
21 to 27	65
30 to 39	75
42 or larger	80

As pipeline segments become larger, in downstream reaches of the system, flows will more likely approximate citywide averages and therefore less conservative sizing criteria have been utilized.

For existing portions of the system with inadequate capacity to serve projected future flows, two alternatives are considered in this evaluation:

1. Replacement of the existing sewer with a larger one, or

2. Paralleling the existing sewer with a new "relief" sewer, thereby leaving the existing sewer line in place.

During detailed planning, a number of factors will be considered in making a decision related to relieving versus replacing an existing sewer. Factors would include relative cost, structural condition and maintenance history of the existing sewer, etc. For the purposes of this study, the following approach has been used:

1. If the size of the relief sewer is less than the size of the existing sewer, construction of a relief sewer has been assumed.

2. If the size of the relief sewer is equal to or greater than the existing sewer, then construction of a replacement sewer has been assumed.

3. If the existing sewer is known to be in poor condition, then replacement in all cases has been assumed. Replacement of such sewers would eliminate infrastructure and inflow (I/I), thereby freeing up additional capacity in downstream sewers and treatment facilities.

Materials and standards for sewer construction have been assumed to be consistent with current City standards.

- Pump Stations. Pump stations have been sized to handle the full capacity, on a peak wet weather flow basis, of all influent sewer lines with the largest pump out of service. For estimating purposes, conventional wet pit/dry pit stations with standby power are assumed. For areas outside the existing service area boundary, detailed master planning studies may be required in the future to establish if pump stations are required or if a gravity sewer system is most appropriate to serve the area. For the purposes of this evaluation, the need for pump stations has been based on available topographic data and obvious constraints to gravity service for each area considered.

- Treatment Facilities. Treatment facilities for future expansion of the Easterly Waste Water Treatment Plant (WWTP) have been based on preliminary evaluations by Kennedy-Jenks-Chilton, engineers for the ongoing expansion of the existing plant. Evaluations assume that growth within the City will be served by existing plant capacity (10 mdg) plus a 2 mgd expansion of the existing plant facilities (for a total of 12 mgd).

Cost Estimates. The basis for developing facilities costs included:

1. Unit costs for sewer construction, based on diameter of pipeline and type of construction (such as within open field, within developed roadway, etc.).

2. Cost of pumping facilities as a function of design pumping capacity.

3. Cost of treatment plant capacity provided by the most recent expansion and by the proposed 2.0 mgd future expansion.

Phasing of Improvements. The timing of construction of the capital improvements was developed to allow for completion of construction as existing facilities are reaching full capacity, consistent with the growth projections of the City Planning Department, and the following:

1. Payment for facilities is assumed to be at the beginning of construction. Money for project initiation must therefore be available before award of a construction project.

2. Project initiation of treatment plant expansion projects is scheduled sufficiently in advance of actual need to allow for a comfortable construction period. At the completion of the expansion project, a small increment of "existing" treatment capacity would remain.

3. Project initiation and phasing of collection system improvements is based on assumed construction phasing. Actual phasing will be based on future development patterns within the City and the actual timing of new development.

2. Responsibility to Pay

Costs for required improvements have been allocated between citywide and local impact. Those projects which primarily serve growth in the entire City, and that do not primarily benefit specific Sectors or Policy Plan Areas of the City, have been designated as citywide impacts. For these projects, costs are spread citywide and are part of the citywide fee structure. Projects which are primarily required to serve growth in specific Sectors are designated as "Local Impact" projects, and costs associated with these improvements are the responsibility of the Developer. Local improvement projects are to accommodate growth within those Sectors.

In some cases, improvements may be triggered by growth in Sectors and citywide in near-equal proportions. For these cases, project costs are split between citywide and Local Impacts.

3. Rehabilitation Projects

Projects for correcting existing system deficiencies, and that are not primarily related to providing capacity to accommodate growth, are accounted for separately and are tabulated as System Rehabilitation projects. These projects are to be funded from service charges and not from impact fees.

4. Expansion Projects

Projects designed as "Expansion" are those projects which provide additional capacity and related upgrades to accommodate "citywide" or "local" development within the City and resulting flow increases and capacity requirements. Such projects are therefore directly related and assignable to new development in the City and are appropriately included for impact fee assessment.

5. Relationship to Land Use

The various land use categories and the unit flow rates used in modeling the system to identify deficiencies and to size improvements are previously described under "Service and Timing Standard," Section IV.A.1.

B. Relative Impacts

The impact of various connections to the sewerage system is dependent on both the relative wastewater flow and the strength of wastewater (measured in terms of BOD and suspended solids loading) of each connection. A single family home has been established as the standard for comparison purposes. A single family home, defined as one EDU, has historically produced 275 gallons/unit/day at a strength factor of 200 mg/l BOD and 200 mg/l suspended solids.

Using the EDU as a standard, other customers and user types are assessed based on their relative impact on the sewer system.

1. Planning Level Estimates

Planning efforts to project long term average wastewater flows and facilities needs are based on projected changes in land use. citywide average sewage generation by land use type and quantity of development, usually stated as acres, is used in this planning effort. The City has established sewage generation factors for various land uses and has developed a model that closely estimates average wastewater production by land use category. These generation factors are summarized in Table IV-1. These factors represent current citywide averages for existing development, but are not sufficiently conservative for facilities planning purposes for specific local development areas.

Wastewater generation factors that were used to establish phasing of improvements and actual capacity needs of citywide growth, as defined by land use categories in Table II-1, are summarized in Table IV-3.

2. Basis for Impact Fee

Because substantial variation exists in wastewater generation rates among various users in each land use category, both in terms of flow and strength, the City currently charges Sewer Impact Fees based on user classifications. This methodology more accurately accounts for the variations among user types that exist within each land use category.

Table IV-3

CALCULATION OF EQUIVALENT DWELLING UNIT (EDU) FACTORS
City of Vacaville Sewer Fee Program

Land Use Category	Units	Sewage Generation Rates (gpd)	Sewer EDU Factor
Residential			
Single Family	Dwelling Unit	275	1.00
Multi Family	Dwelling Unit	275	1.00
Non-Residential			
Retail	1,000 SqFt	77	0.28
Service	1,000 SqFt	96	0.35
Office	1,000 SqFt	69	0.25
Industrial	1,000 SqFt	115	0.42
Institutional			
Hospital/Congregate Care	1,000 SqFt	184	0.67
Church	Acre	1120	4.07
Schools - Elem/JHS	Students	12	0.04
Schools - HS	Students	16	0.06
	Students		

Source: City of Vacaville, Public Works Department.

[A]C:\P\1751\1751FOR1.WK1

Sewer system connection charges are to be assessed based on user classification and average flow/strength factors for each classification. The basis for charges will be on an EDU basis, with the single family home used as the basis for relative charges. The relationship between relative impacts from planning level estimates and the impacts projected for impact fee assessment are as follows:

Sewage Generation (Land Use) = EDU = Sewage Generation (User Classification)

The EDU is the common link between planning level estimates, used for facilities planning, and the assessment of impact fees for various user classifications.

The City's current sewer ordinance establishes EDU factors for various user classifications, and these equivalencies are the basis for impact fees. The fees shown in Table I-2 are estimated based on anticipated usage, but actual fees will be determined based on tenant type and EDU value, as established by the Department of Public Works. For large commercial/industrial users, or for users with unique sewage generation characteristics, the department of Public Works may establish EDU equivalencies on a case-by-case basis. A summary of EDU equivalencies is included in Table IV-4. Residential and hotel/motel uses are adjusted to account for unit size, based on number of bedrooms per unit.

C. Project Descriptions

A computer model of the City's sewer system was developed by Brown & Caldwell Consultants in 1987 (BC Report). Using this model, land use provided for under the recently adopted General Plan, and sewage flow generation factors described above, the improvements to the existing sewer system necessary to solve existing deficiencies and to accommodate future growth were developed and their costs estimated. For certain improvements in the vicinity of Leisure Town Road, the findings of a specific system modeling study, prepared for the City at the request of Chevron Land and Development Company, have been incorporated into this work. In addition, improvements and associated cost estimates were developed for the Easterly Waste Water Treatment Plan.

1. Capital Improvements Summary

The capital improvements resulting from this analysis are listed in Appendix B by year in which they will be required to accommodate future growth. As described above, the costs of these improvements are assigned to either citywide or local impact. Projects under citywide impact are further categorized as improvements needed for facilities expansion, or for rehabilitation to correct existing deficiencies (which are funded by user fees). In certain cases, where capacity improvements also provide for rehabilitation of deteriorated

Table IV-4 (Page 1 of 2)

EDU SUMMARY BY USER CATEGORY
City of Vacaville Sewer Fee

Land Use Category	Equivalent Dwelling Units
RESIDENTIAL	
Single and Multi-Family Including Mobile Homes	
• 1 Bedroom	0.6 Per Unit
• 2 Bedrooms	0.8 Per Unit
• 3 Bedrooms	1.0 Per Unit
• 4 Bedrooms or More	1.2 Per Unit
HOTEL/MOTEL	
Living Unit w/ Kitchen	0.6 Per Unit
Living Unit w/o Kitchen	0.4 Per Unit
Sleeping Quarters Sharing Common Restroom	0.2 Per Unit
LOW DENSITY	
Parking Garages	1/12 Per 1,000 sq.ft.
Warehouses	1/12 Per 1,000 sq.ft.
Storage Facilities	1/12 Per 1,000 sq.ft.
RETAIL STORES	
Apparel	1/5 Per 1,000 sq.ft.
Appliance	1/5 Per 1,000 sq.ft.
Automotive	1/5 Per 1,000 sq.ft.
Furniture	1/5 Per 1,000 sq.ft.
Hardware	1/5 Per 1,000 sq.ft.
Novelty	1/5 Per 1,000 sq.ft.
MEDIUM DENSITY USERS	
Theaters	1/4 Per 1,000 sq.ft.
Auditoriums, Halls, Lodges	1/4 Per 1,000 sq.ft.
Banks/Offices	1/4 Per 1,000 sq.ft.
Schools (w/o Cafeterias or Gymnasiums)	1/4 Per 1,000 sq.ft.
Bowling/Entertainment Centers (w/o Kitchens)	1/4 Per 1,000 sq.ft.
Churches	1/4 Per 1,000 sq.ft.

Table IV-4 (Page 2 of 2)

EDU SUMMARY BY USER CATEGORY
City of Vacaville Sewer Fee

Land Use Category	Equivalent Dwelling Units
HIGH DENSITY USERS	
Barber/Beauty Shops (w Lavatories)	1 Per 1,000 sq.ft.
Bars	1 Per 1,000 sq.ft.
Markets (w/o Disposals)	1 Per 1,000 sq.ft.
Medical/Dental Offices	1 Per 1,000 sq.ft.
Schools (w Cafeterias or Gymnasiums)	1 Per 1,000 sq.ft.
Service Stations	1 Per 1,000 sq.ft.
Sports/Fitness Centers	1 Per 1,000 sq.ft.
SPECIAL COMMERCIAL OR INDUSTRIAL USERS	
Carwashes (w/o Steam Cleaning)	2.5 Per Automatic Stall
Carwashes (w/o Steam Cleaning)	2 Per Self-serve Stall
Laundromats	1/5 Per Washer
Markets (w Disposals)	Pro Rata
Restaurants, Bakeries, Cafes	2.0 Per 1,000 sq.ft.
Mortuaries	2 Per 1,000 sq.ft.
Hospitals	1/2 Per Bed
Resthomes, Convalescent Hospitals	1/3 Per Bed
OTHER COMMERCIAL OR INDUSTRIAL USERS	Not Less Than 1 EDU
NON-CATEGORICAL USERS	
For Commercial or Industrial Uses Having High Wastewater Strengths or Flows, Use the EDU Formula	EDU = GPD/275 [0.44 + BOD/200 mg/L (0.28)+ SS mg/L/200 (0.28)]

facilities, costs may be shared between Expansion and Rehabilitation. Local impact improvements are assigned to a City General Plan sector or policy planning area. These local impact improvements are summarized in Appendix B.

Some improvements to the Easterly Waste Water Treatment Plant, for treatment plant expansion facilities not built during original construction of expansion facilities, are also assigned under citywide impact, and footnoted as such in Appendix B. An example of such improvements is sludge spreading equipment, which was not provided for in the recent expansion.

V. THE CITY OF VACAVILLE WATER AND SEWER FEE

A. The Recommended Fees

The development impact fees have two components which comprise the recommended fees.

- **Portion Not Subject To Contingent Reimbursement:** This component is collected per Equivalent Dwelling Unit (EDU) and charged for the entire planning period.

- **Portion Subject To Contingent Reimbursement:** The situation of having a portion of the fee subject to contingent reimbursement is brought on by having a significantly higher proportion of project costs to new development in the earlier years of the fee program. This would result in cash flow problems that would make it impossible for water and sewer improvements to be funded on a timely basis if only a single uniform fee were charged. The two-component fee has to be imposed on new development in the earlier years of the fee program to insure funding for improvements on a timely basis.

  If development occurs according to the forecast, the additional charge would not be imposed for the entire eighteen year planning period. Those who develop in the early years and pay the two-component fee will be reimbursed for the second component from fee receipts from future development if, and when, that development occurs. The reimbursement will include interest over the period it is outstanding, but it is not guaranteed, as it is contingent on future development occurring. Full reimbursement for the second component of the fee is also contingent on the actual cost of projects being equal to, or less than, the estimated cost.

B. Method of Calculation

The portion of the fee not subject to contingent reimbursement is approximately equal to the total cost of all improvements, divided by the total number of EDUs that have been forecast to develop through the year 2009. This relationship is approximate, rather than exact, because there are funds currently available for water improvements, the balances in the fee accounts earn interest, and interest is earned by, and paid on, the outstanding portion of the fee that is subject to contingent reimbursement.

The calculation of the portion of the fee subject to contingent reimbursement is more complex. This portion of the fee is necessary if the portion not subject to reimbursement fails to meet the cash flow demands of the capital improvements program. A heuristic

algorithm is employed and successive modifications of three separate variables are made. The first two variables are the level of the portion subject to contingent reimbursement and the years it is collected. The third variable is the years in which the portion subject to contingent reimbursement, plus accrued interest, is repaid from the funds then available in the development fee accounts.

A project phasing schedule is prepared, as determined by the development forecast and the adopted service standard, showing the timing of the expenditures required for each improvement. This schedule is shown in Appendix A for water improvements and Appendix B for sewer improvements. An EDU forecast is prepared, then converted into a forecast of the amount of fee not subject to contingent reimbursement and fee subject to contingent reimbursement that will be collected in each year. The fee, and cost of capital improvements are inflated, for purposes of analysis, at the same rate (6 percent per year). However, the recommended fee is set at a level equal the July 1 to account for inflation during the course of the current year, and the fact that the fee will be updated only once each year.

The amount of both components of the fee, along with the years the portion subject to contingent reimbursement is imposed and subsequently repaid, are successively manipulated until:

- All projects have been constructed at their then actual year cost;
- All yearly deficits in the development fee accounts have been eliminated;
- The portion subject of contingent reimbursement balance, along with accumulated interest, has been fully repaid. The balance in this account at the end of the planning period is zero;
- Only a nominal surplus remains in each development fee account.

C. Financial Analysis

Table V-1 shows the detailed financial analysis for the City of Vacaville Water Development Impact Fee, and Table V-2 shows the detailed financial analysis for the City of Vacaville Sewer Development Impact Fee. Each analysis identifies forecast fee revenues, interest earnings on both components of the fee and their respective balances, expenditures for improvements, and repayments of the portion subject to contingent reimbursement, all on an annual basis.

