APPENDIX J

VILLAGE 7 CONCEPTUAL SEWER STUDY

VILLAGE 7

CONCEPTUAL SEWER STUDY

April 14, 2004

PBS&J Project No.: 491067

Prepared For:

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CHAPTER 1
INTRODUCTION

1.1 PURPOSE

This report provides an overview of the existing and planned wastewater services for the proposed Otay Ranch Village 7 master-planned development (Project). This study summarizes existing and planned regional sewerage facilities that will serve the Project, estimated wastewater generation rates, and a conceptual on-site sewer collection system for ultimate buildout as well as phased development.

This document is prepared to support the project's preliminary development plan and SPA application. More detailed studies may be required during preparation of improvement plans.

1.2 PROJECT OVERVIEW

The Project is located in the City of Chula Vista within the Otay Ranch General Planning Area. The site is bounded by future Birch Road to the north, the future extension of State Route 125 to the east, the future extension of La Media Road to the west, and future Rock Mountain Road to the south.

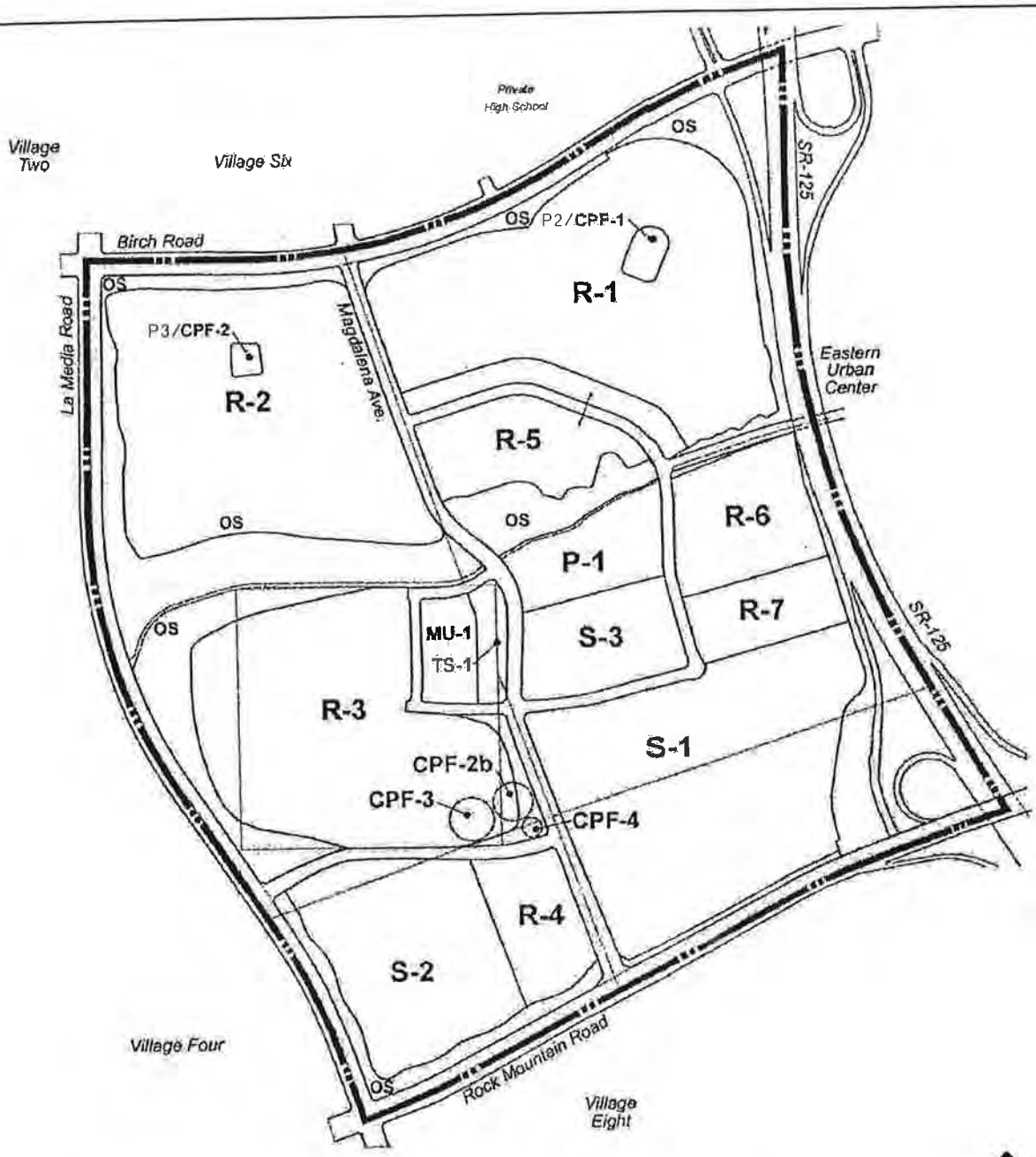
Planned land uses in Village 7 include single- and multi-family residential, commercial, community purpose, schools, and parks. Figure 1-1 shows the planned land uses based on the Project Site Utilization Plan (Cinti Land Planning, 3/8/04).

1.3 SITE TOPOGRAPHY

Proposed graded elevations will range from a low of approximately 410 feet in Wolf Canyon along the western boundary of the site to a high of approximately 570 to 580 feet in the northeast and southeast corners of the site. Natural drainage on the property is generally from east to west. The northernmost portion of the site drains in a northwesterly direction to the Poggi Canyon Drainage Basin and the southern portion of the Project drains in a westerly direction to the roadways, Magdalena Avenue and La Media Road, and then south to the Wolf Canyon Drainage Basin as shown in the conceptual grading plan of Figure 1-2.

1.4 SEWER SERVICE

Sanitary sewer service for the Project will be provided by the City of Chula Vista. Chula Vista operates and maintains its own sanitary sewer collection system that connects to the City of San Diego's Metropolitan Sewerage System. The *Otay Ranch Master Plan of Sewerage* (Wilson Engineering, 1993) documented the feasibility of providing sewer service to the project area.

