City of Victorville

Sewer System Master Plan and Collection System Model

DRAFT FINAL
FOR REVIEW

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CHAPTER 1 EXECUTIVE SUMMARY

This *Sewer System Master Plan* (SMP) describes the City of Victorville's (City) plan for developing its system of trunk and interceptor sewers. It describes the existing sewers and pumping facilities, the City sewer atlas geodatabase, system planning criteria, hydraulic evaluation of the system for current conditions and future development, and the proposed Capital Improvement Program for the development of future sewer facilities.

1.1 PLANNING CRITERIA

Recently the City experienced a period of rapid growth. With few exceptions, new developments are being connected to the City's wastewater collection system. The Project Planning Criteria (PPC) specify the minimum requirements for the parameters that define the basis of sewer system design. For this project, the parameters that the PPC address and define are discussed below.

Study Area

The study area for this SMP is the boundary of the City of Victorville sphere of influence (See Figure 2-2). The SMP herein identifies the major sewer facilities needed to satisfy the sewage conveyance requirements within this area for the current conditions (year 2006), and for the years 2014 and 2030 planning horizons.

Population Estimates and Land Use

Population and land use form the basis of defining the Equivalent Dwelling Units (EDUs) and subsequently, the existing and future wastewater flows. Population estimates were made using the City-provided dwelling unit count and the recent Traffic Analysis Zone (TAZ) data for year 2005. The number of single family and multi-family EDUs and retail and non-retail employee population that existed within each TAZ area, and respective planning area, as of December 2005 were provided. These data were used to define residential and employment population figures for the current conditions (year 2006) scenario in the hydraulic model. A summary of this data is shown in Table E-1.

Table E-1 City of Victorville December 2005 Traffic Analysis Zone (TAZ) Population and Dwelling Unit Data

Land Use*	Totals
Single Family Dwelling Units (SDU)	25,970
Multi-Family Dwelling Units (MDU)	6,953
Total Dwelling Units	32,923
Retail Employees (RET)	10,105
Non Retail Employees (NRET)	17,159
Total Employees	27,264
Avg. persons/occupied Dwelling Unit**	2.94
Est. Dec. 2005 Population	**96,794**

* Data from spreadsheet filename: *VVSED-SubtotalbyPlngAreaDistricts-010208.xls*
**The average number of persons per occupied dwelling unit defines an EDU. Therefore, based on TAZ data the population equivalent of one EDU equals 3.2 persons. Note that the City of Victorville Planning Department uses a value of 2.9 persons per EDU for both single family and multi family land uses. This value was used to develop wastewater flows in the hydraulic model.

Population projections for 2014 and 2030 were estimated based on data provided by the City Planning Department. The projected total single family and multi-family EDUs and retail and non-retail employee population are presented for Years 2014 and 2030 in Table E-2.

Table E-2 Projected Residential and Commercial Employee Population by Planning Area, Years 2014 and 2030

Planning Horizon	SDU	MDU	RET	NRET
2014	35,291	16,674	18,472	29,523
2030	60,978	35,365	33,812	51,921

Notes: Population represented in this table is for residential and commercial units connected to the Victorville sewer system.
SDU – Single Family Dwelling Unit
MDU – Multi-Family Dwelling Unit
RET – Retail Employee
NRET – Non-Retail Employee

Wastewater Flow Generation Factor (FGF)

Victor Valley Wastewater Reclamation Authority (VVWRA) and City of Victorville wastewater flow generation factors (FGFs) are shown in Table E-3. The City of Victorville FGF values shown were derived from flow data recorded during October 2006. The VVWRA values were developed for the VVWRA and presented in their *"Sewage Facilities Plan Update, Year 2005 Amendment".* VVWRA FGFs were used for

establishing residential, industrial and commercial wastewater flows in the hydraulic model.