Table V-1 (page 1 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Water Fee

07-Feb-92
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BUILDOUT SUMMARY	Total	1992	1993	1994	1995
Financing Equivalent Dwelling Units	13,006	204	316	316	316
For The Time Period		204	316	316	316
Annual Average		204	519	835	1,150
Cumulative					
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)		$3,860	$3,860	$3,860	$3,860
Portion of Fee Not Subject To Contingent Reimbursement		$950	$950	$950	$950
Portion of Fee Subject To Contingent Reimbursement					
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)		$3,978	$4,224	$4,485	$4,763
Portion of Fee Not Subject To Contingent Reimbursement		$979	$1,040	$1,104	$1,172
Portion of Fee Subject To Contingent Reimbursement					

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	Total	1992	1993	1994	1995
Funds Not Subject to Contingent Reimbursement from Prior Periods	$2,568,309				
Funds Subject to Contingent Reimbursement from Prior Periods	$0				
Beginning Fund Balance		$2,568,309	$328,321	$721,318	$1,759,546
Revenues: Portion Not Subject To Contingent Reimbursement	$101,296,106	$1,061,795	$1,634,167	$1,735,218	$1,842,518
Portion Subject To Contingent Reimbursement	$15,223,044	$199,455	$328,015	$348,299	$369,836
Repayment From Lower Lagoon Valley	$1,949,765	$0	$0	$194,977	$194,977
Total Revenues	$118,468,915	$1,261,250	$1,962,183	$2,278,494	$2,407,331
Expenditures for Public Improvements	$105,346,347	$3,588,809	$1,600,556	$1,314,380	$3,787,598
Reimbursement of Fee and Interest	$22,593,333	$0	$0	$0	$0
Net Par Call for All COPs	$4,871,617	$0	$0	$0	$0
Net Revenues (Expenditures)	($14,342,382)	($2,327,559)	$361,626	$964,113	($1,380,267)
Interest Earnings on Fund Balance	$11,797,750	$87,571	$31,371	$74,114	$66,556
Fund Balance - End of Period	$23,677	$328,321	$721,318	$1,759,546	$445,835

CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	Total	1992	1993	1994	1995
Funds Subject To Contingent Reimbursement From Prior Periods	$0				
Reimbursement Due - Start of Period		$0	$205,560	$556,327	$949,688
Collections - Portion Subject to Contingent Reimbursement	$15,223,044	$199,455	$328,015	$348,299	$369,836
Reimbursements - This Period	$22,593,333	$0	$0	$0	$0
Net Collections (Reimbursements)	($7,370,290)	$199,455	$328,015	$348,299	$369,836
Interest Accrued - This Period	$7,370,290	$6,105	$22,751	$45,062	$70,046
Reimbursement Account Balance Due - End of Period	$0	$205,560	$556,327	$949,688	$1,389,570

Rangename: @WORK-AREA
City of Vacaville - Water Fee

		Levy Portion Subject To Contingent Reimbursement Yes/No			
Average Cost Per EDU Through End of Program	$4,007				
Maximum Cumulative Average Cost Per EDU During Program	$5,718				
Total Fee (January 1, 1992 Dollars)	$4,810	1992	1993	1994	1995
Portion of Fee - Not Subject To Contingent Reimbursement	$3,860				
Portion of Fee - Subject To Contingent Reimbursement	$950	YES	YES	YES	YES
Minimum Fund Balance	$23,677				
Final Balance Not Subject To Contingent Reimbursement	$23,677				
Final Reimbursement Account Balance	$0				
Final Redevelopment Loan Account Balance	$0				
Fund Balance - End of Period	$23,677	$328,321	$721,318	$1,759,546	$445,835
Total Reimbursement In Period	$22,593,333	$0	$0	$0	$0
Net Par Call for All COPs	$4,871,617	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-1 (page 2 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Water Fee

07-Feb-92
04:43 PM

BUILDOUT SUMMARY	1996	1997	1998	1999	2000
Financing Equivalent Dwelling Units					
For The Time Period	316	888	888	888	888
Annual Average	316	888	888	888	888
Cumulative	1,466	2,353	3,241	4,129	5,017
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$3,860	$3,860	$3,860	$3,860	$3,860
Portion of Fee Subject To Contingent Reimbursement	$950	$950	$950	$950	$950
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$5,057	$5,370	$5,702	$6,055	$6,429
Portion of Fee Subject To Contingent Reimbursement	$1,245	$1,322	$1,403	$1,490	$1,582

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS		1996	1997	1998	1999	2000
Funds Not Subject to Contingent Reimbursement from Prior Periods						
Funds Subject to Contingent Reimbursement from Prior Periods						
Beginning Fund Balance		$445,835	$1,331,348	$5,087,087	$9,683,407	$4,871,961
Revenues:	Portion Not Subject To Contingent Reimbursement	$1,956,453	$4,881,366	$5,183,213	$5,503,725	$5,844,056
	Portion Subject To Contingent Reimbursement	$392,706	$1,173,219	$1,245,767	$1,322,801	$1,404,598
	Repayment From Lower Lagoon Valley	$194,977	$194,977	$194,977	$194,977	$194,977
	Total Revenues	$2,544,136	$6,249,561	$6,623,956	$7,021,502	$7,443,631
Expenditures for Public Improvements		$1,711,672	$2,685,249	$2,469,371	$12,271,053	$3,862,892
Reimbursement of Fee and Interest		$0	$0	$0	$0	
Net Par Call for All COPs		$0	$0	$0	$0	
Net Revenues (Expenditures)		$832,463	$3,564,313	$4,154,585	($5,249,551)	$3,580,739
Interest Earnings on Fund Balance		$53,050	$191,426	$441,736	$438,104	$410,868
Fund Balance - End of Period		$1,331,348	$5,087,087	$9,683,407	$4,871,961	$8,863,568

CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	1996	1997	1998	1999	2000
Funds Subject To Contingent Reimbursement From Prior Periods					
Reimbursement Due - Start of Period	$1,389,570	$1,880,222	$3,205,619	$4,687,742	$6,340,907
Collections - Portion Subject to Contingent Reimbursement	$392,706	$1,173,219	$1,245,767	$1,322,801	$1,404,598
Reimbursements - This Period	$0	$0	$0	$0	$0
Net Collections (Reimbursements)	$392,706	$1,173,219	$1,245,767	$1,322,801	$1,404,598
Interest Accrued - This Period	$97,947	$152,178	$236,356	$330,364	$435,093
Reimbursement Account Balance Due - End of Period	$1,880,222	$3,205,619	$4,687,742	$6,340,907	$8,180,598

Rangename: @WORK-AREA
City of Vacaville - Water Fee

Levy Portion Subject To Contingent Reimbursement Yes/No

Average Cost Per EDU Through End of Program
Maximum Cumulative Average Cost Per EDU During Program

Total Fee (January 1, 1992 Dollars)	1996	1997	1998	1999	2000
Portion of Fee - Not Subject To Contingent Reimbursement					
Portion of Fee - Subject To Contingent Reimbursement	YES	YES	YES	YES	YES
Minimum Fund Balance					
Final Balance Not Subject To Contingent Reimbursement					
Final Reimbursement Account Balance					
Final Redevelopment Loan Account Balance					
Fund Balance - End of Period	$1,331,348	$5,087,087	$9,683,407	$4,871,961	$8,863,568
Total Reimbursement In Period	$0	$0	$0	$0	$0
Net Par Call for All COPs	$0	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-1 (page 3 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Water Fee

07-Feb-92
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BUILDOUT SUMMARY	2001	2002	2003	2004	2005
Financing Equivalent Dwelling Units					
For The Time Period	888	888	888	888	888
Annual Average	888	888	888	888	888
Cumulative	5,904	6,792	7,680	8,567	9,455
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$3,860	$3,860	$3,860	$3,860	$3,860
Portion of Fee Subject To Contingent Reimbursement	$950	$950	$950	$950	$950
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$6,827	$7,249	$7,697	$8,173	$8,678
Portion of Fee Subject To Contingent Reimbursement	$1,680	$1,784	$1,894	$2,011	$2,136
ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	2001	2002	2003	2004	2005
Funds Not Subject to Contingent Reimbursement from Prior Periods					
Funds Subject to Contingent Reimbursement from Prior Periods					
Beginning Fund Balance	$8,863,568	$12,623,624	$18,678,763	$24,665,957	$30,030,770
Revenues: Portion Not Subject To Contingent Reimbursement	$6,205,432	$6,589,155	$6,973,000	$7,404,186	$7,862,035
Portion Subject To Contingent Reimbursement	$1,491,454	$1,583,680	$1,681,609	$1,785,594	$1,896,009
Repayment From Lower Lagoon Valley	$194,977	$194,977	$194,977	$0	$0
Total Revenues	$7,891,862	$8,367,811	$8,849,586	$9,189,780	$9,758,045
Expenditures for Public Improvements	$4,775,294	$3,249,927	$4,160,938	$5,464,260	$4,352,086
›imbursement of Fee and Interest	$0	$0	$0	$0	$0
‡t Par Call for All COPs	$0	$0	$0	$0	$0
.et Revenues (Expenditures)	$3,116,568	$5,117,884	$4,688,648	$3,725,520	$5,405,958
Interest Earnings on Fund Balance	$643,488	$937,255	$1,298,546	$1,639,292	$2,022,471
Fund Balance - End of Period	$12,623,624	$18,678,763	$24,665,957	$30,030,770	$37,459,199
CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	2001	2002	2003	2004	2005
Funds Subject To Contingent Reimbursement From Prior Periods					
Reimbursement Due - Start of Period	$8,180,598	$10,223,564	$12,487,909	$14,993,200	$17,760,578
Collections - Portion Subject to Contingent Reimbursement	$1,491,454	$1,583,680	$1,681,609	$1,785,594	$1,896,009
Reimbursements - This Period	$0	$0	$0	$0	$0
Net Collections (Reimbursements)	$1,491,454	$1,583,680	$1,681,609	$1,785,594	$1,896,009
Interest Accrued - This Period	$551,512	$680,665	$823,682	$981,783	$1,156,288
Reimbursement Account Balance Due - End of Period	$10,223,564	$12,487,909	$14,993,200	$17,760,578	$20,812,875

Rangename: @WORK-AREA
City of Vacaville - Water Fee

	Levy Portion Subject To Contingent Reimbursement Yes/No				
Average Cost Per EDU Through End of Program					
Maximum Cumulative Average Cost Per EDU During Program					
Total Fee (January 1, 1992 Dollars)	2001	2002	2003	2004	2005
Portion of Fee - Not Subject To Contingent Reimbursement					
Portion of Fee - Subject To Contingent Reimbursement	YES	YES	YES	YES	YES
Minimum Fund Balance					
Final Balance Not Subject To Contingent Reimbursement					
Final Reimbursement Account Balance					
Final Redevelopment Loan Account Balance					
Fund Balance - End of Period	$12,623,624	$18,678,763	$24,665,957	$30,030,770	$37,459,199
Total Reimbursement In Period	$0	$0	$0	$0	$0
Net Par Call for All COPs	$0	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-1 (page 4 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Water Fee

07-Feb-92
04:43 PM

BUILDOUT SUMMARY	2006	2007	2008	2009
Financing Equivalent Dwelling Units				
For The Time Period	888	888	888	888
Annual Average	888	888	888	888
Cumulative	10,343	11,231	12,118	13,006
DEVELOPMENT FEE SCHEDULE				
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)				
Portion of Fee Not Subject To Contingent Reimbursement	$3,860	$3,860	$3,860	$3,860
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)				
Portion of Fee Not Subject To Contingent Reimbursement	$9,215	$9,785	$10,390	$11,032
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0
ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	2006	2007	2008	2009
Funds Not Subject to Contingent Reimbursement from Prior Periods				
Funds Subject to Contingent Reimbursement from Prior Periods				
Beginning Fund Balance	$37,459,199	$33,479,057	$3,995,414	$1,295,272
Revenues: Portion Not Subject To Contingent Reimbursement	$8,348,196	$8,864,420	$9,412,565	$9,994,606
Portion Subject To Contingent Reimbursement	$0	$0	$0	$0
Repayment From Lower Lagoon Valley	$0	$0	$0	$0
Total Revenues	$8,348,196	$8,864,420	$9,412,565	$9,994,606
Expenditures for Public Improvements	$4,457,679	$34,481,142	$4,678,905	$6,434,534
Reimbursement of Fee and Interest	$10,000,000	$5,000,000	$7,593,333	($0)
Net Par Call for All COPs	$0	$0	$0	$4,871,617
Net Revenues (Expenditures)	($6,109,483)	($30,616,722)	($2,859,673)	($1,311,545)
Interest Earnings on Fund Balance	$2,129,342	$1,133,079	$159,531	$39,950
Fund Balance - End of Period	$33,479,057	$3,995,414	$1,295,272	$23,677
CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	2006	2007	2008	2009
Funds Subject To Contingent Reimbursement From Prior Periods				
Reimbursement Due - Start of Period	$20,812,875	$11,793,781	$7,370,022	($0)
Collections - Portion Subject to Contingent Reimbursement	$0	$0	$0	$0
Reimbursements - This Period	$10,000,000	$5,000,000	$7,593,333	($0)
Net Collections (Reimbursements)	($10,000,000)	($5,000,000)	($7,593,333)	$0
Interest Accrued - This Period	$980,905	$576,241	$223,312	($0)
Reimbursement Account Balance Due - End of Period	$11,793,781	$7,370,022	($0)	$0

Rangename: @WORK-AREA
City of Vacaville - Water Fee

		Levy Portion Subject To Contingent Reimbursement Yes/No		
Average Cost Per EDU Through End of Program				
Maximum Cumulative Average Cost Per EDU During Program				
Total Fee (January 1, 1992 Dollars)	2006	2007	2008	2009
Portion of Fee - Not Subject To Contingent Reimbursement				
Portion of Fee - Subject To Contingent Reimbursement	NO	NO	NO	NO
Minimum Fund Balance				
Final Balance Not Subject To Contingent Reimbursement				
Final Reimbursement Account Balance				
Final Redevelopment Loan Account Balance				
Fund Balance - End of Period	$33,479,057	$3,995,414	$1,295,272	$23,677
Total Reimbursement In Period	$10,000,000	$5,000,000	$7,593,333	($0)
Net Par Call for All COPs	$0	$0	$0	$4,871,617

Source: Angus McDonald & Associates.