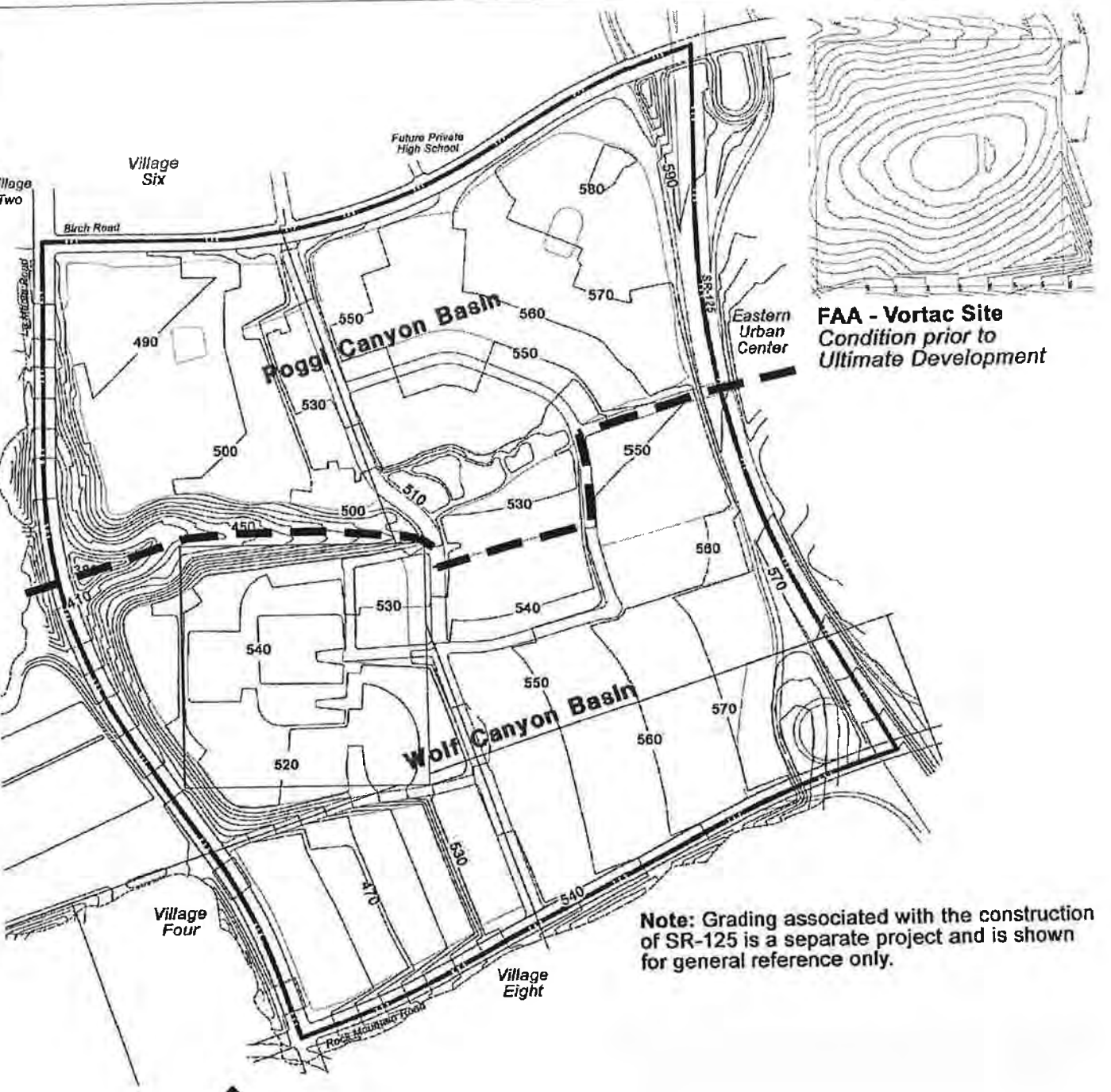


LEGEND

MU-1	MIXED USE/COMMERCIAL
TS-1	TOWN SQUARE
R-1 - R-4	SF RESIDENTIAL
R-5 - R-7	MF RESIDENTIAL
CPF-2b - CPF-4	COMMUNITY PURPOSE FACILITY
S-1	HIGH SCHOOL
S-2	MIDDLE SCHOOL
S-3	ELEMENTARY SCHOOL
OS	OPEN SPACE
P-1	PARK
P2/CPF-1	PARK
P3/CPF-2	PARK

NO SCALE

PROPOSED LAND USE
FIGURE 1-1



FAA - Vortac Site
Condition prior to Ultimate Development

Note: Grading associated with the construction of SR-125 is a separate project and is shown for general reference only.

NO SCALE

LEGEND

POGGI CANYON SEWER BASIN BOUNDARY

CONCEPTUAL GRADING PLAN
FIGURE 1-2

SOURCE: P&D Consultants and Cinti Land Planning, 3/8/04

H:\Waterres\048 McMillin\491067 -Village 7\dwg\Sewer Study 04-04\491067-grade-sewer.dwg April 13, 2004

Based on the current site utilization plan and conceptual grading, Village 7 will drain to two sewer basins. The northern portion of the Project will drain to the Poggi Canyon Sewer Basin. This includes Neighborhoods R-1, R-2, R-5, P-1, P2/CPF-1, and P3/CPF-2. Wastewater collected within this basin will be conveyed to existing and planned sewer mains in Birch Road and La Media Roads that discharge to the existing Poggi Canyon Interceptor in Olympic Parkway.

The southern portion of the Project is located in the Wolf Canyon Basin and includes Neighborhoods R-3, R-4, S-2, MU-1, TS-1, CPF-2b, CPF-3, and CPF-4. Wastewater flows will be conveyed by gravity to the future Wolf Canyon Trunk Sewer in Rock Mountain Road. The City anticipates completion of this sewer by the end of 2008.

Current regional phasing plans for the Wolf Canyon Trunk Sewer indicate that the sewer may not be completed until after the commencement of development within portions of Village 7 situated in the Wolf Canyon Basin. To serve these parcels, wastewater flows will be temporarily diverted to the Poggi Canyon Basin via on-site gravity mains. These parcels include Neighborhoods R-6, R-7, S-3, and S-1.

All wastewater generated within the Project will eventually be conveyed to the Salt Creek Interceptor west of I-805 that discharges to the City of San Diego's South Metro Interceptor. The wastewater is ultimately treated by the City of San Diego at the existing Point Loma Wastewater Treatment Facility.