Table E-3 City of Victorville and VVWRA Flow Generation Factors by Land Use (Average Daily Flow)

Land Use	City of Victorville* FGF	VVWRA** FGF
Equivalent Dwelling Unit (SDU/MDU)	221 - 241 gpd	235 gpd
Residential	75 - 82 gpcd	80 gpcd
Office/Retail (RET/NRET)	varies	35 gped
Industrial	--	75 gped
Institutional	--	35 gped
High School	--	15,000 gpd
Junior High School	--	10,000 gpd
Elementary School	--	5,000 gpd

* From flow meter data recoded in October 2006, based on TAZ data for EDU counts.
** Data from Victor Valley Wastewater Reclamation Authority "*Sewage Facilities Plan Update, Year 2005 Amendment*".
gpd – gallons per day
gpcd – gallons per capita per day
gped - gallons per employee per day

Equivalent Dwelling Unit (EDU)

One EDU is defined as the average size of a single family household. Since residential land use in Victorville is a mix of single family and multi-family residences, future wastewater flows are based upon EDUs. The City of Victorville Planning Department is currently using a value of 2.94 people per EDU for both single and multi-family dwelling units, which is the value used in this study.

Diurnal Flow and Peaking Factors

The City of Victorville discharges to the Victorville Valley Wastewater Reclamation Authority (VVWRA) interceptor system at six (6) locations. Flow data was recorded by VVWRA at each of these locations during November 2004, and peak-hour flow factors (peaking factors) were calculated for each of the meter sites. The peaking factors developed by VVWRA are compared in Table E-4 with peaking factors that were developed from data collected during the temporary flow monitoring program conducted in October 2006 for this SMP.

Table E-4 Average Daily Flow and Peak Flow Factors at Connections to the VVWRA Interceptor

Victorville Valley Reclamation Authority*				City of Victorville**			
Meter	**Average Daily Flow (mgd)**	**Peak-hour Flow (mgd)**	**Peaking Factor**	**Avg. Daily Flow (mgd)**	**Peak-hour Flow (mgd)**	**Peaking Factor**	**Flow Meter**
VSD 1	0.606	1.345	2.22	0.65	1.12	1.74	6
VSD 2	2.284	4.312	1.89	2.35	3.50	1.49	3B,10
VSD 3	2.257	3.534	1.56	2.95	5.04	1.71	2,4
VSD 4	0.590	1.340	2.27	0.66	1.15	1.73	1
VSD 5	0.106	0.195	1.84	---	---	---	
VSD 6	0.873	1.448	1.66	1.24	1.73	1.40	5
Total	**6.716**	**12.174**	**1.81(avg)**	**7.85**	**12.54**	**1.60**	

*November 2004 VVWRA data from Victor Valley Wastewater Reclamation Authority "*Sewage Facilities Plan Update, Year 2005 Amendment*"
**City of Victorville temporary flow meter data recorded October 2006.

Flow

Flow in the Victorville sewage system is comprised of domestic, commercial and industrial wastes. All segments of the wastewater conveyance system must be capable of carrying the combined peak flows generated from each of these sources. The diurnal curve method was used to simulate wastewater flows in the hydraulic model. Diurnal patterns derived from October 2006 flow data were used for the hydraulic model.

Septic Systems

There are several areas within the Victorville sphere of influence where wastewater is treated with on-site septic systems. The VVWRA estimates in their *Sewage Facilities Plan Update Year 2005 Amendment* that 97% of Victorville's population is currently connected to the City's sewer system. For purposes of developing the hydraulic model, it was assumed that all existing septic systems will remain in operation.

Sewer Design

All sewer pipelines comprising the City's collection system shall be designed and constructed in accordance with the City's wastewater policies and the requirements put forth in this SMP. Wastewater system facilities shall be designed with sufficient capacity to convey peak flows from the tributary area for the design life of the facility, unless other criteria has been established and approved by the City.

The d/D criteria for existing sewers and the design of new sewers are summarized in Table E-5. The design flow rate for evaluating existing sewers and sizing new sewers is the peak hour dry weather flow rate (sewershed population x per capita load x peaking factor).