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Table V-2 (page 1 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Sewer Fee

10-Jan-92
10:09 AM

BUILDOUT SUMMARY	Total	1992	1993	1994	1995
Financing Equivalent Dwelling Units					
For The Time Period	20,929	940	1,187	1,187	1,187
Annual Average		940	1,187	1,187	1,187
Cumulative		940	2,127	3,314	4,501
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement		$2,548	$2,548	$2,548	$2,548
Portion of Fee Subject To Contingent Reimbursement		$1,325	$1,325	$1,325	$1,325
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement		$2,626	$2,788	$2,961	$3,144
Portion of Fee Subject To Contingent Reimbursement		$1,366	$1,450	$1,540	$1,635

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS		Total	1992	1993	1994	1995
Funds Not Subject to Contingent Reimbursement from Prior Periods		$0				
Funds Subject to Contingent Reimbursement from Prior Periods		$0				
Beginning Fund Balance			$0	$274,215	$176,089	$5,679,202
Revenues:	Portion Not Subject To Contingent Reimbursement	$96,208,777	$2,468,199	$3,310,214	$3,514,907	$3,732,256
	Portion Subject To Contingent Reimbursement	$24,169,083	$1,283,502	$1,721,363	$1,827,807	$1,940,832
	Reimbursement From Redevelopment Agency	$650,000	$75,000	$75,000	$500,000	$0
	Total Revenues	$121,027,861	$3,826,702	$5,106,578	$5,842,713	$5,673,088
Expenditures for Public Improvements		$86,131,511	$3,560,631	$5,218,243	$513,608	$8,516,716
Reimbursement of Fee and Interest		$41,488,032	$0	$0	$0	$0
Net Revenues (Expenditures)		($6,591,683)	$266,071	($111,665)	$5,329,106	($2,843,627)
Interest Earnings on Fund Balance		$6,630,432	$8,144	$13,539	$174,008	$264,141
Fund Balance - End of Period		$38,749	$274,215	$176,089	$5,679,202	$3,099,716

CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	Total	1992	1993	1994	1995
Funds Subject To Contingent Reimbursement From Prior Periods	$0				
Reimbursement Due - Start of Period		$0	$1,322,789	$3,178,639	$5,258,949
Collections - Portion Subject to Contingent Reimbursement	$24,169,083	$1,283,502	$1,721,363	$1,827,807	$1,940,832
Reimbursements - This Period	$41,488,032	$0	$0	$0	$0
Net Collections (Reimbursements)	($17,318,949)	$1,283,502	$1,721,363	$1,827,807	$1,940,832
Interest Accrued - This Period	$17,318,949	$39,287	$134,486	$252,504	$384,602
Reimbursement Account Balance Due - End of Period	($0)	$1,322,789	$3,178,639	$5,258,949	$7,584,384

Rangename: @WORK-AREA
City of Vacaville - Sewer Fee

		Levy Portion Subject To Contingent Reimbursement Yes/No			
Average Cost Per EDU Through End of Program	$2,575				
Maximum Cumulative Average Cost Per EDU During Program	$3,960				
Total Fee (January 1, 1992 Dollars)	$3,873	1992	1993	1994	1995
Portion of Fee - Not Subject To Contingent Reimbursement	$2,548				
Portion of Fee - Subject To Contingent Reimbursement	$1,325	YES	YES	YES	YES
Minimum Fund Balance	$38,749				
Final Balance Not Subject To Contingent Reimbursement	$38,749				
Final Reimbursement Account Balance	($0)				
Fund Balance - End of Period	$38,749	$274,215	$176,089	$5,679,202	$3,099,716
Total Reimbursement In Period	$41,488,032	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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CASH FLOW ANALYSIS
City of Vacaville - Sewer Fee

10-Jan-92
10:09 AM

BUILDOUT SUMMARY	1996	1997	1998	1999	2000
Financing Equivalent Dwelling Units					
For The Time Period	1,187	1,187	1,187	1,187	1,187
Annual Average	1,187	1,187	1,187	1,187	1,187
Cumulative	5,689	6,876	8,063	9,250	10,437
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$2,548	$2,548	$2,548	$2,548	$2,548
Portion of Fee Subject To Contingent Reimbursement	$1,325	$1,325	$1,325	$1,325	$1,325
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$3,338	$3,545	$3,764	$3,997	$4,244
Portion of Fee Subject To Contingent Reimbursement	$1,736	$1,843	$1,957	$2,078	$2,207
ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	1996	1997	1998	1999	2000
Funds Not Subject to Contingent Reimbursement from Prior Periods					
Funds Subject to Contingent Reimbursement from Prior Periods					
Beginning Fund Balance	$3,099,716	$103,671	$3,936,250	$10,506,559	$17,874,388
Revenues: Portion Not Subject To Contingent Reimbursement	$3,963,046	$4,208,107	$4,468,322	$4,744,628	$5,038,019
Portion Subject To Contingent Reimbursement	$2,060,846	$2,188,282	$2,323,598	$2,467,281	$2,619,849
Reimbursement From Redevelopment Agency	$0	$0	$0	$0	$0
Total Revenues	$6,023,893	$6,396,389	$6,791,920	$7,211,909	$7,657,868
Expenditures for Public Improvements	$9,116,938	$2,683,858	$652,923	$693,298	$4,264,5[illegible]
Reimbursement of Fee and Interest	$0	$0	$0	$0	
[illegible]et Revenues (Expenditures)	($3,093,046)	$3,712,531	$6,138,996	$6,518,611	$3,393,[illegible]
[illegible]nterest Earnings on Fund Balance	$97,000	$120,048	$431,313	$849,218	$1,209,15[illegible]
Fund Balance - End of Period	$103,671	$3,936,250	$10,506,559	$17,874,388	$22,476,828
CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	1996	1997	1998	1999	2000
Funds Subject To Contingent Reimbursement From Prior Periods					
Reimbursement Due - Start of Period	$7,584,384	$10,177,303	$13,061,895	$16,264,318	$19,812,850
Collections - Portion Subject to Contingent Reimbursement	$2,060,846	$2,188,282	$2,323,598	$2,467,281	$2,619,849
Reimbursements - This Period	$0	$0	$0	$0	$0
Net Collections (Reimbursements)	$2,060,846	$2,188,282	$2,323,598	$2,467,281	$2,619,849
Interest Accrued - This Period	$532,073	$696,311	$878,826	$1,081,251	$1,305,349
Reimbursement Account Balance Due - End of Period	$10,177,303	$13,061,895	$16,264,318	$19,812,850	$23,738,048

Rangename: @WORK-AREA
City of Vacaville - Sewer Fee

Levy Portion Subject To Contingent Reimbursement Yes/No

Average Cost Per EDU Through End of Program
Maximum Cumulative Average Cost Per EDU During Program

Total Fee (January 1, 1992 Dollars)	1996	1997	1998	1999	2000
Portion of Fee - Not Subject To Contingent Reimbursement					
Portion of Fee - Subject To Contingent Reimbursement	YES	YES	YES	YES	YES
Minimum Fund Balance					
Final Balance Not Subject To Contingent Reimbursement					
Final Reimbursement Account Balance					
Fund Balance - End of Period	$103,671	$3,936,250	$10,506,559	$17,874,388	$22,476,828
Total Reimbursement In Period	$0	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-2 (page 3 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Sewer Fee

10-Jan-92
10:09 AM

BUILDOUT SUMMARY	2001	2002	2003	2004	2005
Financing Equivalent Dwelling Units					
For The Time Period	1,187	1,187	1,160	1,160	1,160
Annual Average	1,187	1,187	1,160	1,160	1,160
Cumulative	11,624	12,811	13,971	15,131	16,290
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$2,548	$2,548	$2,548	$2,548	$2,548
Portion of Fee Subject To Contingent Reimbursement	$1,325	$1,325	$0	$0	$0
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$4,506	$4,785	$5,081	$5,395	$5,729
Portion of Fee Subject To Contingent Reimbursement	$2,343	$2,488	$0	$0	$0
ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	2001	2002	2003	2004	2005
Funds Not Subject to Contingent Reimbursement from Prior Periods					
Funds Subject to Contingent Reimbursement from Prior Periods					
Beginning Fund Balance	$22,476,828	$31,441,399	$1,627,834	$1,739,084	$3,207,122
Revenues: Portion Not Subject To Contingent Reimbursement	$5,349,553	$5,680,351	$5,891,629	$6,255,947	$6,642,794
Portion Subject To Contingent Reimbursement	$2,781,851	$2,953,872	$0	$0	$0
Reimbursement From Redevelopment Agency	$0	$0	$0	$0	$0
Total Revenues	$8,131,404	$8,634,222	$5,891,629	$6,255,947	$6,642,794
Expenditures for Public Improvements	$781,691	$39,448,807	$881,354	$935,854	$4,234,435
Reimbursement of Fee and Interest	$0	$0	$5,000,000	$4,000,000	$4,000,000
Net Revenues (Expenditures)	$7,349,713	($30,814,585)	$10,275	$1,320,093	($1,591,641)
Interest Earnings on Fund Balance	$1,614,858	$1,001,021	$100,974	$147,946	$149,599
Fund Balance - End of Period	$31,441,399	$1,627,834	$1,739,084	$3,207,122	$1,765,080
CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	2001	2002	2003	2004	2005
Funds Subject To Contingent Reimbursement From Prior Periods					
Reimbursement Due - Start of Period	$23,738,048	$28,072,929	$32,853,149	$29,731,629	$27,447,693
Collections - Portion Subject to Contingent Reimbursement	$2,781,851	$2,953,872	$0	$0	$0
Reimbursements - This Period	$0	$0	$5,000,000	$4,000,000	$4,000,000
Net Collections (Reimbursements)	$2,781,851	$2,953,872	($5,000,000)	($4,000,000)	($4,000,000)
Interest Accrued - This Period	$1,553,029	$1,826,348	$1,878,480	$1,716,065	$1,574,834
Reimbursement Account Balance Due - End of Period	$28,072,929	$32,853,149	$29,731,629	$27,447,693	$25,022,527

Rangename: @WORK-AREA
City of Vacaville - Sewer Fee

Levy Portion Subject To Contingent Reimbursement Yes/No

Average Cost Per EDU Through End of Program Maximum Cumulative Average Cost Per EDU During Program					
Total Fee (January 1, 1992 Dollars)	2001	2002	2003	2004	2005
Portion of Fee - Not Subject To Contingent Reimbursement					
Portion of Fee - Subject To Contingent Reimbursement	YES	YES	NO	NO	NO
Minimum Fund Balance					
Final Balance Not Subject To Contingent Reimbursement					
Final Reimbursement Account Balance					
Fund Balance - End of Period	$31,441,399	$1,627,834	$1,739,084	$3,207,122	$1,765,080
Total Reimbursement In Period	$0	$0	$5,000,000	$4,000,000	$4,000,000

Source: Angus McDonald & Associates.

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Table V-2 (page 4 of 4)

CASH FLOW ANALYSIS
City of Vacaville - Sewer Fee

10-Jan-92
10:09 AM

BUILDOUT SUMMARY	2006	2007	2008	2009
Financing Equivalent Dwelling Units				
For The Time Period	1,160	1,160	1,160	1,160
Annual Average	1,160	1,160	1,160	1,160
Cumulative	17,450	18,609	19,769	20,929
DEVELOPMENT FEE SCHEDULE				
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)				
Portion of Fee Not Subject To Contingent Reimbursement	$2,548	$2,548	$2,548	$2,548
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)				
Portion of Fee Not Subject To Contingent Reimbursement	$6,083	$6,459	$6,858	$7,282
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	2006	2007	2008	2009
Funds Not Subject to Contingent Reimbursement from Prior Periods				
Funds Subject to Contingent Reimbursement from Prior Periods				
Beginning Fund Balance	$1,765,080	$2,903,174	$1,402,090	$2,275,314
Revenues: Portion Not Subject To Contingent Reimbursement	$7,053,561	$7,489,729	$7,952,868	$8,444,646
Portion Subject To Contingent Reimbursement	$0	$0	$0	$0
Reimbursement From Redevelopment Agency	$0	$0	$0	$0
Total Revenues	$7,053,561	$7,489,729	$7,952,868	$8,444,646
Expenditures for Public Improvements	$1,055,173	$1,120,421	$1,189,704	$1,263,271
Reimbursement of Fee and Interest	$5,000,000	$8,000,000	$6,000,000	$9,488,032
Net Revenues (Expenditures)	$998,388	($1,630,692)	$763,164	($2,306,658)
Interest Earnings on Fund Balance	$139,706	$129,608	$110,060	$70,093
Fund Balance - End of Period	$2,903,174	$1,402,090	$2,275,314	$38,749

CONTINGENT REIMBURSEMENT ANALYSIS - ACTUAL YEAR DOLLARS	2006	2007	2008	2009
Funds Subject To Contingent Reimbursement From Prior Periods				
Reimbursement Due - Start of Period	$25,022,527	$21,416,789	$14,496,256	$9,209,000
Collections - Portion Subject to Contingent Reimbursement	$0	$0	$0	$0
Reimbursements - This Period	$5,000,000	$8,000,000	$6,000,000	$9,488,032
Net Collections (Reimbursements)	($5,000,000)	($8,000,000)	($6,000,000)	($9,488,032)
Interest Accrued - This Period	$1,394,261	$1,079,467	$712,744	$279,033
Reimbursement Account Balance Due - End of Period	$21,416,789	$14,496,256	$9,209,000	($0)

Rangename: @WORK-AREA
City of Vacaville - Sewer Fee

Levy Portion Subject To Contingent Reimbursement Yes/No

Average Cost Per EDU Through End of Program
Maximum Cumulative Average Cost Per EDU During Program

Total Fee (January 1, 1992 Dollars)	2006	2007	2008	2009
Portion of Fee - Not Subject To Contingent Reimbursement				
Portion of Fee - Subject To Contingent Reimbursement	NO	NO	NO	NO
Minimum Fund Balance				
Final Balance Not Subject To Contingent Reimbursement				
Final Reimbursement Account Balance				
Fund Balance - End of Period	$2,903,174	$1,402,090	$2,275,314	$38,749
Total Reimbursement In Period	$5,000,000	$8,000,000	$6,000,000	$9,488,032

Source: Angus McDonald & Associates.

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D. Additional Sources of Financing -- Additional Distribution Rights Charge

In addition to the fee revenues collected, there are two additional sources of revenue available to fund the water improvements. First, there is approximately $2.5 million dollars available from previously collected fees that is used to fund improvements in the fee program. Second, there is an additional charge levied against those who previously purchased Distribution Rights through the Water Rights Program.

The water impact fee provides the funding for water plant capacity, as well as the distribution system. When the Water Rights Program was developed in 1987, of a $1,600 Water Right, $850 was for the NBRWTP construction (Water Treatment Right), and $750 was for the system improvements (Distribution Right). The Water Rights Agreement states that if the Distribution Right increases after July 1, 1987, for reasons other than engineering cost index adjustment, then 1/2 of that increase can be levied on unused Distribution Rights.

The Distribution Rights should increase because in the 1990 Water Master Plan the City Council adopted a 20 year Capital Improvement Program that expands the City's distribution system to facilitate a growth period. The schedule of projects provides distribution and reservoir capacity needs for the 20 year growth condition. The Water Master Plan also sets design criteria that the distribution system and reservoirs have to be constructed to:

1) Distribution = 4,500 gal/min. at 20 psi. + peak day demand usage.

2) Reservoir Storage = 4,500 gal/min. for 4 hours + 75% of maximum day usage.

These new distribution and storage capacity requirements follow sound water utility and fire safety practices. The City sizes water reservoirs at 5 million gallons, with Browns Valley completion in 1990, and a new reservoir scheduled for 1992.

The portion of Distribution Rights attributable to reservoir construction will not offset existing storage deficiencies. These deficiencies will be "carried," so that by the year 2010, the deficiency of 1.4 mg storage capacity will exist in the system.

Those who develop during the eighteen-year program, and have already purchased distribution rights, will pay an additional fee based on the following formula:

$$((((\$750/\$1600) * \$\,3{,}978) - \$926.08) * 50\%)$$

The items in the formula were derived as follows:

$ 750.00	Original Purchase Price -- Distribution Rights
$ 1,600.00	Original Purchase Price -- Distribution & Plant Rights
$ 926.08	Original Purchase Price of Distribution Rights inflated to July 1, 1992 dollars.