CHAPTER 2
WASTEWATER GENERATION

Sewer flows generated in the Project were estimated based on current City planning criteria for the permanent and interim on-site sewer system conditions. These estimated flows would form the basis for design of new sewer facilities and evaluation of existing facilities that will serve the Project.

2.1 WASTEWATER GENERATION FACTORS

The City of Chula Vista Subdivision Manual (July 2001) provides criteria to estimate sewer flows from different land uses. Single-family homes are estimated to produce an average of 265 gallons per day (gpd). Multi-family homes are assumed to produce 75 percent of the single-family generation, or 199 gpd. Elementary schools are assumed to produce 15 gallons per capita per day (gpcd). Middle and High Schools are estimated to produce 20 gpcd. For this study, it is assumed that the planned elementary school will house approximately 800 students, the middle school will accommodate approximately 1,400 students, and the High School will have approximately 2,400 students. Commercial and community purpose development are assumed to generate 2,500 gpd per acre.

2.2 WASTEWATER FLOW PROJECTIONS

Based on the criteria presented in Section 2.1 average wastewater generation rates at ultimate buildout for the Project were estimated and are presented in Table 2-1.

Table 2-1
Village 7 – Projected Wastewater Generation by Land Use

Land Use	Number	Units	Generation Rate [1] (gpd/Unit)	Average Daily Flow (gpd)
SF Residential	1053	DU	265	279,045
MF Residential	448	DU	199	89,152
High School	2400	Students	20	48,000
Middle School	1400	Students	20	28,000
Elementary School	800	Students	15	12,000
Commercial	5.6	AC	2500	14,000
CPF	2.3	AC	2500	5,750
Park	9.4	AC	500	4,700
Total				**480,647**

[1] Unit demand factors from Chula Vista Subdivision Manual (July 2001)

Average wastewater generation rates were projected for permanent and interim on-site sewer system conditions and then by respective basins. The permanent condition reflects the sewer system after Village 7 is fully developed and the Wolf Canyon Trunk Sewer is operational. The interim condition represents the temporary diversion of the southeastern portion of the Project to the Poggi Canyon Basin until the Wolf Canyon Trunk Sewer is constructed. This includes the high school, elementary school, and two multi-family neighborhoods (R-6 and R-7).

Tables 2-2 and 2-3 present estimated average Project wastewater flow generation and equivalent dwelling units for the permanent sewer system by sewer basin. The average projected flow rates for the Poggi Canyon and Wolf Canyon Basins are 225,348 gpd (850 EDUs) and 255,299 gpd (963 EDUs), respectively.

Table 2-2
Village 7 – Permanent Condition
Poggi Canyon Sewer Basin
Sewage Flows and EDUs by Neighborhood ID

Neighborhood ID	Land Use	Number	Units	Generation Rate[1] (gpd/Unit)	Average Daily Flow (gpd)	EDU
R-1	SF Residential	351	DU	265	93,015	351
R-2	SF Residential	375	DU	265	99,375	375
R-5	MF Residential	142	DU	199	28,258	107
P-1	Park	7.6	AC	500	3,800	14
P2/CPF-1	Park	1.1	AC	500	550	2
P3/CPF-2	Park	0.7	AC	500	350	1
TOTAL					**225,348**	**850**

[1] Unit demand factors from Chula Vista Subdivision Manual (July 2001)

Table 2-3
Village 7 – Permanent Condition
Wolf Canyon Sewer Basin
Sewage Flows and EDUs by Neighborhood ID

Neighborhood ID	Land Use	Number	Units	Generation Rate[1] (gpd/Unit)	Average Daily Flow (gpd)	EDU
R-3	SF Residential	290	DU	265	76,850	290
R-4	SF Residential	37	DU	265	9,805	37
R-6	MF Residential	187	DU	199	37,213	140
R-7	MF Residential	119	DU	199	23,681	89
S-3	Elementary School	800	Students	15	12,000	45
S-1	High School	2,400	Students	20	48,000	181
S-2	Middle School	1,400	Students	20	28,000	106
MU-1	Mixed Use/Comm	3.7	AC	2,500	9,250	35
TS-1	Town Square	1.9	AC	2,500	4,750	18
CPF-2b	Commercial	1.0	AC	2,500	2,500	9
CPF-3	Commercial	0.2	AC	2,500	500	2
CPF-4	Commercial	1.1	AC	2,500	2,750	10
TOTAL					**255,299**	**963**

[1] Unit demand factors from Chula Vista Subdivision Manual (July 2001)

Table 2-4 presents estimated average Project wastewater flow generation and equivalent dwelling units for the interim sewer system in the Poggi Canyon Sewer Basin. The average projected flow rates are 346,242 gpd (1,307 EDUs).

Table 2-4
Village 7 – Interim Condition
Poggi Canyon Sewer Basin
Sewage Flows and EDUs by Neighborhood ID

Neighborhood ID	Land Use	Number	Unit	Generation Rate[1] (gpd/Unit)	Average Daily Flow (gpd)	EDU
R-1	SF Residential	351	DU	265	93,015	351
R-2	SF Residential	375	DU	265	99,375	375
R-5	MF Residential	142	DU	199	28,258	107
R-6	MF Residential	187	DU	199	37,213	140
R-7	MF Residential	119	DU	199	23,681	89
S-1	High School	2,400	Students	20	48,000	181
S-3	Elementary School	800	Students	15	12,000	45
P-1	Park	8	AC	500	3,800	14
P2/CPF-1	Park	1.1	AC	500	550	2
P3/CPF-2a	Park	0.7	AC	500	350	1
TOTAL					**346,242**	**1,307**

[1] Unit demand factors from Chula Vista Subdivision Manual (July 2001)

CHAPTER 3
REGIONAL SEWERAGE FACILITIES

3.1 POGGI CANYON BASIN

Wastewater generated within the Poggi Canyon Sewer Basin is conveyed to the City of San Diego Metropolitan Wastewater Department (Metro) sewerage system via the Poggi Canyon Interceptor, which generally follows from Olympic Parkway to Brandywine Avenue and then extends southwesterly through existing development to a temporary connection to the Date-Faivre Trunk Sewer south of Main Street. Following completion of the western portion of the planned Salt Creek Interceptor in Otay Valley Road, the Poggi Canyon Interceptor will be connected to the Salt Creek Interceptor near the intersection of Palm Avenue and Main Street and the temporary connection to the Date-Faivre Trunk Sewer will be removed.