Table E-5 Hydraulic Criteria

Condition	d/D Criteria	
	Mainlines 8”-12” Dia.	Trunks > 12” Dia.
Threshold for rehabilitation of existing sewers	0.50	0.75
Maximum design depth allowed in new sewers	0.50	0.75

The required pipe size for new sewers was calculated based on flow velocity, slope, and capacity using d/D criteria. Gravity sewers shall be designed for a maximum velocity of 10 feet per second (fps) and a minimum velocity of 2 fps as calculated using the projected future peak-hour dry weather flow for the planning horizon. The required minimum pipe size, minimum slope, and pipe materials are provided in this SMP along with requirements for pipe alignment and manhole design.

1.2 DATA

Data collection and analysis for developing the sewer atlas geodatabase and constructing the hydraulic model consisted of collection of sewer data, population data, and flow data.

Sewer Data

Sewer data collection activities consisted of identifying and considering the availability and usefulness of the following sewer system source data:

1. As-Built Drawings
2. Pressure & Gravity Main Pipelines
3. Manholes
4. Pump Stations
5. Land Use Data
6. Population Data
7. Parcel and Street Centerline Data
8. Other Information

A Data Gap Analysis (DGA) was performed to identify the missing data necessary for developing the sewer atlas geodatabase and for constructing the hydraulic model.

Sewer Atlas Geodatabase

A new sewer atlas was developed for the City as part of this SMP. The new sewer atlas geodatabase is comprised of City of Victorville parcel information and sewer system data. In addition to providing an up-to-date depiction of the sewer system, the database features allow the atlas grid maps to be revised to reflect growth or changes in the sewer system.

Flow Data

The objectives for measuring wastewater flows in the City of Victorville were to determine the volume of wastewater being generated and conveyed through the major trunk and interceptor systems, to determine diurnal patterns for various areas of the City, and to calibrate the hydraulic model. Fourteen flow meter sites were selected to achieve these objectives. These flow meters measured the majority of the wastewater conveyed by the City conveyance system.

The flow monitoring locations were used as calibration points for the sewer hydraulic model. Recorded diurnal flows from two weeks of flow monitoring were used to develop a single representative diurnal curve for each flow monitoring location (separate representative curve for weekdays and weekends). The developed representative diurnal curves were used to calibrate the sewer hydraulic model.

Demand for Planning Horizons

Wastewater flows were estimated for planning horizons 2014 and 2030. The projected population for each planning area was used to calculate demand using flow generation factors based on land use. Estimated average daily wastewater flows for years 2014 and 2030 are summarized in Tables E-6 and E-7, respectively.

Table E-6 Projected Residential and Commercial Average Daily Wastewater Flow by Planning Area, Year 2014

Planning Area	Average Daily Wastewater Flow (MGD)	
	Residential	Commercial
Baldy Mesa	1,280	51
Central City	978	190
East Bear Valley	739	190
Golden Triangle	288	50
North Mojave	234	93
SCLA	38	208
Spring Valley Lake	0	0
West City	1,989	172
West Bear Valley	1,546	118
Northern Sphere Proposed Expansion	1,348	95
Outside Victorville Sphere of Influence	47	0
TOTAL	**8,487**	**1,167**

Notes: Residential includes Single Family Dwelling Units (SDU) and Multi-Family Dwelling Unit (MDU)
Commercial includes Retail Employees (RET) and Non-Retail Employee (NRET)

Table E-7 Projected Residential and Commercial Average Daily Wastewater Flow by Planning Area, Year 2030

Planning Area	Average Daily Wastewater Flow (MGD)	
	Residential	Commercial
Baldy Mesa	3,316	140
Central City	1,075	204
East Bear Valley	930	239
Golden Triangle	707	105
North Mojave	551	235
SCLA	82	451
Spring Valley Lake	0	0
West City	3,350	279
West Bear Valley	1,851	167
Northern Sphere Proposed Expansion	3,744	264
Outside Victorville Sphere of Influence	130	0
TOTAL	**15,736**	**2,084**