The additional fee, per EDU, required of those who purchased distribution rights for each scenario is shown in Table V-3. The entire additional distribution charge is not subject to contingent reimbursement.

The cash flow analysis showing the annual revenue generated from the additional distribution charge is shown in Table V-6 (page 51).

Table V-3

CALCULATION OF ADDITIONAL DISTRIBUTION CHARGE
City of Vacaville Water Fee

Plant Rights			$850
Distribution Rights			$750
Total Original Water Rights Fee			$1,600
Adjustment to Distribution Portion			
Original		$750.00	
Nov. 1987	7.60%	$807.00	
Nov. 1988	3.00%	$831.21	
Nov. 1989	1.05%	$839.94	
Jan. 1991	5.40%	$885.29	
Jan. 1992	1.50%	$898.57	
Jul. 1992 *	3.06%	$926.08	
Calculation of Additional Distribution Fee To Be Charged (7/1/92 Dollars)			$469

* Estimate based on an annual 6% inflation rate.

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E. Financing Sources -- Certificate of Participation (COP)

The City of Vacaville plans to take advantage of opportunities to secure additional water capacity when they become available. As a result the projects listed in Table V-4 could not be put off into the future. However, if the full cost of these projects is funded from water fees in the year each project is scheduled, the result is a portion subject to contingent reimbursement that is clearly not viable. The solution is that each of the projects is assumed to be funded from COP issues in the year listed in Table V-4. The annual debt service payments for these issues is then funded from the water impact fee program. Prior to going to the Council for specific COP financing, the City will first attempt to finance these projects through interfund borrowing.

Table V-4

PROJECTS FUNDED FROM CERTIFICATES OF PARTICIPATION (COPs)
City of Vacaville Water Fee

Project #	COP Issue Year of Funding	Dollar Amount (Net Construction-Proceeds)
4 - Well Field Expansion	1992	$1.1 mil
11 - Zone 1 Treated Reservoirs	1992	$3.3 mil
15 - Well Field Exp/Rep	1993	$550,000
21A - Water Development Projects (Land Acquisition and Engineering)	1993	$0.9 mil
24 - Well Field Expansion	1993	$1.1 mil
21B - Water Development Projects (Land Acquisition and Engineering)	1995	$1.1 mil
38 - Water Development (Construction)	1995	$4.0 mil
60 - Peabody Road Pipeline	1999	$3.165 mil
67 - NBR Plant - To 20 mgd	2001	$4.140 mil

F. Levels of Defense

The timing of required water system improvements is such that development impact fees alone will not produce sufficient cash early enough to finance some of the improvements that are required in the early years of the eighteen-year program. A Certificate of Participation (COP), which is a lease financing vehicle, is proposed to finance certain projects in the early years of the program. The basic concept is that annual payments on the Certificate of Participation would be drawn from the Water Development Impact Fee Fund. In other words, development impact fees would be the source of repayment.

The use of a COP could result in a call for funding from the Vacaville General Fund if other sources for the payment of debt service (e.g., development impact fee revenue) were not available.

The forecast of development over the next twenty years was originally prepared as a realistic, but conservative, forecast of the amount of development that Vacaville could expect. The actual amount of development could drop to one-third of the development forecast and it would still not be necessary to use anything but that year's collection of Water Impact Fees to service the Certificate of Participation. This is shown in Table V-5, in column (1), as the annual debt service does not exceed 33-1/3 percent of current year fee revenues in any given year.

In the event that the current year's fee revenues are not able to fund the total debt service obligation there are five protections that are available to prevent either a water rate increase or a call on General Fund revenues. These are listed in the order in which they would be called upon to fund the debt service.

1. **Cash Reserve - Fee Fund.** The Water Impact Fee Program collects and accumulates fee revenues prior to the actual expenditure on the construction of water facilities. As a result the cash surplus in the fee fund that has not been encumbered is available to fund shortfalls in revenue from the current year's fee revenues.

2. **Cash Reserve - Two Years Maximum Annual Debt Service.** The Water Impact Fee Program provides for collecting water impact fees such that a cash surplus equal to two years' of the maximum annual debt service is accumulated at the time each Certificate of Participation is issued. This is in addition to all of the programmed expenditures for the construction of water projects (including the Certificates of Participation) from the Water Impact Fee fund. This reserve fund is an extra cushion used before the "reserve fund", into which certain of the proceeds of the original Certificate of Participation were deposited, is invaded. This latter reserve fund is really only a protection to the certificate holders and not to the Vacaville

General Fund. It can only be used to pay debt service in the event the City defaults on its obligation to make payments from generally available revenues (including General Fund revenues), or in the event that the City's obligation is abated due to damage, destruction or condemnation of the project(s) financed.

The total cash reserves at the beginning of each year (the sum of [1] and [2]) do not exceed 30 percent of the annual debt service requirements. This is shown in Table V-5, column (2).

The accumulation of the additional two years of maximum annual debt service, the accrual of interest on the fund balances, along with the fund balance being used for a par call of all COPs in 2009, is shown in Table V-6.

3. **Redevelopment Tax Increment.** The Vacaville Redevelopment Agency is projecting a positive tax increment balance in future years. It would be practical and equitable to borrow from the Redevelopment Agency in a year where development dropped below the rate necessary to service the COP. This borrowing, plus interest, could be repaid as the development cycle improved.

4. **Inter-fund Borrowing.** It is entirely practical and equitable to borrow between different development impact fee fund accounts as long as the borrowing is repaid, the accounting is meticulous, and interest is paid. By the time a difficulty could occur, Vacaville will have in place eight development impact fees, each with its separate account. Experience in other jurisdictions has confirmed that the peak cash flow requirements for all of the fees virtually never occur in the same year. A year of peak demand in the Water Impact Fee fund, for example, could be a year where there is not a heavy demand on the Park Impact Fee fund. In such a case, borrowing from one fund to the other could cure a temporary shortfall.

   In the case of a prolonged slowdown in development, there would also be a slowdown in the demand for new facilities. Any available balances in any of the development impact fee accounts could be used to remedy a short-term deficiency in the Water Impact Fee fund. As development improved, it would be possible to repay this borrowing plus interest.

5. **Mello-Roos.** Only in projects after 1995, a latent Mello-Roos could be placed on outlying property to be annexed by the city. The Mello-Roos would be activated only if fees are unable to cover debt service for that year.

Table V-5

SUMMARY OF RATIOS RELATED TO DEBT SERVICE
City of Vacaville - Water Fee

07-Feb-92
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YEAR		(1) Annual Debt Service As A Percent Of Annual Fee Revenue	Over 33 1/3 %	(2) Annual Debt Service As A Percent Of Total Cash Reserves	Over 33 1/3 %
1992	1	0.0%		0.0%	
1993	2	0.0%		0.0%	
1994	3	19.9%		19.2%	
1995	4	31.8%		21.8%	
1996	5	28.6%		19.8%	
1997	6	22.8%		30.1%	
1998	7	21.5%		16.4%	
1999	8	20.2%		10.5%	
2000	9	18.7%		13.9%	
2001	10	24.4%		13.5%	
2002	11	22.6%		9.5%	
2003	12	30.0%		10.0%	
2004	13	28.9%		8.1%	
2005	14	27.2%		6.8%	
2006	15	31.8%		5.7%	
2007	16	29.8%		6.1%	
2008	17	28.1%		18.3%	
2009	18	26.4%		21.3%	

Notes:

(1) Annual Fee Revenue is measured as the total collections in the current period.

(2) Total Cash Reserves is measured as the sum of the fund balance available at the begining of the current period and the cash balance of the reserve fund containing 2-years of maximum debt service at the begining of the current period.

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Table V-6 (page 1 of 4)

ADDITIONAL REVENUE FROM SUPPLEMENTARY DISTRIBUTION CHARGE AND ADDITIONAL DEBT SERVICE RESERVE FUND
City of Vacaville - Water Fee

07-Feb-92
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BUILDOUT SUMMARY	Total	1992	1993	1994	1995
Financing Equivalent Dwelling Units For The Time Period	5,120	536	605	605	605
Annual Average		536	605	605	605
Cumulative		536	1,140	1,745	2,350
Total Fee (January 1, 1992 Dollars)	$455				
Portion of Fee - Not Subject To Contingent Reimbursement	$455				
Portion of Fee - Subject To Contingent Reimbursement	$0				
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement		$455	$455	$455	$455
Portion of Fee Subject To Contingent Reimbursement		$0	$0	$0	$0
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement		$469	$498	$529	$562
Portion of Fee Subject To Contingent Reimbursement		$0	$0	$0	$0

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	Total	1992	1993	1994	1995
Funds Not Subject to Contingent Reimbursement from Prior Periods	$0				
Funds Subject to Contingent Reimbursement from Prior Periods	$0				
Beginning Fund Balance		$0	$251,379	$552,768	$872,793
Revenues: Portion Not Subject To Contingent Reimbursement	$3,559,785	$251,379	$301,389	$320,025	$339,815
Portion Subject To Contingent Reimbursement	$0	$0	$0	$0	$0
Total Revenues	$3,559,785	$251,379	$301,389	$320,025	$339,815
Cumulative Revenues	$3,559,785	$251,379	$552,768	$872,793	$1,212,608

ADDITIONAL TWO YEARS MAXIMUM DEBT SERVICE RESERVE FUND - ACTUAL YEAR DOLLARS	Total	1992	1993	1994	1995
Additional Debt Service Reserve Fund From Prior Periods	$0				
Debt Service Reserve - Start of Period		$0	$968,915	$1,642,767	$1,744,350
Debt Service Reserve Collected- This Period	$5,334,702	$940,138	$595,704	$0	$1,322,262
Use of Reserve Fund - This Period	$0	$0	$0	$0	$0
Net Collections (Uses)	$5,334,702	$940,138	$595,704	$0	$1,322,262
Interest Accrued - This Period	$6,453,681	$28,777	$78,148	$101,583	$148,338
Debt Service Reserve Fund Balance Due - End of Period	$11,788,383	$968,915	$1,642,767	$1,744,350	$3,214,950
Par Call For All COPs (11/01/09)	$16,660,000	$0	$0	$0	$0
Net Contribution From Water Fee Fund For Par Call	$4,871,617	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-6 (page 2 of 4)

ADDITIONAL REVENUE FROM SUPPLEMENTARY DISTRIBUTION CHARGE AND ADDITIONAL DEBT SERVICE RESERVE FUND
City of Vacaville - Water Fee

07-Feb-92
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BUILDOUT SUMMARY	1996	1997	1998	1999	2000
Financing Equivalent Dwelling Units					
For The Time Period	605	181	181	181	181
Annual Average	605	181	181	181	181
Cumulative	2,955	3,135	3,316	3,496	3,677
Total Fee (January 1, 1992 Dollars)					
Portion of Fee - Not Subject To Contingent Reimbursement					
Portion of Fee - Subject To Contingent Reimbursement					
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$455	$455	$455	$455	$455
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0	$0
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$597	$634	$673	$714	$758
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0	$0

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	1996	1997	1998	1999	2000
Funds Not Subject to Contingent Reimbursement from Prior Periods					
Funds Subject to Contingent Reimbursement from Prior Periods					
Beginning Fund Balance	$1,212,608	$1,573,436	$1,687,827	$1,809,292	$1,938,268
Revenues: Portion Not Subject To Contingent Reimbursement	$360,828	$114,391	$121,465	$128,976	$136,951
Portion Subject To Contingent Reimbursement	$0	$0	$0	$0	$0
Total Revenues	$360,828	$114,391	$121,465	$128,976	$136,951
Cumulative Revenues	$1,573,436	$1,687,827	$1,809,292	$1,938,268	$2,075,219

ADDITIONAL TWO YEARS MAXIMUM DEBT SERVICE RESERVE FUND - ACTUAL YEAR DOLLARS	1996	1997	1998	1999	2000
Additional Debt Service Reserve Fund From Prior Periods					
Debt Service Reserve - Start of Period	$3,214,950	$3,413,751	$3,624,846	$3,848,994	$5,137,764
Debt Service Reserve Collected- This Period	$0	$0	$0	$1,019,554	$0
Use of Reserve Fund - This Period	$0	$0	$0	$0	$0
Net Collections (Uses)	$0	$0	$0	$1,019,554	$0
Interest Accrued - This Period	$198,801	$211,095	$224,148	$269,216	$317,702
Debt Service Reserve Fund Balance Due - End of Period	$3,413,751	$3,624,846	$3,848,994	$5,137,764	$5,455,466
Par Call For All COPs (11/01/09)	$0	$0	$0	$0	$0
Net Contribution From Water Fee Fund For Par Call	$0	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-6 (page 3 of 4)

ADDITIONAL REVENUE FROM SUPPLEMENTARY DISTRIBUTION CHARGE AND ADDITIONAL DEBT SERVICE RESERVE FUND
City of Vacaville - Water Fee

07-Feb-92
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BUILDOUT SUMMARY	2001	2002	2003	2004	2005
Financing Equivalent Dwelling Units					
For The Time Period	181	181	155	155	155
Annual Average	181	181	155	155	155
Cumulative	3,857	4,038	4,193	4,347	4,502
Total Fee (January 1, 1992 Dollars)					
Portion of Fee - Not Subject To Contingent Reimbursement					
Portion of Fee - Subject To Contingent Reimbursement					
DEVELOPMENT FEE SCHEDULE					
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$455	$455	$455	$455	$455
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0	$0
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)					
Portion of Fee Not Subject To Contingent Reimbursement	$805	$855	$908	$964	$1,024
Portion of Fee Subject To Contingent Reimbursement	$0	$0	$0	$0	$0

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	2001	2002	2003	2004	2005
Funds Not Subject to Contingent Reimbursement from Prior Periods					
Funds Subject to Contingent Reimbursement from Prior Periods					
Beginning Fund Balance	$2,075,219	$2,220,638	$2,375,050	$2,515,405	$2,664,439
Revenues: Portion Not Subject To Contingent Reimbursement	$145,420	$154,412	$140,355	$149,034	$158,250
Portion Subject To Contingent Reimbursement	$0	$0	$0	$0	$0
Total Revenues	$145,420	$154,412	$140,355	$149,034	$158,250
Cumulative Revenues	$2,220,638	$2,375,050	$2,515,405	$2,664,439	$2,822,689

ADDITIONAL TWO YEARS MAXIMUM DEBT SERVICE RESERVE FUND - ACTUAL YEAR DOLLARS	2001	2002	2003	2004	2005
Additional Debt Service Reserve Fund From Prior Periods					
Debt Service Reserve - Start of Period	$5,455,466	$7,294,456	$7,745,520	$8,224,476	$8,733,049
Debt Service Reserve Collected- This Period	$1,457,044	$0	$0	$0	$0
Use of Reserve Fund - This Period	$0	$0	$0	$0	$0
Net Collections (Uses)	$1,457,044	$0	$0	$0	$0
Interest Accrued - This Period	$381,946	$451,064	$478,956	$508,573	$540,022
Debt Service Reserve Fund Balance Due - End of Period	$7,294,456	$7,745,520	$8,224,476	$8,733,049	$9,273,071
Par Call For All COPs (11/01/09)	$0	$0	$0	$0	$0
Net Contribution From Water Fee Fund For Par Call	$0	$0	$0	$0	$0

Source: Angus McDonald & Associates.