Design criteria, including minimum pipe diameters and slopes, for the Poggi Canyon Interceptor was provided in the *Poggi Canyon Basin Gravity Sewer Basin Plan* (Wilson Engineering, 1997). The Basin Plan estimated average sewer flows from Village 7 to the Poggi Canyon Interceptor equal to 78,060 gpd (295 EDUs) at 265 gpd/EDU. The *Poggi Canyon Sewer Basin Plan Update and Pumped Flow Analysis* (PBS&J, 2002) calibrated the existing sewer system model, which included the Poggi Canyon Interceptor and Date-Faivre Trunk Sewer, with metered flow data. The calibrated generation rates from existing development were estimated to be 215 gpd/EDU. The City elected to evaluate the remaining capacity in the Poggi Canyon Interceptor sewer using a combination of their Subdivision Manual for new development and sewer flow meter data to assess existing pipe capacity. Using this method, Poggi Canyon is estimated to have adequate capacity for all of the proposed wastewater flows from Village 7. Analysis of the available capacity of the Interceptor is presented in Chapter 4.

The Basin Plan Update additionally identified that approximately 660 feet of the existing Poggi Canyon Interceptor located under I-805 (Reach 205) may reach capacity after 2005. The City has included improvement of this reach in its current CIP. The improvements will be funded through the existing Development Impact Fee (DIF). It is anticipated that the section of the Interceptor crossing I-805 will be constructed prior to the development of the Village 7 Development. After Reach 205 is completed, the next critical reach in the sewer is identified at Brandywine Avenue and Olympic Parkway. This reach is estimated to have adequate capacity for all of the proposed permanent units in the Project. The projected average project flow to the Poggi Canyon Basin is 225,348 gpd.

3.2 WOLF CANYON BASIN

After the City evaluated several regional sewer alternatives for the Wolf Canyon Basin, the future Wolf Canyon Trunk Sewer alignment was moved out of Wolf Canyon and into a planned improved roadway, Rock Mountain Road. This new alignment will significantly reduce the environmental impacts and capital costs associated with construction in a canyon. The conceptual grading in the Project and sewer study was modified to reflect this revision.

Wastewater generated within the Wolf Canyon Basin will drain to the future trunk sewer in Rock Mountain Road. The trunk sewer will connect to the existing Salt Creek Interceptor at a location approximately 3,000 feet east of Heritage Road in the Otay River Valley. From the connection point, flows will be conveyed in the Salt Creek Interceptor to Metro facilities located west of I-5. Completion of the Salt Creek Interceptor is expected in 2004. The projected average project flow to the Wolf Canyon Basin is 255,299 gpd.

CHAPTER 4
POGGI CANYON BASIN CAPACITY ANALYSIS

4.1 METHODOLOGY

The City specified a methodology that recognizes current metered peak flow rates and a maximum flow depth to pipe diameter ration (d/D) of 0.85 to assess the existing capacity of the Poggi Canyon Interceptor. Metered flow rates provided by the City subtracted from the estimated maximum capacity of the sewer to determine the remaining capacity in the sewer. Based on peak metered flow depths in the Poggi Canyon Interceptor, the available capacity at critical reaches of the interceptor was estimated by application of Manning's Equation. Projected flows from the number of units remaining to be built were then added to the sewer to determine if it has adequate capacity to convey peak flows under basin buildout conditions.

The analysis was computed using a generation rate of 265 gpd/EDU, as well as 215 gpd/EDU to estimate wastewater flows. For comparison purposes, the wastewater generation rate for the number of units tributary to the Poggi Canyon Interceptor Sewer at the time of the meter reading was determined based on a peaking factor of 1.76 and an existing 9,442 tributary units. The measured generation was estimated to be 173 gpd/EDU and illustrates that the two rates used in this capacity analysis are conservative when compared to actual sewer flows.

The City requested that two thresholds be evaluated. The first threshold is an existing 18-inch vitrified clay pipe (VCP) that crosses under I-805, which is referred to as Reach 205 in the Basin Plan. This reach is expected to be upsized after March 2005. The next threshold is an existing 18-inch polyvinyl chloride (PVC) pipe located upstream of Reach 205 at Brandywine Avenue and Olympic Parkway. It is identified as Reach P270 in the *Poggi Canyon Sewer Basin Plan Update and Pumped Flow Analysis* (PBS&J, May 2002).

4.2 SEWER DATA

The City provided flow monitor data for Reach 205 on three separate occasions between the period of September 27 to November 27, 2003. Flow rates were measured at 1605 Melrose, which appears to correspond with Manhole No. 6836 in the City's sewer atlas map. The flow rate on Thanksgiving Day, November 27, 2003 was assumed to be the peak flow rate for existing developments in the Poggi Canyon Basin over the metering period. Based on a measured depth of 0.79 feet and Manning's coefficient of 0.013, the peak flow rate is 1,819 gpm.

Flow monitor data was not available for Reach P270 at Brandywine Avenue. The peak flow rate at this location was derived by subtracting wastewater flows generated by existing developments between Reaches 205 and P270 from the measured meter data. Existing wastewater flows were estimated with a generation rate of 215 gpd/EDU and peaking factor of 2.20. The peak flow rate at P270 is estimated to be 1,510 gpm.

The number of remaining EDUs to be built within the Basin was estimated by subtracting the existing units from the total number of planned units in the Basin. The existing and planned units are referred to as committed units with respect to capacity rights in the Poggi Interceptor. In order to estimate the number of existing units tributary to the meter location, the City provided the number of building permits issued in the Poggi Canyon Basin as of November 3, 2003. This assumes units completed at the beginning of November would be sold and occupied by the time the peak flow rate was measured on Thanksgiving Day. The developed units were then subtracted from the "committed" units verified by the City.