Notes: Residential includes Single Family Dwelling Units (SDU) and Multi-Family Dwelling Unit (MDU)
Commercial includes Retail Employees (RET) and Non-Retail Employee (NRET)

1.3 SEWER MODEL

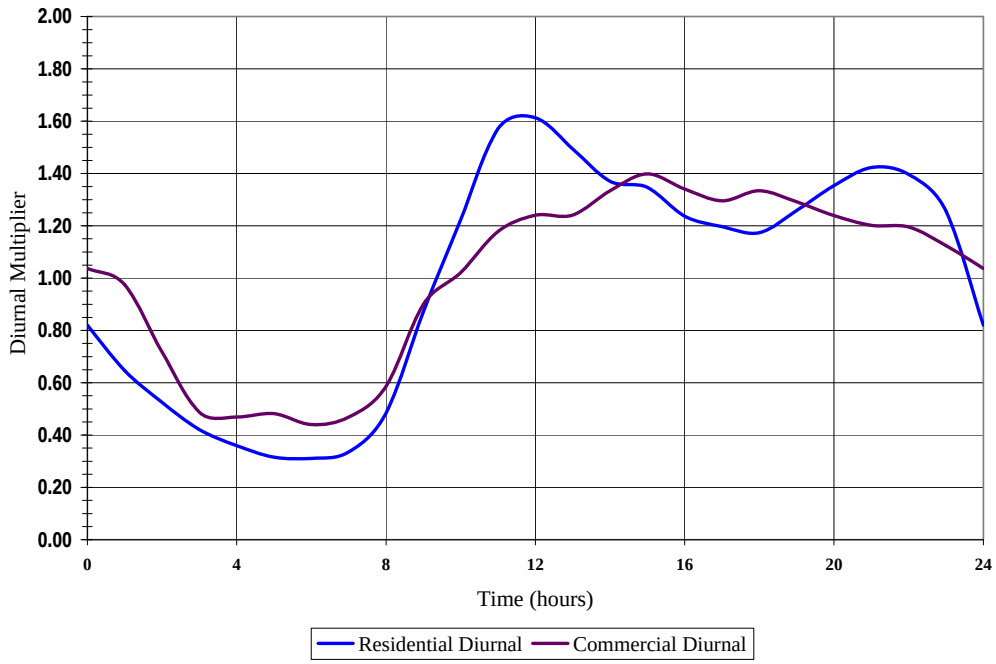
The purpose of the hydraulic model was to identify hydraulic deficiencies of the sewer collection system for current conditions, and to analyze the impact of future population growth on the system. The hydraulic evaluation was performed for current conditions (2006), and for years 2014 and 2030.

The City's existing wastewater collection system was constructed in the hydraulic model from the sewer atlas geodatabase. Once the pipe and manhole network were finalized, the model was loaded with wastewater flows calculated based on population data and hospital and industrial loads. For current conditions, diurnal patterns were derived from diurnal curves generated for each flow monitoring sewer shed.

Once the model calibration was complete, diurnal patterns were derived for residential and commercial land uses. A residential diurnal curve and a commercial diurnal curve were generated based on flow meter data collected in October 2006. These curves

were used in the hydraulic model to simulate diurnal patterns of flows from future developments. The derived residential and commercial diurnal curves are presented in Figure E-1.

Figure E-1 Residential and Commercial Diurnal Curves Derived from Flow Meter Data



1.4 HYDRAULIC EVALUATION

The hydraulic model was used to simulate three flow scenarios: current conditions (2006), year 2014 conditions, and year 2030 conditions using current and projected wastewater demands. Model simulations were performed to identify system deficiencies based on d/D criteria for existing and future demands, and to propose a Capital Improvement Program.