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Table V-6 (page 4 of 4)

ADDITIONAL REVENUE FROM SUPPLEMENTARY DISTRIBUTION CHARGE AND ADDITIONAL DEBT SERVICE RESERVE FUND
City of Vacaville - Water Fee

07-Feb-92
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BUILDOUT SUMMARY	2006	2007	2008	2009
Financing Equivalent Dwelling Units	155	155	155	155
For The Time Period	155	155	155	155
Annual Average	4,656	4,811	4,965	5,120
Cumulative				
Total Fee (January 1, 1992 Dollars)				
Portion of Fee - Not Subject To Contingent Reimbursement				
Portion of Fee - Subject To Contingent Reimbursement				
DEVELOPMENT FEE SCHEDULE				
Fee Per Equivalent Dwelling Unit (January 1, 1992 Dollars)	$455	$455	$455	$455
Portion of Fee Not Subject To Contingent Reimbursement	$0	$0	$0	$0
Portion of Fee Subject To Contingent Reimbursement				
Fee Per Equivalent Dwelling Unit (In Actual-Year Dollars)	$1,087	$1,154	$1,226	$1,302
Portion of Fee Not Subject To Contingent Reimbursement	$0	$0	$0	$0
Portion of Fee Subject To Contingent Reimbursement				

ANALYSIS OF SOURCES AND USES OF FUNDS - ACTUAL YEAR DOLLARS	2006	2007	2008	2009
Funds Not Subject to Contingent Reimbursement from Prior Periods				
Funds Subject to Contingent Reimbursement from Prior Periods				
Beginning Fund Balance	$2,822,689	$2,990,724	$3,169,151	$3,358,610
Revenues: Portion Not Subject To Contingent Reimbursement	$168,035	$178,426	$189,459	$201,175
Portion Subject To Contingent Reimbursement	$0	$0	$0	$0
Total Revenues	$168,035	$178,426	$189,459	$201,175
Cumulative Revenues	$2,990,724	$3,169,151	$3,358,610	$3,559,785

ADDITIONAL TWO YEARS MAXIMUM DEBT SERVICE RESERVE FUND - ACTUAL YEAR DOLLARS	2006	2007	2008	2009
Additional Debt Service Reserve Fund From Prior Periods				
Debt Service Reserve - Start of Period	$9,273,071	$9,846,485	$10,455,358	$11,101,881
Debt Service Reserve Collected- This Period	$0	$0	$0	$0
Use of Reserve Fund - This Period	$0	$0	$0	$0
Net Collections (Uses)	$0	$0	$0	$0
Interest Accrued - This Period	$573,415	$608,873	$646,523	$686,502
Debt Service Reserve Fund Balance Due - End of Period	$9,846,485	$10,455,358	$11,101,881	$11,788,383
Par Call For All COPs (11/01/09)	$0	$0	$0	$16,660,000
Net Contribution From Water Fee Fund For Par Call	$0	$0	$0	$4,871,617

Source: Angus McDonald & Associates.

[A]C:\P\1751\WATER\W-DIST10.WK1

REFERENCE LIST

Reference Number	Description
R-1	Blayney Dyett Greenberg. Existing Conditions and Future Prospects, Planning Issues and Options. Prepared for City of Vacaville. San Francisco: February 1989.
R-2	Association of Bay Area Governments. Projections 87. Oakland: July 1987.
R-3	Economics Research Associates. "Market Demand Analysis for the Development of Lagoon Valley." Project #9804. Prepared for McCuen Properties. August 1990.

APPENDIX A

A-1 Water System Capital Improvements Summary

A-2 Capital Improvements - Project Descriptions

A-3 Water System Improvements Location Map

APPENDIX A-1: WATER SYSTEM CAPITAL IMPROVEMENTS SUMMARY[†]

(1990 Dollars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1992	1*	Reservoir Modifications		360		
	2	NBR Plant CIP - Plant Upgrade	200 [3]			
	3*	Existing Well Field - Chemical Equip. & Instru..		190		
	4*	Well Field Expansion	1,100			
	5	SCADA System - Additional SCADA	70			
	6	Water System Study	25			
	7	Water Main Capacity Program - New Pipelines	150	150		
	8	AUTOCAD Implementation - Phase 2	50			
	9*	On-Site Water System - Lower Lagoon Valley,			xxxxxx[2]	Lower Lagoon Valley
	10*	Alamo Drive Pipeline - Peabody to I-80	1,740			
	11*	Zone 1 Treated Water Reservoirs	3,300			
	12	Water Reclamation Projects	200			
			6,835	700		

A-1.1

[†]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund a[illegible]mulated to pay for part of treatment plant expansion facilities not [illegible]lt during original construction and [illegible]d to serve future growth.

Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: December 11, 1991
Revision Da[illegible]nuary 7, 1992

APPENDIX A-1: WATER SYSTEM CAPITAL IMPROVEMENTS SUMMARY[1]
(1993 Dollars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1993	13	NBR Plant CIP - Plant Upgrade	200 [3]			
	14*	Existing Well Field - Chemical Equip. & Instru.	190			
	15*	Well Field Expansion and Replacement	550	550		
	16	SCADA System - Additional SCADA	70			
	17	Water System Study	25			
	18	Water Main Capacity Program - New Pipelines	150	150		
	19	AUTOCAD Implementation - Phase 3	25			
	20	Water Reclamation Projects	200			
	21	Water Development Projects (Land Acquisition)	900			
	24*	Well Field Expansion	1,100			
			3,410	700		
1994	22	NBR Plant CIP - Plant Upgrade	250 [3]			
	23*	Existing Well Field - Chemical Equip. & Instru.		190		
	25	SCADA System - Additional SCADA	70			
	26	Water System Study	25			
	27	Water Main Capacity Program - New Pipelines	150	150		
	28*	North Browns Valley Road Pipeline			970	I-505/I-80 Redevelopment Agency Funded
	29	Water Reclamation Projects	200			
	30	Reservoir Modifications		360		
			695	700	970	

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*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: December 11, 1991
Revision Date: January 7, 1992
Revision Date: February 5, 1992

APPENDIX A-1: WATER SYSTEM CAPITAL IMPROVEMENTS SUMMARY[†]
(19__ Dollars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1995	31	NBR Plant CIP - Plant Upgrade	250 [3]			
	32*	Existing Well Field - Chemical Equip. & Instru.		190		
	33*	Well Field Expansion and Replacement	550	550		
	34	SCADA System - Additional SCADA	70			
	35	Water System Study	25			
	36	Water Main Capacity Program - New Pipelines	150	150		
	37	Water Reclamation Projects	200			
	38	Water Development Projects				
		Engineering	1,100			
		Construction	4,000			
			6,345	890		
1996	39	NBR Plant CIP - Plant Upgrade	250 [3]			
	40	SCADA System - Additional SCADA	70			
	41	Water System Study	25			
	42	Water Main Capacity Program - New Pipelines	150	150		
	43*	North Leisure Town Road Pipeline			860	I-505/I-80 Redevelopment Agency Funded
	44	Water Reclamation Projects	200			
			695	150	860	

[†]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and requ to serve future growth.

Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: Dec ber 11, 1991
Revision Date: Janu , 7, 1992
Revision Date: February 5, 1992

APPENDIX A-1: WATER SYSTEM C[illegible]TAL IMPROVEMENTS SUMMARY
(19[illegible] lars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1997	45	NBR Plant CIP - Plant Upgrade	250 [3]			
	46	Water System Study	25			
	47	Water Main Capacity Program - New Pipelines	150	150		
	48*	Monte Vista Avenue Pipeline	190			
	49	Water Reclamation Projects	200			
			815	150		
1998	50	NBR Plant CIP - Plant Upgrade	250 [3]			
	51	Water System Study	25			
	52	Water Main Capacity Program - New Pipelines	150	150		
	53*	Nut Tree/I-505 Pipeline			2,050	I-505/I-80 Redevelopment Agency Funded
	54	Water Reclamation Projects	200			
			625	150	2,050	
1999	55*	Zone 1 Treated Water Reservoirs and Pipeline				
		Reservoir	3,300			
		Pipeline	910			
	56	NBR Plant CIP - Plant Upgrade	250 [3]			
	57*	Well Field Expansion	1,100			
	58	Water System Study	25			
	59	Water Main Capacity Program - New Pipelines	150	150		
	60*	Peabody Road Pipeline	3,165			
	61	Water Reclamation Projects	200			
			9,100	150		

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*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: December 11, 1991
Revision Date: January 7, 1992
Revision Date: February 5, 1992

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APPENDIX A-1: WATER SYSTEM CAPITAL IMPROVEMENTS SCHEDULE
(1990 Dollars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2000	62	NBR Plant CIP - Plant Upgrade	250 [3]			
	63	Water System Study	25			
	64	Water Main Capacity Program - New Pipelines	150	150		
	65*	South Leisure Town Road Pipeline	750		370	Northeast Sector
	66	Water Reclamation Projects	200			
			1,375	150	370	
2001	67*	NBR Plant - To 20 mgd	4,140			
	68	NBR Plant CIP - Plant Upgrade	250 [3]			
	69	Water System Study	25			
	70	Water Main Capacity Program - New Pipelines	150	150		
	71	Water Reclamation Projects	200			
			4,765	150		
2002	72	NBR Plant CIP - Plant Upgrade	250 [3]			
	73	Water System Study	25			
	74	Water Main Capacity Program - New Pipelines	150	150		
	75	Water Reclamation Projects	200			
			625	150		

[1]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees on Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[2]Developer funded.

[3]Developer funded - Costs available.

[3]Fur cumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 22, 19
Revision Date: April 22, 19
Revision Date: August 19, 19
Revision Date: December 11, 19
Revision Date: January 7, 19

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APPENDIX A-1: WATER SYSTEM CA[illegible]AL IMPROVEMENTS SUMMARY[1]
(199[illegible]ars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2003	76	NBR Plant CIP - Plant Upgrade	250 [3]			
	77	Water System Study	25			
	78	Water Main Capacity Program - New Pipelines	150	150		
	79	Water Reclamation Projects	200			
			625	150		
2004	80	NBR Plant CIP - Plant Upgrade	250 [3]			
	81*	Well Field Expansion and Replacement	550	550		
	82	Water System Study	25			
	83	Water Main Capacity Program - New Pipelines	150	150		
	84	Water Reclamation Projects	200			
			1,175	700		
2005	85	NBR Plant CIP - Plant Upgrade	250 [3]			
	86	Water System Study	25			
	87	Water Main Capacity Program - New Pipelines	150	150		
	88*	Southeast Pipeline				
		12 Inch Pipeline			1,866	South Sector, Fry & Vanden Policy Planning Areas
		Increase to 18 Inch Pipeline			933	Northeast Sector
	89	Water Reclamation Projects	200			
			625	150	2,799	

[1]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: December 11, 1991
Revision Date: January 7, 1992

(199 ollars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2006	90	NBR Plant CIP - Plant Upgrade	250 [3]			
	91	Water System Study	25			
	92	Water Main Capacity Program - New Pipelines	150	150		
	93	Water Reclamation Projects	200			
			625	150		
2007	94*	NBR Plant - To 33 mgd	8,050			
	95*	Zone 1 Treated Water Reservoirs	3,300			
	96	NBR Plant CIP - Plant Upgrade	250 [3]			
	97	Water System Study	25			
	98	Water Main Capacity Program - New Pipelines	150	150		
	99	Water Reclamation Projects	200			
			11,975	150		
2008	100	NBR Plant CIP - Plant Upgrade	250 [3]			
	101	Water System Study	25			
	102	Water Main Capacity Program - New Pipelines	150	150		
	103	Water Reclamation Projects	200			
			625	150		

[1]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund a ulated to pay for part of treatment plant expansion facilities not t during original construction and requ...ed to serve future growth.

Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: I nber 11, 1991

(199[illegible]llars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2009	104	NBR Plant CIP - Plant Upgrade	250 [3]			
	105*	Well Field Expansion and Replacement	550	550		
	106	Water System Study	25			
	107	Water Main Capacity Program - New Pipelines	150	150		
	108	Water Reclamation Projects	200			
			1,175	700		
2010	109	NBR Plant CIP - Plant Upgrade	250 [3]			
	110	Water System Study	25			
	111	Water Main Capacity Program - New Pipelines	150	150		
	112	Water Reclamation Projects	200			
			625	150		
2011	113	NBR Plant CIP - Plant Upgrade	250 [3]			
	114	Water Systems Study	25			
	115	Water Main Capacity Program - New Pipelines	150	150		
			425	150		
2012	116	NBR Plant CIP - Plant Upgrade	250 [3]			
	117	Water Systems Study	25			
	118	Water Main Capacity Program - New Pipelines	150	150		
			425	150		

[1]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: December 11, 1991

(1990 llars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2013	119	NBR Plant CIP - Plant Upgrade	250 [3]			
	120	Water Systems Study	25			
	121	Water Main Capacity Program - New Pipelines	150	150		
			425	150		
2014	122*	Zone 1 Treated Water Reservoirs	3,300			
	123*	Well Field Expansion and Replacement	550	550		
	124	NBR Plant CIP - Plant Upgrade	250 [3]			
	125	Water Systems Study	25			
	126	Water Main Capacity Program - New Pipelines	150	150		
			4,275	700		
2015	127	NBR Plant CIP - Plant Upgrade	250 [3]			
	128	Water Systems Study	25			
	129	Water Main Capacity Program - New Pipelines	150	150		
			425	150		
2016	130	NBR Plant CIP - Plant Upgrade	250 [3]			
	131	Water Systems Study	25			
	132	Water Main Capacity Program - New Pipelines	150	150		
			425	150		

[1]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.

*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location.Map."

[1]Developer funded.

[2]Developer funded - Costs available.

[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
Revision Date: [illegible]mber 11, 19[illegible]

APPENDIX A-1: WATER SYSTEM C[illegible]TAL IMPROVEMENTS SUMMARY
(19[illegible] lars)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2017	133	NBR Plant CIP - Plant Upgrade	250 [3]			
	134	Water Systems Study	25			
	135	Water Main Capacity Program - New Pipelines	150	150		
			425	150		
2018	136	NBR Plant CIP - Plant Upgrade	250 [3]			
	137	Water Systems Study	25			
	138	Water Main Capacity Program - New Pipelines	150	150		
			425	150		
		TOTAL	59,985	8,090	7,049	

[1]Prepared by West Yost & Associates with input from Nolte and Associates and City staff - October 1990. This list is intended for estimating connection fees only. Additional analysis would be required for budgeting, aligning, sizing, scheduling, or otherwise planning individual improvements.
*Improvements identified with an asterisk are shown on a map titled "Water System Improvements Location Map."
[1]Developer funded.
[2]Developer funded - Costs available.
[3]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: August 19, 1991
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Listing of Developer Funded Projects[1]

	Pipelines Without Specified Time Periods	Estimated Cost ($) Developer Funded Projects
139*	Gonsalves Lockie Pipelines	790
140*	Akerly Drive Pipeline	340
141*	Leisure Town Midway, Eubanks Pipelines	1,240
142*	Midway Road Pipeline	400
143*	Allison Drive Pipeline	950
144*	Maple/Willow Pipeline	790
145*	Pipeline in Unnamed Road in Northeast	750
146*	N. Browns Valley/Aldridge Pipeline	670

[1]Projects not included in connection fee analysis.