Table 4-1 shows the "committed" units for entitled and non-entitled developments in the Poggi Canyon Basin, as well as, proposed additional units in Villages 2 and 7 above the committed number of units for these developments. The entitled EDUs include all development in the Basin that is either built or has at a minimum an approved Sectional Planning Area Plan. The non-entitled EDUs include Village 2, Village 7 and the northern portion of the Eastern Urban Center (EUC). The City requested that the 1997 Basin Plan be used as the basis for determining the number of committed EDUs for the non-entitled villages.

Table 4-1
Poggi Canyon Sewer Basin
Proposed Units Remaining to be Built by Development

Development	Committed Units			Proposed Units	
	Total Units (EDU)	Constructed Units (EDU)	Remaining Units (EDU)	Additional Units (EDU)	Total with Additional Units (EDU)
Entitled Developments					
West of I-805	813	813	0		813
Sunbow I	952	952	0		952
Sunbow II	1,986	1,533	453		1,986
Village 1 West	520	317	203		520
Village 1 ORC	1,120	986	134		1,120
East Lake Land Swap Area/ East Lake Greens	2,007	1,039	968		2,007
Village 5 ORC	592	215	377		592
Village 6	2,054	53	2,001		2,054
Village 1/5 McMillin	312	312	0		312
Freeway Commercial	1,132	0	1,132		1,132
Non-entitled Developments					
Village 2	1,201	0	1,201	1,001	2,202
Village 7	295	0	295	555	850
Eastern Urban Center	189	0	189		189
TOTAL	**13,173**	**6,220**	**6,953**	**1,556**	**14,729**

4.3 SEWER CAPACITY ANALYSIS RESULTS

Table 4-2 below summarizes the available capacity in Reaches 205 and P270, computed by subtracting the existing peak flow from the calculated maximum capacity of each reach. The maximum capacities in the two reaches are close since the pipe diameters are the same (18-inches) and the difference in slope is very slight with 0.0050 ft/ft for Reach 205 and 0.0049 ft/ft for P270. Pipe slopes were obtained from sewer design plans acquired for the Basin Plan Update. Roughness coefficients of 0.013 (VCP) and 0.012 (PVC pipe) were used for Reaches 205 and P270, respectively, per the Chula Vista Subdivision Manual.

Table 4-2
Excess Capacity in Threshold Reaches

Reach	Max Capacity[1]	Recorded Flow[2]	Current Remaining Capacity		Olympic Pkwy Pump Station[4]	Available Capacity in EDUs[5]	
	Qmax (gpm)	Qpeak (gpm)	Qpeak (gpm)	Qavg[3] (gpm)	EDU	215 gpd/EDU	265 gpd/EDU
205	3,435	1,819	1,616	903	2,496	8,544	7,403
P270	3,684	1,510	2,174	1,235	2,496	10,768	9,207

(1) Maximum capacity calculated by application of Manning's equation and based on a maximum d/D of 0.85.
(2) Reach 205 recorded peak flow from November 27, 2003 at Manhole No. 6836. Reach P270 peak flow estimated from Reach P270 record data.
(3) Used peaking factors of 1.79 and 1.76 for Reaches 205 and P270, respectively, based on CVDS18.
(4) Projected EDUs to December 2003 for Olympic Parkway Pump Station is based on house closing information as of September 8, 2003 and generation rate of 265 gpd/EDU.
(5) Available capacity assumes EDUs tributary to Olympic Parkway Pump Station are not conveyed to Poggi Canyon Interceptor.

It should be noted that the Olympic Parkway Pump Station receives flow from approximately 2,496 EDUs into the Poggi Canyon Basin at the end of 2003, per house closing information provided by developers as of September 8, 2003. A copy of the pump station projection is provided in the Appendix. After the Salt Creek Interceptor is completed, the flow will gravity permanently into the Salt Creek Basin and free up capacity in the Poggi Canyon Basin. The available capacity in Table 4-2 accounts for this transfer of flow.

The EastLake Parkway Pump Station currently pumps to Telegraph Canyon, but will ultimately flow by gravity into Poggi Canyon after pumped flows from Salt Creek Basin leave the Poggi Canyon Basin. The sewer capacity analysis assumes all of the proposed 2,007 EDUs from the EastLake Development in Table 4-1 are tributary to the Poggi Canyon Basin.

Table 4-3 shows the remaining capacity in the Poggi Canyon Interceptor Sewer after all of the "committed" units are sewered to the basin.

Table 4-3
Remaining Poggi Canyon Basin Capacity in Threshold Reaches minus Committed Units

Reach	Remaining Pipe Capacity	
	215 gpd/EDU	265 gpd/EDU
205	1,591	450
P270	3,815	2,254

4.4 CONCLUSIONS

Based on the basin capacity analysis, the Poggi Canyon Interceptor Sewer will have adequate capacity to accept most of the proposed 850 EDUs from Village 7. Table 4-3 shows the total number of additional units that can be sewered by the Interceptor above and beyond the number of committed units before exceeding a maximum sewer capacity of d/D=0.85. The number of proposed additional units for Village 7 is 555 EDUs per Table 4-1. The first threshold, Reach 205 at a generation rate of 265 gpd/EDU, provides a remaining capacity of 450 EDUs, which is below the number of proposed additional units. Therefore, the Poggi Canyon Interceptor may receive flow from 745 EDUs out of the proposed 850 EDUs from Village 7 at maximum capacity. However, based on a generation rate of 215 gpd/EDU, all of the proposed flow from Village 7 may be received by the Interceptor.

Development of particular neighborhoods in Village 7 may be contingent upon the completion of certain regional facilities or implementation of temporary diversions. The southeastern quadrant, which includes neighborhoods R-6, R-7, S-1 and S-3, is planned to temporarily sewer north to the Poggi Basin until the future Wolf Canyon Trunk Sewer is built. Approximately 456 EDUs above the proposed 850 EDUs will sewer north to the Poggi Basin on an interim basis. Of this amount, 295 EDUs are committed per the 1997 Basin Plan Therefore, the total additional units during the interim condition is 1,011 EDUs. This is 561 EDUs above the threshold at Reach 205 with a generation rate of 265gpd/EDU. If Reach 205 is complete, the Poggi Canyon Interceptor Sewer would have adequate capacity to accommodate all of the interim flows. Additionally, phasing of developments in the Poggi Canyon Basin will free up capacity in the Interceptor sewer until regional facilities are in place. Project phasing is further discussed in Chapter 5 of this report.