The methodology for evaluating system deficiencies for current conditions (2006) consisted of performing model simulations on the existing system and identifying pipes with d/D ratios higher than the d/D criteria. The existing wastewater system in the hydraulic model and manhole loading of current wastewater demands for model

simulation are shown on Figure 5-3. Deficiencies for current conditions, defined as pipes that exceeded the maximum allowable d/D criteria, are shown on Figure 5-4.

In order to evaluate system deficiencies for future conditions, sewer trunks were extended in the hydraulic model to simulate service of future development demands. Hydraulic simulations were run for 2014 conditions using existing and future projected pipes, and wastewater demands. The manhole loading for Year 2014 wastewater demands for model simulation is shown on Figure 5-5. Deficiencies for Year 2014 conditions are shown on Figure 5-6.

Hydraulic simulations were run for 2030 using the existing and projected future system with 2014 upgrades identified via the hydraulic evaluation performed for year 2014 conditions. The manhole loading for Year 2030 wastewater demands for model simulation is shown on Figure 5-7. Deficiencies for Year 2030 conditions are shown on Figure 5-8. If a pipe was deficient for both 2014 and 2030 conditions, the proposed pipe upgrade was sized for 2030 conditions.

1.5 RECLAIMED WATER

VVWRA has been working with its member agencies, including the City of Victorville, over the past several years to study the feasibility of developing recycled water programs.

One option studied was the concept of constructing sub-regional reclamation facilities located at strategic locations throughout the service area. Wastewater would be diverted from the existing sewer system at key points in the system and directed to a new reclaimed water treatment facility, thereby avoiding capacity improvements to the downstream pipe network.

Potential Reclaimed Water Users

Potential reclaimed water users were identified based on four categories: Tier 1, Tier 2, Tier 3, and Heavy Industrial. Tier 1 users consist of large irrigated areas such as golf courses, schools, parks, etc. Tier 2 users consist of right-of-ways, easements, and irrigated areas along highways and major roadways. Tier 3 users consist of residential and commercial reclaimed water use. For the purpose of this study, Tier 3 reclaimed

water use was assumed to be for residential toilet flushing and irrigation. Heavy industrial users consist of water use for industrial purposes such as cement factories and power plants. Figure 6-1 shows potential reclaimed water users and demands by planning area. Table E-8 summarizes potential reclaimed water demand for each type of user for the City of Victorville sphere of influence.

Table E-8 Estimated Potential Reclaimed Water Demand

Potential Reclaimed Water User	Potential Reclaimed Water Demand (acre-feet/year)
Tier 1	9,810
Tier 2	5,068
Tier 3	29,891
Heavy Industrial	21,650
Total Estimated Potential Reclaimed Water Demand	**66,420**

Potential Sub-regional Treatment Facility Sites

There are three sub-regional treatment facilities that have been studied by VVWRA: Green Tree, Upper Narrows, and West Sub-regional Facility. Based on a review of the Green Tree site, the City should consider a site nearby due to its beneficial location from a hydraulic perspective. The Upper Narrows site is also centrally located; however, fewer potential users are nearby. The West Sub-regional Facility is located in the Baldy Mesa planning area. This facility has excellent potential and its viability has increased due to planning work of the Baldy Mesa Water District. An in-depth study is recommended to identify additional sites in order to provide more options from which the City can choose.

1.6 CAPITAL IMPROVEMENT PROGRAM

The deficient pipes identified in the hydraulic evaluation were used as the basis for the capital improvement program for the 2014 and 2030 planning horizons. Deficient pipes were grouped into pipe reaches for budgetary cost estimates.

The Capital Improvement Program for the 2014 planning horizon is shown on Figure 7-1. There are 46 pipe reaches comprised of approximately 252,000 feet of pipe. Of this total, 157,000 feet of new pipe is required to service future growth areas, and 97,000 feet of existing pipe will require upsizing as a result of future growth. Improvements for year 2014 are summarized in Table 7-1.