PROJECT COSTS ASSIGNABLE TO SECTORS

I-505/I-80 Redevelopment Area		
28*	1994 - No. Browns Valley Pipeline	$ 970
43*	1996 - No. Leisure Town Road	860
	Subtotal	**$1,830**
Northeast Sector		
53*	1998 - Nut Tree/I-505 Pipeline	$2,050
65*	2000 - South Leisure TOwn Road Pipeline	370
88*	2005 - Southeast Pipeline - Increase to 18 inch Pipeline	933
	Subtotal	**$3,535**
South Sector		
88*	2005 - Southeast Pipeline - 12 Inch Pipeline	$1,866
	TOTAL	**$7,049**

APPENDIX A-2: CAPITAL IMPROVEMENTS - PROJECT DESCRIPTIONS

The following section presents a description of each of the water system capital improvements identified in conjunction with the work on developing conceptual cost estimates and establishing connection fees. Certain improvements are well defined due to previous planning efforts, but many of the projects will require further definition. This list of projects is appropriate for establishing fees. However, it is not appropriate for detailed costing, aligning, and sizing of individual projects, which would be done during subsequent predesign studies.

1992

1. Reservoir Modifications

The existing piping on the two Butcher Road reservoirs and the Buck reservoir is arranged with both inflow and outflow through a single pipe. This arrangement does not promote mixing of the tank contents, and without good mixing, there is a risk of having zones in the tank where the water warms up and loses chlorine residual. Therefore, the inlet and outlet piping will be modified. Specifically, the outlet will be from the tank bottom and the inlet will be in the upper portion of the tank on the opposite side from the outlet.

In order to make the modifications, structural and mechanical improvements will be needed within the valve vaults, and pipe will have to be extended to the back of the reservoir and through the tank wall. Additionally, these reservoirs need several improvements to improve security and safety at the sites.

2. NBR Plant CIP-Plant Upgrade

Certain facilities such as a raw water blending reservoir were not included in the initial phase of construction at the NBR Plant in order to control initial capital expenditures. The cost estimate for this CIP is intended to provide a budget for a variety of both anticipated and unforseen needs.

3. Existing Well Field - Chemical Equipment and Instrumentation

The existing wells lack equipment and instrumentation to provide all required information to the supervisory control and data acquisition (SCADA) system. Most of the wells will require chlorine and fluoride residual analyzers and flow meter improvements plus facilities for measuring water level depth, discharge pressure, pump control valve position and motor current and voltage. Additionally, wells 13 and 6 are expected to be converted to discharging directly to the distribution system instead of the clearwell at the DE Plant. This will require new pump bowls, motors, and electrical facilities and instrumentation. All of these projects are expected to be phased over a five year period. Therefore, the cost estimate for this CIP is one-fifth of the total cost.

4. Well Field Expansion

In order to meet increasing water demands from new development, new water production capabilities in the form of a new well will be required. It is anticipated that the well will be located east of Leisure Town Road either north or south of Elmira Road.

5. SCADA System - Additional SCADA

Additional SCADA equipment includes programmable logic controllers (PLCs) and core SCADA equipment at the wells, distribution system pump stations and zone 1 distribution system reservoirs (i.e. Buck, Butcher, and Browns Valley). This CIP does not include SCADA facilities for the Vine Street Water System (which will be developer funded with an assessment district) or for the Wykoff and Hidden Valley Water System (which will be improved with the Wykoff and Zone 2 improvements).

The additional SCADA equipment will be constructed over a five year period so this CIP represents on fifth of the total cost.

6. Water System Study

In order to properly address future water system needs resulting from new development and extensions of the water system and from future regulations, it will be necessary to conduct studies to establish various courses of action. It is not possible to identify specific studies at this point in time, so this CIP establishes a budget for a typical level of effort needed in a given year.

7. Water Main Capacity Program - New Pipelines

Distribution system pipelines have a limited useful life and it will be necessary to periodically replace older and failed pipelines. Also, in certain instances it may be advantageous for the city to upsize pipelines installed with development to serve future development and improve performance of the entire system. It is not possible to identify specific improvements at this time, so this CIP establishes a budget for a typical level of effort needed in a given year.

8. AutoCAD Implementation - Phase 2

This project includes conversion of existing water system drawings to an AutoCAD format. The AutoCAD format will facilitate future design work and will improve the city's ability to maintain current records of installed facilities. This CIP establishes a budget to perform a portion of the total conversion needs.

9. On-Site Water System - Lower Lagoon Valley

In order to provide potable water to future development in Lower Lagoon Valley a new water system pressure zone will need to be constructed. It will include a new 2,140 gpm pump station which withdraws water from the Butcher reservoirs and pumps it to the valley. New 12 in. and 18 in. pipelines will be constructed for the backbone distribution system in the valley and a 3.0 million gallon reservoir will be constructed in the hills on the south end of the valley. This CIP also includes zone 3 water system facilities to serve residential development in the valley which is too high for service by zone 2. This zone 3 will include a 312 gpm pump station, a 340,000 gallon reservoir in the hillsides and 12 in. pipe connecting the pump station, reservoir, and service area.

16. **SCADA System - Additional SCADA**

See Text for CIP - Number 5

17. **Water System Study**

See Text for CIP - Number 6

18. **Water Main Capacity Program - New Pipelines**

See Text for CIP - Number 7

19. **AutoCAD Implementation - Phase 3**

See Text for CIP - Number 8

20. **Water Reclamation Projects**

See Text for CIP - Number 12

21. **Water Development Projects**

In order to serve buildout development within the 1990 General Plan area, additional water supplies will be needed. It is not clear at this time exactly what improvements will be needed, so this CIP establishes a general budget for water development. It is expected that projects will be regional in nature such as the Joint Use Reservoir (Noonan) or the Tehema Colusa Canal and that the city would be one of the several or many participating agencies.

24. **Well Field Expansion**

See Text for CIP - Number 4

1994

22. **NBR Plant CIP - Plant Upgrade**

See Text for CIP - Number 2

23. **Existing Well Field - Chemical Equipment and Instrumentation**

See Text for CIP - Number 3

25. **SCADA System - Additional SCADA**

See Text for CIP - Number 5

10. **Alamo Drive Pipeline - Peabody to I-80**

A new pipeline within the zone 1 distribution system will be required to enable water to be withdrawn from zone 1 at the Butcher reservoirs for Lower Lagoon Valley. This pipeline will originate at Peabody Road and California Drive. One possible alignment which follows existing streets is west then north on California Drive to Alamo Drive, then northwest on Alamo Drive to the south side of I-80. With development in Lower Lagoon Valley only, an 18 in. pipe would be recommended. To accommodate additional future development in the city and to provide a stronger linkage between storage and distribution facilities, a larger 24 in. pipeline is proposed.

11. **Zone 1 Treated Water Reservoir**

New treated water storage capacity in the zone 1 distribution system will be needed to accommodate new development by providing operational, fire protection and emergency storage volumes. This CIP includes a 5 million gallon reservoir. A specific site has not been identified at this time. The site will have to be at an elevation of approximately 300 feet so hillsides from the northwest to southwest portion of the city are candidate locations.

12. **Water Reclamation Projects**

Reclamation of wastewater has the benefit of offsetting needs for treated potable water. Therefore, reclamation is a conservation measure which reduces the demand for potable water and allows existing potable water supplies to serve new development. The CIP establishes a budget for the city to seek and implement reclamation projects. Specific projects are not identified at this time.

1993

13. **NBR Plant CIP - Plant Upgrade**

See Text for CIP - Number 2

14. **Existing Well Field - Chemical Equipment and Instrumentation**

See Text for CIP - Number 3

15. **Well Field Expansion and Replacement**

As existing wells reach the end of their useful lives, they will have to be replaced in order to maintain the city's water production capacity. In many cases it may be possible to drill new wells at areas of higher production and to design new facilities to maximize production, thereby providing increased capacity. It is expected that new equipment will also be needed to replace older facilities at the wells. It is not possible to predict exactly when and specifically which wells will fail, so this CIP establishes a general budget for well replacement. Because capacity increases will be realized by the proposed improvements, costs are divided between expansion and rehabilitation.

26. **Water System Study**

See Text for CIP - Number 6

27. **Water Main Capacity Program**

See Text for CIP - Number 7

28. **North Browns Valley Road Pipeline**

Transmission capacity into the northern industrial area will need to be improved to serve future development. Therefore, it is recommended that an 18 in. pipe be extended from Browns Valley Road at Glen Eagle Way, north, then east on Vaca Valley Parkway to Eubanks Drive.

29. **Water Reclamation Projects**

See Text for CIP - Number 12

30. **Reservoir Modifications**

Modify reservoir intake and discharge piping to allow for better mixing of stored water, thereby improving water quality.

1995

31. **NBR Plant CIP - Plant Upgrade**

See Text for CIP - Number 2

32. **Existing Well Field - Chemical Equipment and Instrumentation**

See Text for CIP - Number 3

33. **Well Field Expansion and Replacement**

See Text for CIP - Number 15

34. **SCADA System - Additional SCADA**

See Text for CIP - Number 5

35. **Water System Study**

See Text for CIP - Number 6

36. **Water Main Capacity Program**

See Text for CIP - Number 7

37. **Water Reclamation Projects**

See Text for CIP - Number 12

38. **Water Development Projects**

See Text for CIP - Number 21

1996

39. **NBR Plant CIP - Plant Upgrade**

See Text for CIP - Number 2

40. **SCADA System - Additional SCADA**

See Text for CIP - Number 5

41. **Water System Study**

See Text for CIP - Number 6

42. **Water Main Capacity Program**

See Text for CIP - Number 7

43. **North Leisure Town Road Pipeline**

This improvement is an 18 in. pipe along Leisure Town Road from Yellowstone Drive to Vaca Valley Parkway. It is needed to convey water into the industrial areas in northeast Vacaville in order to meet future water demands.

44. **Water Reclamation Projects**

See Text for CIP - Number 12

1997

45. **NBR Plant CIP - Plant Upgrade**

See Text for CIP - Number 2

46. **Water System Study**

See Text for CIP - Number 6

47. **Water Main Capacity Program**

See Text for CIP - Number 7

48. **Monte Vista Avenue Pipeline**

Transmission between the northeast and northwest sectors of the city will be improved with a new 12 in. pipe on Monte Vista Avenue between Browns Valley Road and Gibson Canyon Road. This improvement will provide benefit during periods when one sector is stressed and the other is not (e.g., a large fire).

49. **Water Reclamation Projects**

See Text for CIP - Number 12

1998

50. **NBR Plant CIP - Plant Upgrade**

See Text for CIP - Number 2

51. **Water System Study**

See Text for CIP - Number 6

52. **Water Main Capacity Program**

See Text for CIP - Number 7

53. **Nut Tree Road and Interstate 505 Pipeline**

Additional transmission capacity into the northeast sector will be needed to meet future demands. It is recommended that a new 18 in. pipe be placed along Nut Tree Road and Interstate 505 between Elmira Road and Vaca Valley Parkway.

54. **Water Reclamation Projects**

See text for CIP - Number 12

1999

55. **Zone 1 Treated Water Reservoir**

New treated water storage capacity in the zone 1 distribution system will be needed to accommodate new development by providing operational, fire protection and emergency storage volumes. This CIP includes a 5 million gallon reservoir. A specific site has not been identified at this time. The site will have to be at an elevation of approximately 300 feet in the southwest portion of the city. Approximately 5000 linear feet of 24 inch diameter pipeline, extending from the termination point of the Alamo Drive pipeline (Project 10) at I-80, to the vicinity of the reservoir, is included in the project.

56. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

57. **Well Field Expansion**

See text for CIP - Number 4

58. **Water System Study**

See text for CIP - Number 6

59. **Water Main Capacity Program**

See text for CIP - Number 7

60. **Peabody Road Pipeline**

When Vacaville's share in the NBR plant increases above 13.33 mgd, additional transmission capacity from the plant to California Drive is recommended. The existing pipeline has 24 in. and 30 in. segments, respectively. The existing and parallel pipeline will have 36 in. and 30 in. segments, and the parallel pipeline will have 36 in. and 30 in. segments, respectively. The existing and parallel pipelines will together provide sufficient capacity for approximately 33 mgd.

61. **Water Reclamation Projects**

See text for CIP - Number 12

2000

62. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

63. **Water System Study**

See text for CIP - Number 6

64. **Water Main Capacity Program**

See text for CIP - Number 7

65. **South Leisure Town Road Pipeline**

In order to serve City-wide growth and to increase transmission capacity to the industrial area in northeast Vacaville to serve new development, an 18 in. pipe is recommended on Leisure Town Road from Elmira Road to Yellowstone Drive. Costs for a 12 in. pipeline are attributed to City-wide impact and costs associated with upsizing to an 18 in. pipeline are attributed to the Northeast Sector. This pipeline will parallel an existing 18 in. pipe.

66. **Water Reclamation Projects**

See text for CIP - Number 12

2001

67. **NBR Plant to 20 mgd**

Additional water production capacity will be needed to serve future development. This CIP includes an expansion of the NBR Plant from 40 to 60 mgd in which Vacaville's share would increase from 13.33 to 20 mgd. It is assumed that Fairfield would acquire the remaining capacity in the expansion

68. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

69. **Water System Study**

See text for CIP - Number 6

70. **Water Main Capacity Program**

See text for CIP - Number 7

71. **Water Reclamation Projects**

See text for CIP - Number 12

2002

72. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

73. **Water System Study**

See text for CIP - Number 6

74. **Water Main Capacity Program**

See text for CIP - Number 7

75. **Water Reclamation Projects**

See text for CIP - Number 12

2003

76. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

77. **Water System Study**

See text for CIP - Number 6

78. **Water Main Capacity Program**

See text for CIP - Number 7

79. **Water Reclamation Projects**

See text for CIP - Number 12

2004

80. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

81. **Well Field Expansion and Replacement**

See text for CIP - Number 15

82. **Water System Study**

See text for CIP - Number 6

83. **Water Main Capacity Program**

See text for CIP - Number 7

84. **Water Reclamation Projects**

See text for CIP - Number 12

2005

85. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

86. **Water System Study**

See text for CIP - Number 6

87. **Water Main Capacity Program**

See text for CIP - Number 7

88. **Southeast Pipeline**

In order to increase transmission capacity from the NBR plant northward an 18 in. pipe is recommended around the southeast perimeter of the city from Peabody Road to Elmira Road near Leisure Town Road. This will be needed to serve future developments. A 12 in. pipeline would be required to serve nearby development in the South Sector and Fry & Vanden Policy Planning Areas. Increasing the size to 18 in. will provide for additional transmission capacity to serve the Northeast Sector.

89. **Water Reclamation Projects**

See text for CIP - Number 12

2006

90. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

91. **Water System Study**

See text for CIP - Number 6

92. **Water Main Capacity Program**

See text for CIP - Number 7

93. **Water Reclamation Projects**

See text for CIP - Number 12

2007

94. **NBR Plant to 33 mgd**

Additional water production capacity will be needed to serve future development. This CIP includes an expansion of the NBR plant from 60 to 93.35 mgd in which Vacaville's share would increase from 20 to 33 mgd. It is assumed that Fairfield would acquire the remaining capacity in the expansion.

95. **Zone 1 Treated Water Reservoir**

See text for CIP - Number 11

96. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

97. **Water System Study**

See text for CIP - Number 6.