CHAPTER 5
PROJECT PHASING

5.1 POGGI BASIN DEVELOPMENT

In the permanent condition, the northern portion of the Project (R-1, R-2, R-5, P-1, P2/CPF-1, and P3/CPF-2) will sewer to planned mains in Birch Road and La Media Roads, as shown in Figure 5-1. These mains will be constructed as part of the Village 6 subdivision and are expected to be completed and operational prior to development of the Village 7 project. The total proposed EDUs for Village 7 at ultimate buildout is 850 EDUs. With approximately 295 EDUs committed per the 1997 Basin Plan, an additional 555 EDUs will be tributary to the Poggi Canyon Basin. Based on the hydraulic analysis, the Poggi Interceptor Sewer would have sufficient capacity to handle only 450 additional units from Village 7. The remaining 105 EDUs that are considered additional may be tributary to the Poggi Interceptor Sewer until the Year 2012 when the EUC is anticipated to begin construction. This will free up 189 EDUs in the Poggi Canyon Basin until Reach 205 is upsized. At which point, all of the proposed units from Village 7 may be tributary to the Basin.

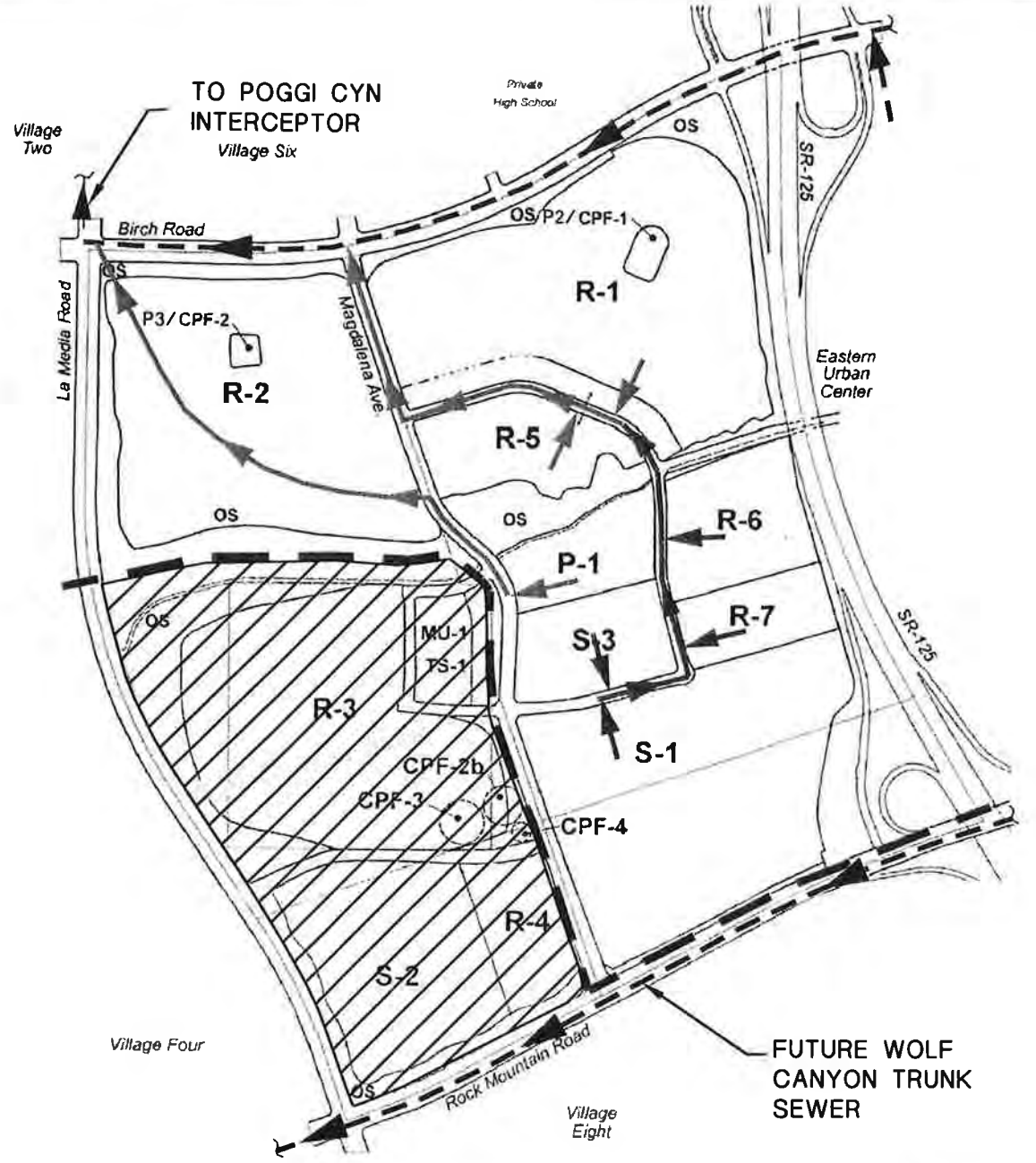
Until the Wolf Canyon Trunk Sewer is completed, the southeastern quadrant (R-6, R-7, S-1 and S-3) will require an interim sewer to the Poggi Basin via a deep sewer in the loop road, as shown in Figure 5-2. As discussed in Chapter 4, the first threshold is Reach 205 with a total remaining capacity of 450 EDUs for additional units. The maximum number of additional units above and beyond the committed units in Village 7 that will be tributary to the Poggi Canyon Basin on an interim basis is 1,011 EDUs. This exceeds the remaining capacity in Reach 205 by 561 EDUs. Once Reach 205 is improved, there will be sufficient capacity to accept all of the temporary flow.

Assuming Reach 205 and the Wolf Canyon Trunk Sewer are not built prior to development of the southeastern quadrant, the timing of developments within the basin may free up capacity within the Poggi Interceptor Sewer to accommodate potential temporary flows. For instance, the latest estimated development timeframe for committed EDUs in Sunbow II (Sunbow Industrial) and the EUC is after 2012. This will free up 642 EDUs in the basin for additional units from Village 7. Once Reach 205 is constructed, the sewer basin would be able to handle 2,254 additional units before the second threshold at Brandywine Avenue would be exceeded. With development of Sunbow Industrial and EUC in the distant future, the Poggi Basin has adequate capacity to accept all of the temporary flows from Village 7.