The Capital Improvement Program for the 2030 planning horizon is shown on Figure 7-2. There are 23 pipe reaches comprised of 49,000 feet of existing pipe that will require upsizing as a result of future growth. Improvements for year 2030 are summarized in Table 7-2.

The total capital costs for the 2014 and 2030 Capital Improvement Programs are estimated at $43,199,000 and $12,669,000, respectively. The 2014 capital costs are comprised of $25,865,000 for installation of new piping to service future growth areas, and $17,334,000 to upgrade existing piping to meet the hydraulic criteria for 2014 demands. The 2030 Capital Improvement Program cost of $12,669,000 is for upgrading existing piping to meet the hydraulic criteria for 2030 demands.

CHAPTER 2 PLANNING CRITERIA

2.1 INTRODUCTION AND OBJECTIVES

This *Sewer System Master Plan* (SMP) describes the City of Victorville's (City) plan for developing its system of trunk and interceptor sewers. It describes the existing sewers and pumping facilities, the City sewer atlas geodatabase, system planning criteria, hydraulic evaluation of the system for current conditions and future development, and the proposed Capital Improvement Program for the development of future sewer facilities.

The City recently experienced a period of rapid growth. With few exceptions, new developments are being connected to Victorville's wastewater collection system. According to *The City of Victorville General Plan – Resource Element,* "…Sewer trunk lines are available for use by new development throughout the majority of the incorporated area of the City, including some areas where rural subdivisions containing lots in excess of 18,000 square feet exist. All new developments are required to connect to public sewer, excepting rural subdivisions not located within two hundred feet of a sewer line." In order to achieve maximum uniformity in planning, engineering, and construction practices, and to ensure the long-term integrity of its sewer infrastructure, the City closely regulates the construction of new sewers.

The Project Planning Criteria (PPC) specify the minimum requirements for sewer system design. City planning criteria and sewer design requirements are defined in this chapter.

2.2 PROJECT PLANNING CRITERIA

2.2.1 STUDY AREA

The City of Victorville is located in southwestern San Bernardino County, California. The City is located within Victor Valley, which is a sub region of the Mojave Desert where the geography and climate can be described as "High Desert" (Figure 2-1). Situated at an elevation of approximately 2,900 feet, Victorville experiences hot, dry summers and occasional snow in the winter. Temperatures range from below freezing up to 110ºF in the summer. Annual precipitation is approximately 3.9 inches per year.

The study area for this SMP is the City of Victorville sphere of influence boundary, which is shown on Figure 2-2. The SMP herein identifies the major sewer facilities needed to satisfy the sewage conveyance requirements within this area for the current conditions (year 2006), and for years 2014 and 2030 planning horizons.

The City Planning Department provided the distribution of planning areas in the City sphere of influence, as shown on Figure 2-2. Each planning area is divided into Traffic Analysis Zones (TAZ).