98. **Water Main Capacity Program**

See text for CIP - Number 7

99. **Water Reclamation Projects**

See text for CIP - Number 12

2008

100. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

101. **Water System Study**

See text for CIP - Number 6

102. **Water Main Capacity Program**

See text for CIP - Number 7

103. **Water Reclamation Projects**

See text for CIP - Number 12

2009

104. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

105. **Well Field Expansion and Replacement**

See text for CIP - Number 15

106. **Water System Study**

See text for CIP - Number 6

107. **Water Main Capacity Program**

See text for CIP - Number 7

108. **Water Reclamation Projects**

See text for CIP - Number 12

2010

109. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

110. **Water System Study**

See text for CIP - Number 6

111. **Water Main Capacity Program**

See text for CIP - Number 7

112. **Water Reclamation Projects**

See text for CIP - Number 12

2011

113. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

114. **Water System Study**

See text for CIP - Number 6

115. **Water Main Capacity Program**

See text for CIP - Number 7

2012

116. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

117. **Water System Study**

See text for CIP - Number 6

118. **Water Main Capacity Program**

See text for CIP - Number 7

2013

119. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

120. **Water System Study**

See text for CIP - Number 6

121. **Water Main Capacity Program**

See text for CIP - Number 7

2014

122. **Zone 1 Treated Water Reservoirs**

See text for CIP - Number 11

123. **Well Field Expansion and Replacement**

See text for CIP - Number 15

124. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

125. **Water System Study**

See text for CIP - Number 6

126. **Water Main Capacity Program**

See text for CIP - Number 7

2015

127. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

128. **Water System Study**

See text for CIP - Number 6

129. **Water Main Capacity Program**

See text for CIP - Number 7

2016

130. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

131. **Water System Study**

See text for CIP - Number 6

132. **Water Main Capacity Program**

See text for CIP - Number 7

2017

133. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

134. **Water System Study**

See text for CIP - Number 6

135. **Water Main Capacity Program**

See text for CIP - Number 7

2018

136. **NBR Plant CIP - Plant Upgrade**

See text for CIP - Number 2

137. **Water System Study**

See text for CIP - Number 6

138. **Water Main Capacity Program**

See text for CIP - Number 7

Unscheduled - Developer Funded Projects

139. **Gonsalves-Locke Pipelines**

This improvement includes pipelines in the Gonsalves-Locke Property located south of Alamo Drive and east of Peabody Road. The recommended improvements include a southern extension of the existing 12 in. pipeline on Nut Tree Rod plus two east-west 12 in. pipelines through the property. These improvements will serve future local demands.

140. **Akerly Drive Pipeline**

In the northeast sector of the city, south of Vaca Valley Parkway a 12 in. pipeline is recommended for completion of the loop on Akerly Drive to serve future local demands.

141. **Leisure Town, Midway, Eubanks Pipelines**

As industrial development proceeds in the northeast sector a 12 in. loop will be needed, north along Leisure town Road to Midway Road, then west across I-505 to Eubanks Drive to serve future local demands.

142. **Midway Road Pipeline**

The extreme northeastern portion of Vacaville is currently served by a single 12 inc. main. A single supply pipeline is not a preferred arrangement, and this situation should be improved by constructing a 12 in. pipeline on Midway Road from Leisure Town Road (connected to future Leisure Town and Midway pipe) to Meridian Road. This will serve future local demands and will improve an existing deficiency.

143. **Allison Drive**

Allison Drive is a proposed road to the east of and parallel to Browns Valley Road between Vaca Valley Parkway and Monte Vista Avenue. When this road is constructed, 12 in. pipeline should be installed to serve future local demands.

144. **Maple/Willow Pipeline**

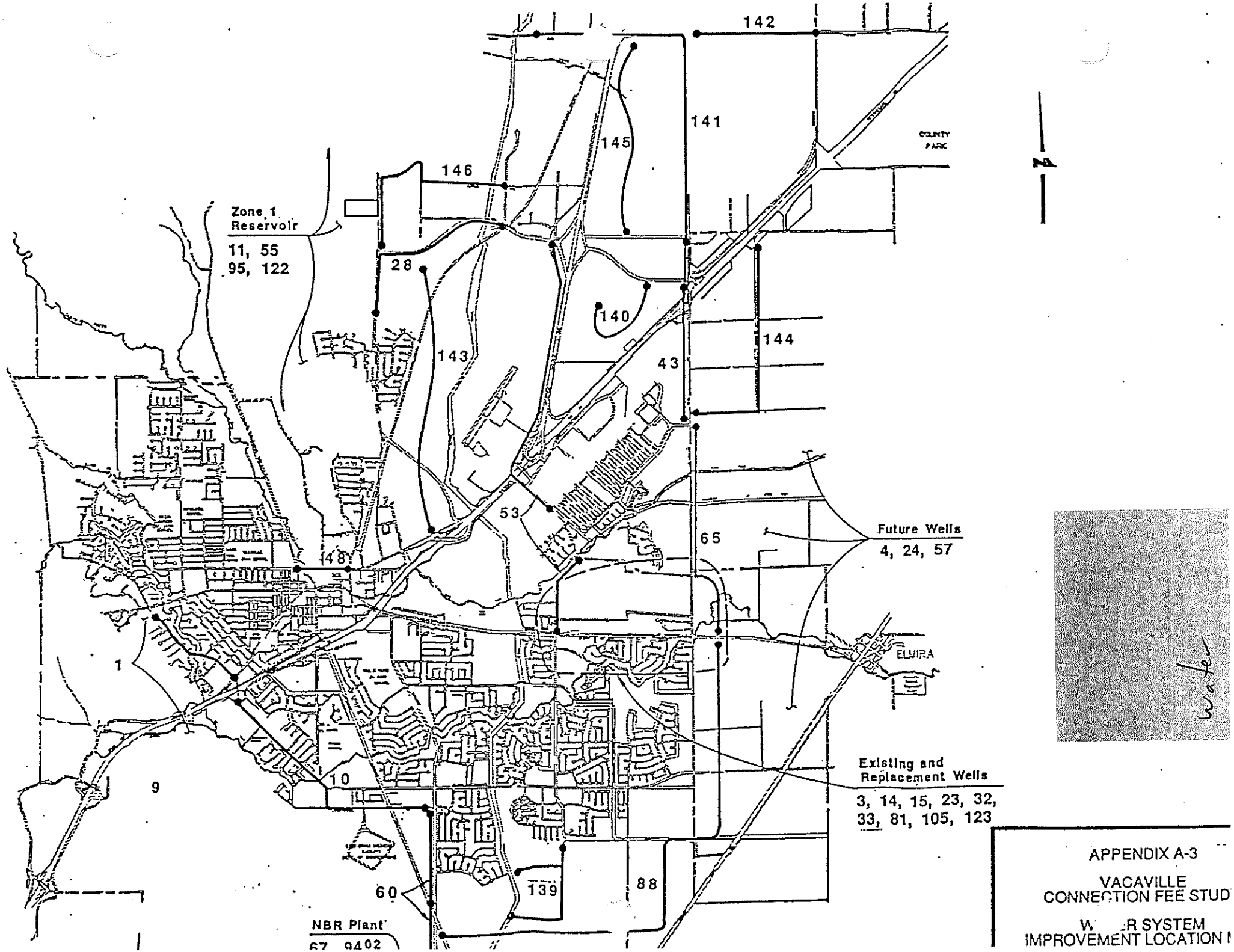
A new 12 in. pipeline will be needed on Maple Avenue and Willow Drive (south of Interstate 80 and east of Leisure Town Road) to serve future development in that area.

145. **Pipeline in Unnamed Road in Northeast**

A new 12 in. pipeline in northeast Vacaville parallel to and west of Interstate 505 will be needed to serve future development in that area.

146. **North Browns Valley/Aldridge Road Pipeline**

A new 12 in. pipeline will be needed from the intersection of Browns Valley Road and Vaca Valley Parkway north to Aldridge Rod then east to Eubanks Drive to serve future development in that area.



APPENDIX A-3

VACAVILLE
CONNECTION FEE STUD

W ER SYSTEM
IMPROVEMENT LOCATION M

APPENDIX B

B-1 Sewer System Capital Improvements Summary

B-2 Capital Improvements - Project Descriptions

B-3 Sewer System Improvement Location Map

APPENDIX B-1: SEWER SYSTEM CA[illegible]AL IMPROVEMENTS SUMMARY
(1990 DO[illegible]LARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1992	1*	54" - Elmira Trunk	2,000			
	2	Easterly Treatment Plant Expansion - Predesign Report	300			
	3*	18" - Alamo	347			
	4	Easterly WWTP Rehab/Upgrades		250		
	5	Wastewater System Studies	50			
	6	Sewer Main Replacement Program	250	250		
	7	Infiltration Control Program	125	125		
	8	Easterly WWTP Sludge Spreading Equip.	250 [1]			
			3,322	625		
1993	9*	48" Elmira Trunk Sewer	3,250			
	10*	21" - SPRR (Markham School)	410			
	11	Easterly WWTP Rehab/Upgrades		250		
	12	Wastewater System Studies	50			
	13	Sewer Main Replacement Program	250	250		
	14	Infiltration Control Program	125	125		
	15	Easterly WWTP - Sludge Spreading Equip.	500 [1]			
			4,585	625		
1994	16*	24" - SPRR to Putah So. Canal			347	Northeast Sector
	17*	27" - Putah So. Canal to I-80			598	Northeast Sector
	18	Easterly WWTP Rehab/Upgrades		250		
	19	Wastewater System Studies	50			
	20	Sewer Main Replacement Program	250	250		
	21	Infiltration Control Program	125	125		
			425	625	945	

[1]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: January 7, 1992

APPENDIX B: SEWER SYSTEM CA L IMPROVEMENTS SUMMARY[1]
(199(ARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1995		Easterly WWTP Expansion (10-12 mgd)				
	22	Secondary Plant	3,300			
	23	Tertiary Plant	1,650	2,350		
	24*	27" - Beelard Park & Nut Tree Rd.	1,262			
	25	Easterly WWTP Rehab/Upgrades		250		
	26	Wastewater System Studies	50			
	27*	21" - Walnut Road Rd (Hwy 80 to Leisure Town)			83	Northeast Sector
	28	27" - Leisure Town Road (Walnut Rd. to Sierra Rd.)			730	
	29	Sewer Main Replacement Program	250	250		
	30	Infiltration Control Program	125	125		
			6,637	2,975	813	

[1]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM C... ...L IMPROVEMENTS SUMMARY[1]
(199... ...LARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1996		Easterly WWTP Expansion (10-12 mgd) - continued				
	22	Secondary Plant	3,300			
	23	Tertiary Plant	1,650	2,350		
	31*	Leisure Town Rd. Pumping Station	850		850	Northeast Sector
	32*	18" - Leisure Town Road Force Main (Sierra Road Rd. to Ulatis Crk.)	466			
	33	Easterly WWTP Rehab/Upgrades		250		
	34	Wastewater System Studies	50			
	35	Sewer Main Replacement Program	250	250		
	36	Infiltration Control Program	125	125		
			6,691	2,975	850	

[1]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM CA L IMPROVEMENTS SUMMARY[1]
(1990 RS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1997	37*	33" - Nut Tree/Cooper School Rd	993		993	Northeast Sector
	38*	30" - Leisure Town Road (Ulatis Crk. to Ulatis Drive)	437			
	39	Easterly WWTP Rehab/Upgrades		250		
	40	Wastewater System Studies	50			
	41	Sewer Main Replacement Program	250	250		
	42	Infiltration Control Program	125	125		
			1,855	625	993	
1998	43*	15" - Hwy. 80 Crossing			120	Northeast Sector
	44*	Golden West pumping station			700	Northeast Sector
	45	Easterly WWTP Rehab/Upgrades		250		
	46	Wastewater System Studies	50			
	47	Sewer Main Replacement Program	250	250		
	48	Infiltration Control Program	125	125		
			425	625	820	

[1]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM C[illegible]L IMPROVEMENTS SUMMARY[†]
(1990 [illegible]ARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
1999	49	Easterly WWTP Rehab/Upgrades		250		
	50	Wastewater System Studies	50			
	51	Sewer Main Replacement Program	250	250		
	52	Infiltration Control Program	125	125		
			425	625		
2000	53*	10" - I-80 to Padan School	612			
	54*	27" - Leisure Town Rd. to Elmira Rd.	1,425			
	55	Easterly WWTP Rehab/Upgrades		250		
	56	Wastewater System Studies	50			
	57	Sewer Main Replacement Program	250	250		
	58	Infiltration Control Program	125	125		
			2,462	625		
2001	59	Easterly WWTP Rehab/Upgrades		250		
	60	Wastewater System Studies	50			
	61	Sewer Main Replacement Program	250	250		
	62	Infiltration Control Program	125	125		
			425	625		

[†]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM C[illegible] L IMPROVEMENTS SUMMARY[†]
(199[illegible] ARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2002	63	Easterly WWTP Expansion (12-15 mgd)	18,900			
	64*	24" - Nut Tree Rd. to Leisure Town Rd.	874			
	65*	Monte Vista Ave. Pumping Station			700	Northeast Sector
	66*	18" - Vaca Valley Parkway North			xxxxx [2]	Northeast Sector
	67*	21" - Vaca Valley Parkway to I-80 and Upgrade of Pine Creek Pump Station			xxxxx [2]	Northeast Sector
	68	Easterly WWTP Rehab/Upgrades		250		
	69	Wastewater System Studies	50			
	70	Sewer Main Replacement Program	250	250		
	71	Infiltration Control Program	125	125		
			20,199	625	700	
2003	72	Easterly WWTP Rehab/Upgrades		250		
	73	Wastewater System Studies	50			
	74	Sewer Main Replacement Program	250	250		
	75	Infiltration Control Program	125	125		
			425	625		

[†]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM CA[illegible]L IMPROVEMENTS SUMMARY[1]
(1990 [illegible]LARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2004	76	Easterly WWTP Rehab/Upgrades		250		
	77	Wastewater System Studies	50			
	78	Sewer Main Replacement Program	250	250		
	79	Infiltration Control Program	125	125		
			425	625		
2005	80*	18" - Elmira Rd.	552			
	81*	24" - Elmira Rd.	106			
	82*	21" - SPRR North of Markham School	292		292	Northeast Sector and Rice-McMurty Policy Planning Area
	83*	18" - Yellowstone Rd. to Leisure Town Rd.	436			
	84	Easterly WWTP Rehab/Upgrades		250		
	85	Wastewater System Studies	50			
	86	Sewer Main Replacement Program	250	250		
	87	Infiltration Control Program	125	125		
			1,811	625	292	

[1]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM C[illegible]L IMPROVEMENTS SUMMARY[†]
(199[illegible]ARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2006	88	Easterly WWTP Rehab/Upgrades		250		
	89	Wastewater System Studies	50			
	90	Sewer Main Replacement Program	250	250		
	91	Infiltration Control Program	125	125		
			425	625		
2007	92	Easterly WWTP Rehab/Upgrades		250		
	93	Wastewater System Studies	50			
	94	Sewer Main Replacement Program	250	250		
	95	Infiltration Control Program	125	125		
			425	625		
2008	96	Easterly WWTP Rehab/Upgrades		250		
	97	Wastewater System Studies	50			
	98	Sewer Main Replacement Program	250	250		
	99	Infiltration Control Program	125	125		
			425	625		

[†]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991

APPENDIX B: SEWER SYSTEM CA\ L IMPROVEMENTS SUMMARY[1]
(1990 LARS)

Year	Proj. No.	Project Description	Capital Cost ($1000) by Category and Impact: City-wide Impact Expansion	City-wide Impact Rehab	Local Impact Expansion	Assignable To
2009	100	Easterly WWTP Rehab/Upgrades		250		
	101	Wastewater System Studies	50			
	102	Sewer Main Replacement Program	250	250		
	103	Infiltration Control Program	125	125		
			425	625		
2010	104	Easterly WWTP Rehab/Upgrades		250		
	105	Wastewater System Studies	50			
	106	Sewer Main Replacement Program	250	250		
	107	Infiltration Control Program	125	125		
			425	625		
	TOTAL		52,237	16,575	5,413	

[1]Prepared by West Yost & Associates with input from Brown and Caldwell, Kennedy Jenks Chilton, and City staff - October 1990. This list is intended for establishing connection fees only. Additional analysis will be required for budgeting, aligning, sizing, scheduling or otherwise planning individual improvements.