The remaining capacity within the Poggi Basin described above, are based on a conservative planning generation rate of 265 gpd/EDU. Using the lower generation rate of 215 gpd/EDU, the Poggi Canyon Basin would be able to accept all of the proposed and temporary EDUs in Reach 205 and P270 with additional capacity remaining. It is recommended that flow monitoring within the Poggi Canyon Sewer Basin should be performed as a confirmation that the metered flow does not exceed the basin capacity.

5.2 WOLF CANYON BASIN DEVELOPMENT

Portions of the Project that lie within the Wolf Canyon Basin will sewer to the future trunk sewer in Wolf Canyon through a planned main in La Media Road and Magdalena Avenue. The southern portion of the Project (Neighborhoods R-3, R-4, S-2, and commercial land uses) will require the completion of future mains in Rock Mountain Road or other alignments to convey flows to the Salt Creek Interceptor.



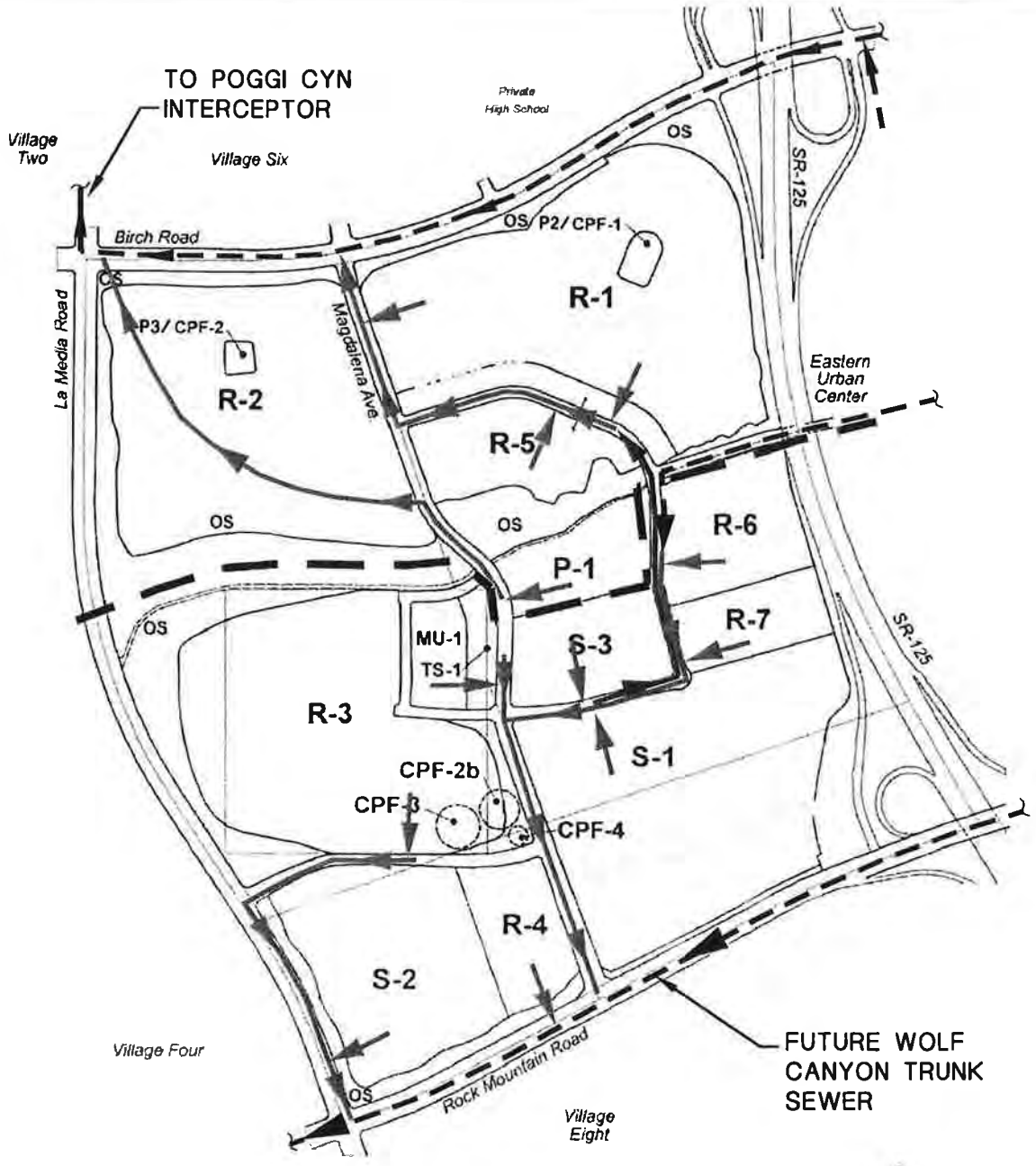
LEGEND

- OFFSITE SEWER
- POGGI CANYON SEWER BASIN BOUNDARY
- INTERIM / PERMANENT SEWER MAIN
- INTERIM SEWER MAIN
- AREA TO BE SERVED BY FUTURE WOLF CANYON TRUNK SEWER

N

NO SCALE

INTERIM SEWER COLLECTION SYSTEM FIGURE 5-1



LEGEND

- POGGI CANYON SEWER BASIN BOUNDARY
- PERMANENT SEWER MAIN
- PLANNED OFF-SITE SEWER
- INTERIM SEWER MAIN TO BE ABANDONED IN PLACE

PERMANENT SEWER COLLECTION SYSTEM

FIGURE 5-2

CHAPTER 6
PROPOSED SEWER SYSTEM

6.1 RECOMMENDED SEWER COLLECTION SYSTEM PROJECTS

Sewer facility improvements required to serve the Project include on-site gravity sewer mains and contributions for the construction of the Poggi Canyon and Salt Creek Interceptors, and potentially the Wolf Canyon Trunk Sewer. The sizing of on-site sewer lines will be determined during development of improvement plans for the Project when slopes and alignments for sewer lines have been established. This chapter provides a discussion of the impact fees to be paid and presents the conceptual on-site collection system for the Project.