2.2.2 POPULATION ESTIMATES AND LAND USE

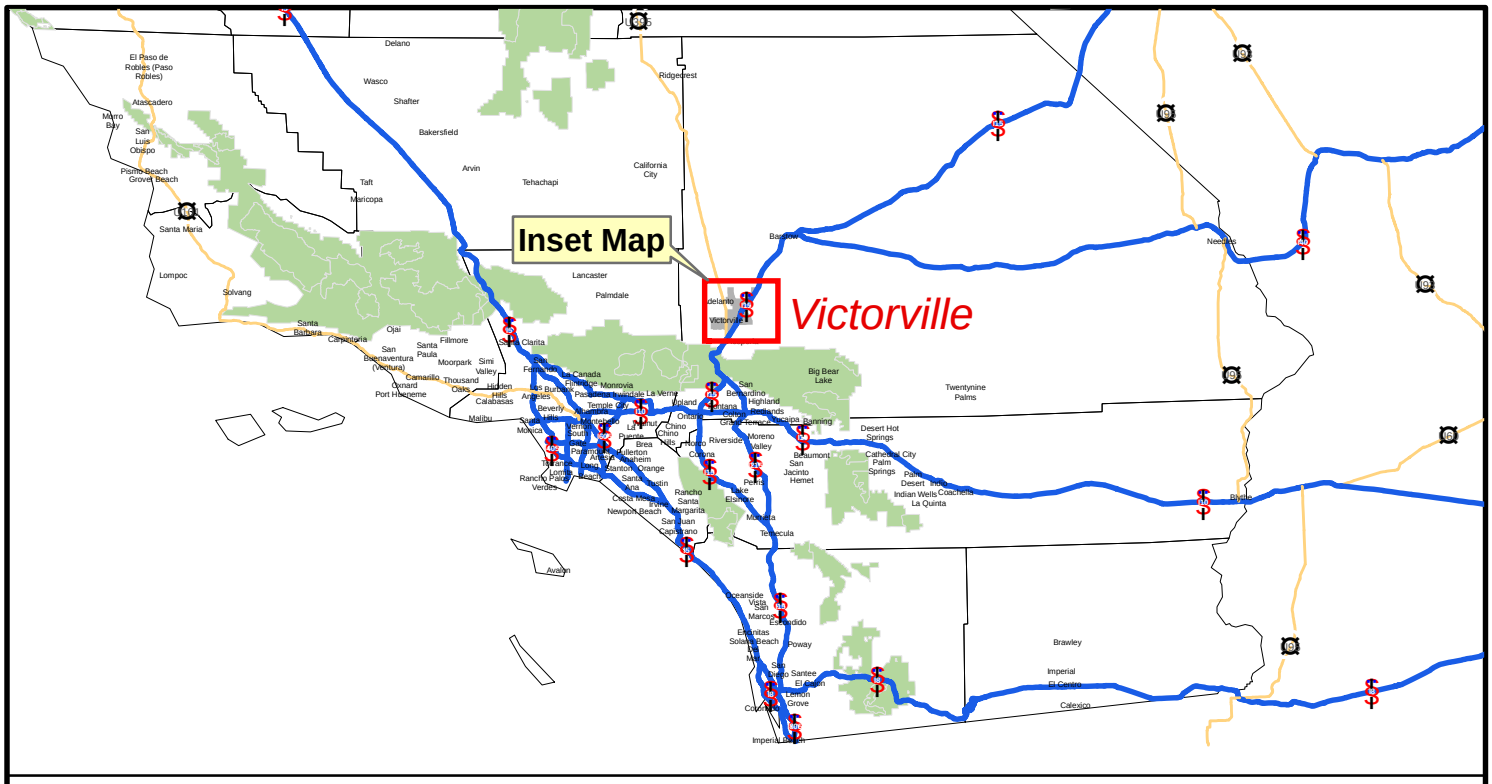
Population estimates for the City's sphere of influence forms the basis for computing wastewater flow. It is customary to develop wastewater design flows by multiplying the estimated population by an estimated per capita wastewater flow generation factor. In lieu of direct population data, equivalent dwelling units (EDU) data can be used. An EDU defines the number of people per dwelling unit. The EDU method was used to generate wastewater flows for this SMP.