*Project location shown on attached Capital Improvements Map.

[1]Fund accumulated to pay for part of treatment plant expansion facilities not built during original construction and required to serve future growth.

[2]Developer funded - estimated cost $1.5 million.

Date: January 15, 1991
Revision Date: March 6, 1991
Revision Date: March 22, 1991
Revision Date: April 22, 1991
Revision Date: January 7, 1992

Project Costs Attributable to Sectors

Northeast Sector

1994 - 24" - SPRR to Putah So. Canal	347
27" - Putah So. Canal to I-80	598
1995 - 21" - Walnut Rd. (Hwy 80 to Leisure Town Rd.)	83
27" - Leisure Town Rd. (Walnut Rd. to Sierra Rd.)	730
1996 - Leisure Town Rd. pumping station (50%)	850
1997 - 33" - Nut Tree/Cooper School Rd (50%)	993
1998 - 15" - Hwy. 80 Crossing	120
Golden West pumping station	700
2002 - Monte Vista Ave. Pumping Station	700
2005 - 21" - SPRR North of Markham School	292
Subtotal	5,413

APPENDIX B-2: CAPITAL IMPROVEMENTS - PROJECT DESCRIPTIONS

Presented below is a description of each of the sewer system capital improvements identified in Appendix B-1. This list of projects is appropriate for establishing fees at this time, subject to future adjustment and refinement. However, it is not appropriate for detailed costing, aligning, and sizing of individual projects, which would be done during subsequent predesign studies.

1992

1. **Elmira Trunk Sewer**

   Replace the existing 36" and 33" sewer sections at the far downstream reaches of the collection system, near the Easterly Wastewater Treatment Plant (Easterly WWTP), with 54" sewer to provide additional capacity and to correct existing surcharging problems.

2. **Easterly Treatment Plant Expansion - Predesign Report**

   Retain consultant to perform predesign level studies related to expansion of the Easterly WWTP.

3. **18" Sewer Replacement - Alamo Drive**

   Replace an existing 12" sewer segment in Alamo Drive with an 18" sewer. This improvement will be necessary to provide for growth within the tributary area in the southern portion of the city.

4. **Easterly WWTP Rehabilitation/Upgrades**

   Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

5. **Wastewater System Studies**

   Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

6. **Sewer Main Replacement Program**

   Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

7. **Infiltration Control Program**

   provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

8. **Easterly WWTP - Sludge Spreading Equipment**

Purchase equipment to allow City staff to land-apply sludge to City-owned property as well as possibly other farm land in the area. Currently, sludge spreading operations are performed on a contract basis.

9. **48" Replacement Sewer - Elmira Trunk Sewer**

Replace existing 33" trunk sewer in Elmira Road, west of Leisure Town Road, with an upsized sewer. This improvement will be required to correct existing capacity limitations and to provide capacity for future growth.

1993

10. **21" Replacement Sewer - SPRR/Markham School Area**

Replace existing sewer (12" to 15" diameter) with larger pipeline required to serve growth in developing portions of the City to the north.

11. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

12. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

13. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

14. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

15. **Easterly WWTP - Sludge Spreading Equipment**

Purchase equipment to allow City staff to land-apply sludge to City-owned property as well as possibly other farm land in the area. Currently sludge spreading operations are performed on a contract basis.

1994

16. **24" Replacement Sewer - SPRR to Putah South Canal**

    Replacing an existing 18" sewer with a 24" pipeline capable of serving growth in the Northeast Sector.

17. **27" Replacement Sewer - Putah South Canal to I-80**

    Replace an existing 18" diameter sewer pipeline with a 27" sewer pipeline capable of serving growth in the Northeast Sector.

18. **Easterly WWTP Rehabilitation/Upgrades**

    Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

19. **Wastewater System Studies**

    Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

20. **Sewer Main Replacement Program**

    Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

21. **Infiltration Control Program**

    Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

1995

22. **Easterly WWTP Expansion - Secondary Plant (10-12 mgd)**

    Design and construction of wastewater treatment plant expansion project to increase the treatment capacity of secondary treatment facilities from 10 mgd to 12 mgd. this expansion will be required to serve City-wide growth. (Costs are split equally between two years.)

23. **Easterly WWTP - Tertiary Treatment Facilities**

    Design and construct additional tertiary wastewater treatment facilities required to improve effluent quality to levels that may be required by the Regional Board. Such requirement may be triggered by the proposed plant expansion and the request to the Regional Board for increases in discharge capacity. Facilities would include chemical feed systems and filters as well as possible disinfection system improvements. (Costs are split equally between two years.)

24. **27" Replacement Sewer - Beelard park and Nut Tree Road**

Replace existing 21" sewer segments with a 27" pipeline sized to accommodate growth.

25. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

26. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

27. **21" Replacement Sewer - Walnut Road**

Replace existing 12" sewer in Walnut Road, between I-80 and Leisure Town Road, with a 21" pipeline required to accommodate growth in the Northeast sector.

28. **27" Replacement Sewer - Leisure Town Road**

Replace existing 12" sewer in the north portion of Leisure Town Road with a 27" pipeline, required to accommodate growth in the Northeast sector.

29. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

30. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

1996

22. **Easterly WWTP Expansion - Secondary Plant (10-12 mgd)**

Design and construction of wastewater treatment plant expansion project to increase the treatment capacity of secondary treatment facilities from 10 mgd to 12 mgd. this expansion will be required to serve City-wide growth. (Costs are split equally between two years.)

23. **Easterly WWTP - Tertiary Treatment Facilities**

Design and construct additional tertiary wastewater treatment facilities required to improve effluent quality to levels that may be required by the Regional Board. Such requirement may be triggered by the proposed plant expansion and the request to the Regional Board for increases in discharge capacity. Facilities would include chemical feed systems and filters as well as possible disinfection system improvements. (Costs are split equally between two years.)

31. **Leisure Town Road Pumping Station**

Design and construct a new, larger pump station to serve growth in the Northeast Sector, and abandon the existing Leisure Town Road pump station.

32. **18" Replacement Sewer - Leisure Town Road**

Replace existing 12" sewer force main with an 18" force main between Sierra Road and Ulatis Creek.

33. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

34. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

35. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

36. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

1997

37. **33" Replacement Sewer - Nut Tree/Cooper School Road**

Replace existing 21" sewer segments with a 33" pipeline sized to accommodate growth in the north area of the City.

38. **30" Replacement Sewer - Leisure Town Road**

Replace existing 18" gravity sewer with 30" sewer required to serve growth in the northern portions of the City.

39. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

40. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

41. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

42. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

1998

43. **15" Replacement Crossing - I-80**

Design and construct an 15" bore-and-jack force main crossing under I-80, replacing a 8" crossing and providing increased capacity required to serve Northeast Sector.

44. **Golden West Pumping Station**

Upgrade or replace existing sewage pump station, located near I-80 and Walnut Road. Project is primarily required to serve development in the Northeast Sector.

45. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

46. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

47. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

48. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

1999

49. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

50. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

51. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

52. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2000

53. **10" Relief Sewer - I-80 to Padan School**

Design and construct a 10" parallel relief sewer along Butcher Road and Alamo Drive, required to serve growth in the southwest part of the City and to provide supplemental capacity to the existing 18" sewer already installed along this alignment.

54. **27" Replacement Sewer - Leisure Town Road to Elmira Road**

Design and construct a 27" replacement sewer from Leisure Town Road and along Fry Road, then northeast along the Southern Pacific tracks to Elmira Road. The new sewer will replace the existing 18" sewer currently in this alignment.

55. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

56. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

57. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

58. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2001

59. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

60. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

61. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

62. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2002

63. **Easterly WWTP Expansion (12 to 15 mgd)**

Design and construct a 3 mgd capacity expansion to the Easterly Wastewater Treatment Plant, increasing total treatment plant from 12 mgd to 15 mgd.

64. **24" Replacement Sewer - Nut Tree Road to Leisure Town Road**

Design and construct a 24" gravity sewer along Alamo Drive between Nut Tree Road to Leisure Town Road, replacing an existing inadequate 18" pipeline.

65. **Monte Vista Avenue Pumping Station**

Abandon an existing, small pump station and construct a new enlarged sewerage pump station. The new system is required to serve growth in the Northeast Sector.

66. **18" Replacement Sewer - Vaca Valley Parkway North**

Replace an existing 8" sewer with a new 18" gravity sewer, required to serve growth in the Northeast Sector.

67. **21" Replacement Sewer - Vaca Valley Parkway to I-80**

Replace an existing 15" sewer with a new 21" gravity sewer, required to serve growth in the Northeast Sector. Abandon existing Pine Creek pump station and replace with new station sized for increased flows.

68. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

69. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

70. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

71. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2003

72. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

73. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

74. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

75. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2004

76. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

77. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

78. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

79. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2005

80. **18" Relief Sewer - Elmira Road**

Design and construct an 18" gravity relief sewer along Elmira Road from Nut Tree Road to approximately 800 feet west of Leisure Town Road. This project will be required to provide additional capacity to serve anticipated growth in the tributary area.

81. **24" Relief Sewer - Elmira Road**

Design and construct an 800-foot segment of 24" gravity relief sewer along Elmira Road from Leisure Town Road to the west. This project will be required to provide additional capacity to serve anticipated growth in the tributary area.

82. **21" Replacement Sewer - SPRR North of Markham School**

Design and construct a 21" gravity sewer, replacing an existing sewer along the Southern Pacific Railroad. The increased pipe size will be required to serve future growth in the Northeast Sector as well as growth to the west.

83. **18" Replacement Sewer - Yellowstone Road to Leisure Town Road**

Design and construct a 12" gravity sewer to replace an existing 8" sewer along Yellowstone Road, providing increased capacity for future growth in the area.

84. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

85. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

86. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

87. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2006

88. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

89. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

90. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

91. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2007

92. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

93. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

94. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

95. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2008

96. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

97. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

98. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

99. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2009

100. **Easterly WWTP Rehabilitation/Upgrades**

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

101. **Wastewater System Studies**

Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

102. **Sewer Main Replacement Program**

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

103. **Infiltration Control Program**

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.

2010

104. Easterly WWTP Rehabilitation/Upgrades

Design and construct miscellaneous unspecified and unidentified rehabilitation projects and upgrades to the Easterly Wastewater Treatment Plant, as required to maintain proper operation of the facilities.

105. Wastewater System Studies

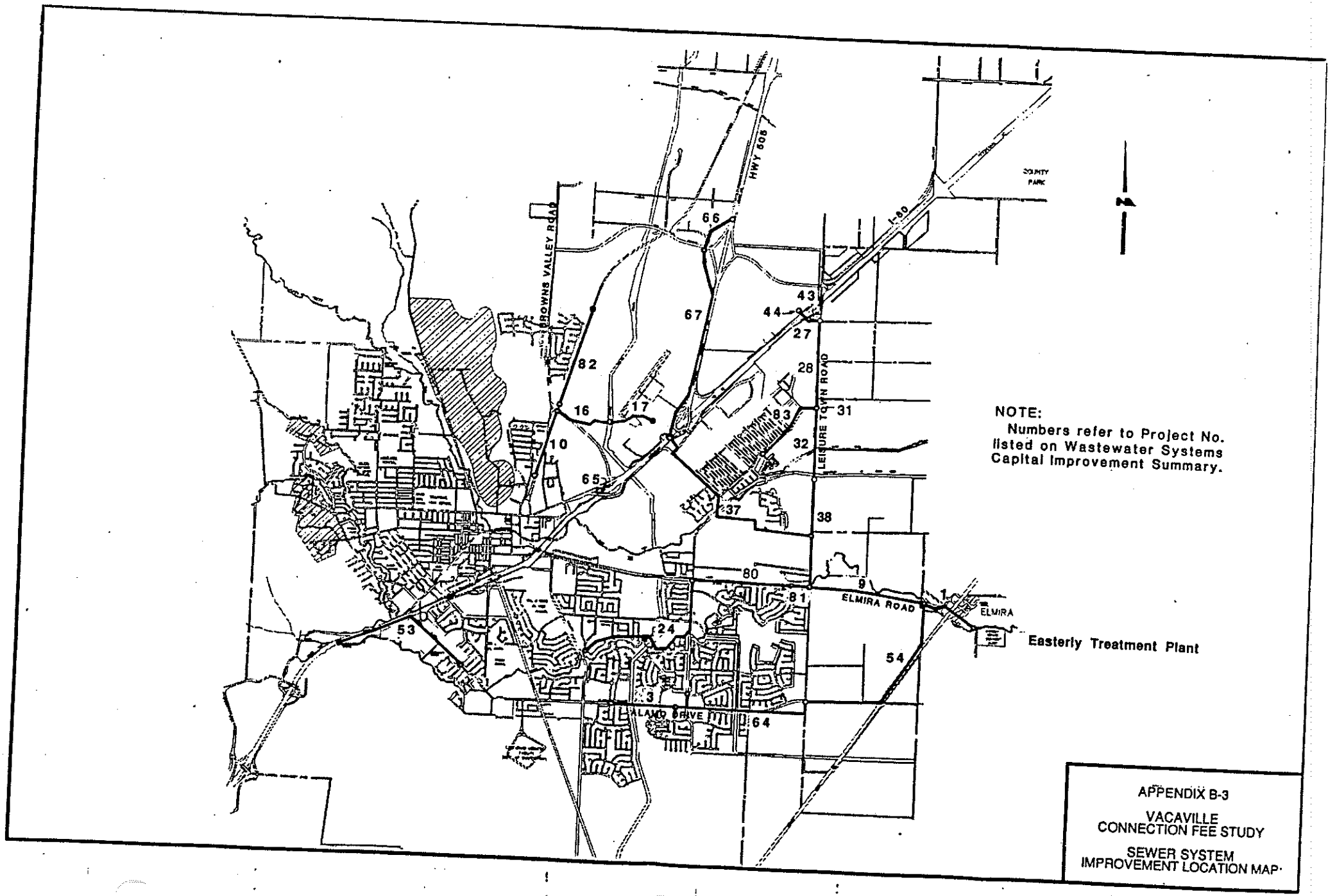
Perform miscellaneous unspecified studies related to the collection and treatment of wastewater primarily related to servicing growth within the system.

106. Sewer Main Replacement Program

Design and construct miscellaneous unidentified sewer improvements city-wide that will be required to replace deteriorated portions of the existing system and to provide increased sewer capacity where required.

107. Infiltration Control Program

Provide ongoing sewer system testing to identify areas where excessive amounts of stormwater are entering the system and rehabilitate faulty portions of the system.


HWY 505
I-80
BROWNS VALLEY ROAD
LEISURE TOWN ROAD
ELMIRA ROAD
ELMIRA
ALAMO DRIVE
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16
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54
NOTE:
Numbers refer to Project No. listed on Wastewater Systems Capital Improvement Summary.
Easterly Treatment Plant
APPENDIX B-3
VACAVILLE
CONNECTION FEE STUDY
SEWER SYSTEM
IMPROVEMENT LOCATION MAP