6.2 DEVELOPMENT IMPACT FEES

The City has established Development Impact Fees (DIF) to fund construction of regional sewer facilities, including the Poggi Canyon and Salt Creek Interceptors and potentially a Wolf Canyon trunk sewer. The Village 7 development within the Poggi Canyon Sewer Basin will be required to pay the Poggi Canyon DIF and development within the Wolf Canyon Basin will be required to pay the Salt Creek DIF. These fees were established in the *Poggi Canyon Gravity Sewer Basin Plan* and the *Salt Creek Basin Study* (Wilson Engineering, 1994) and through City of Chula Vista Ordinances 2716 and 2617, respectively. Table 6-1 summarizes the current Poggi Canyon Basin Impact Fees and Table 6-2 presents the current Wolf Canyon Basin fees. The Wolf Canyon Basin fees are being updated.

Table 6-1
Poggi Canyon Basin Impact Fees

Land Use	Fee
Single-Family Residential	$400 / unit
Multi-Family Residential	$300 / unit
Commercial/Multi-Use	$3,572 / acre
Elementary School	$12,856 / site
Junior High School	$40,000 / site
High School	$68,572 / site
Community Purpose Facility	$3,572 / site
Parks	$716 / acre

Table 6-2
Wolf Canyon Basin Impact Fees

Land Use	Fee
Single-Family Residential	$284 / unit
Multi-Family Residential	$213 / unit
Commercial/Multi-Use	$2,840 / acre
Schools	$1,136 / acre
Community Purpose Facility	$2,840 / acre
Parks	$716 / acre

6.3 RECOMMENDED ON-SITE IMPROVEMENTS

Flows generated in the Poggi Canyon Basin will flow to planned 8 to 12-inch sewer mains in La Media and Birch Roads that connect to the Poggi Canyon Interceptor in Olympic Parkway. The permanent sewer collection system in Figure 5-1 shows the backbone mains at ultimate buildout of Village 7. The permanent sewer in the eastern portion of the Poggi Canyon Basin is mostly deep (depth more than 15 feet), with a total length of 2,500 feet. Manhole depths vary from 27 to 16 feet in the looped road and then become shallower as it approaches an existing 8-foot deep manhole in Birch Road. The sewer in Magdalena Avenue from the public park, P-1, to Neighborhood R-2 contains about 800 feet of deep sewer. The sewer through Neighborhood R-2 is expected to be less than 15 feet deep.

The total length of permanent sewer in the eastern portion of Wolf Canyon is approximately 5,000 feet with depths varying from 5 feet at SR-125 to 21 feet. Of this, approximately 2,100 feet of sewer main is deep. It should be noted that off-site sewer from the Eastern Urban Center (EUC) may contribute a significant portion of its flow to the Wolf Canyon Basin through Village 7, as shown in Figure 5-1. If flows from the EUC are included, the permanent sewer main to Rock Mountain Road may increase in diameter from 8 to 12 inches.

Based on conceptual grading, permanent sewer in the western portion of the Wolf Canyon Basin collects flows in the south connector road between La Media Road and Magdalena Avenue, and then diverts flow south to Rock Mountain Road. Pipe sizes are estimated at 8 inches based on wastewater generation flows. At the time of this study, tentative maps were not available so approximate lengths of deep sewers in this area are not included.

Figure 5-2 illustrates the conceptual on-site sewer collection system for the Project based on the interim condition for the Poggi Canyon Basin. The interim sewer main in the looped road will divert flows from Neighborhoods R-6, R-7, S-1 and S-3 north to the backend of the proposed permanent sewer, which ultimately connects to an existing sewer manhole at the intersection of Magdalena Avenue and Birch Avenue. The total length of deep sewer in the interim main is 1,800 feet with manhole depths ranging from 15 feet to 21 feet. The deepest manhole in this sewer segment is located at the southeast "knuckle" in the looped road.

Approximately 5,400 feet of permanent and 1,800 feet of interim sewers that are greater than 15 feet deep will potentially be constructed in the Village 7 development. It should be noted that the estimated length of deep sewers provided are based on the backbone system and does not include the interior piping which may also be equipped with deep sewers. This will be determined upon completion of the final tentative map for each development.

APPENDIX A
PUMPED BASIN PROJECTIONS
(REVISED 9/8/03)

Pumped Basin Projections

PROJECTED EDUS TO INDIVIDUAL PUMP STATIONS												
(Revised 09/08/03)												
OTAY LAKES ROAD PUMP STATION												
DEVELOPMENT	EXIST	2001	2002	2003	2004	2005						
Rolling Hills Ranch	136.6	63.0	185.0	200.0	200.0	200.0						
EastLake Greens (NE Part)	249											
EastLake III (ELBusCtr II SE & ELWoods)				353.0	350	56		759	759			
Subtotal	385.6	63.0	185.0	553.0	550.0	256.0						
Cumulative Subtotal	*385.6*	*448.6*	*633.6*	*1186.6*	*1736.6*	*1992.6*						
									910.107			
OLYMPIC PARKWAY PUMP STATION												
EastLake Greens (SE Part)	751.2											
EastLake Trails	656.1	194.3	311.3	35.9								
EastLake III (EL Vistas Only)				396	400	121.5		917.5	917.5			
Olympic Training Center	151											
Subtotal	1558.3	194.3	311.3	431.9	400.0	121.5						
Cumulative Subtotal	*1558.3*	*1752.5*	*2063.8*	*2495.7*	*2895.7*	*3017.2*						
EASTLAKE PUMP STATION												
EastLake Village Center												
Otay WD												
EastLake Greens (SW Part)												
TOTAL	**1,943.9**	**257.3**	**496.3**	**984.9**	**950.0**	**377.5**						
CUMULATIVE TOTAL	**1,943.9**	**2,201.1**	**2,697.4**	**3,682.3**	**4,632.3**	**5,009.8**						
EDU Conversion												
SF Dwelling Unit =	1.00	EDU/unit										
MF Dwelling Unit =	0.75	EDU/unit										
Park/Rec Center Ac =	1.89	EDU/unit										
JH/High Student =	0.08	EDU/unit										
Elementary Student =	0.06	EDU/unit										
CPF/Commercial =	9.43	EDU/unit										