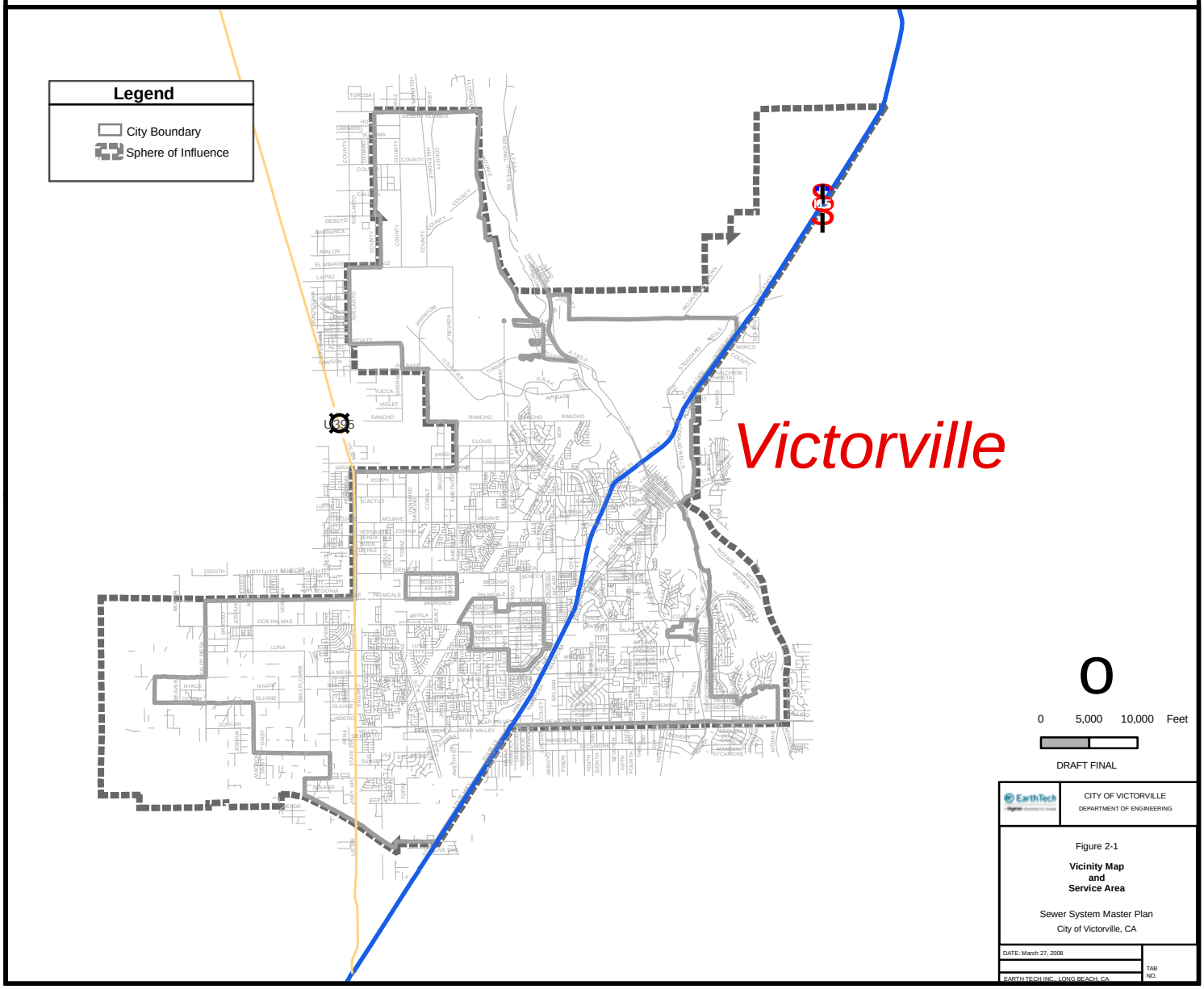
Recent population trends were published in the *City of Victorville General Plan* (the General Plan) for Victorville and the surrounding communities. As part of Update 2000 of the General Plan, the official population estimates from the California Department of Finance were provided. Table 2-1 shows the estimated City of Victorville population estimates in five year increments for the years 1990 through 2005, based on data provided in the General Plan and from more recent Traffic Analysis Zone data.

Table 2-1 Recent City of Victorville Population Trends

	1990 Pop.*	1995 Pop.*	% change in 5 yrs	2000* Pop.	% change in 5 yrs	2005 Pop. **	% change in 5 yrs
Victorville	40,674	58,851	45%	64,455	10%	96,794	50%

* Data from *City of Victorville General Plan*
** Data from spreadsheet filename: *VVSED-SubtotalbyPlngAreaDistricts-010208.xls*





CITY OF VICTORVILLE
DEPARTMENT OF ENGINEERING

Figure 2-1

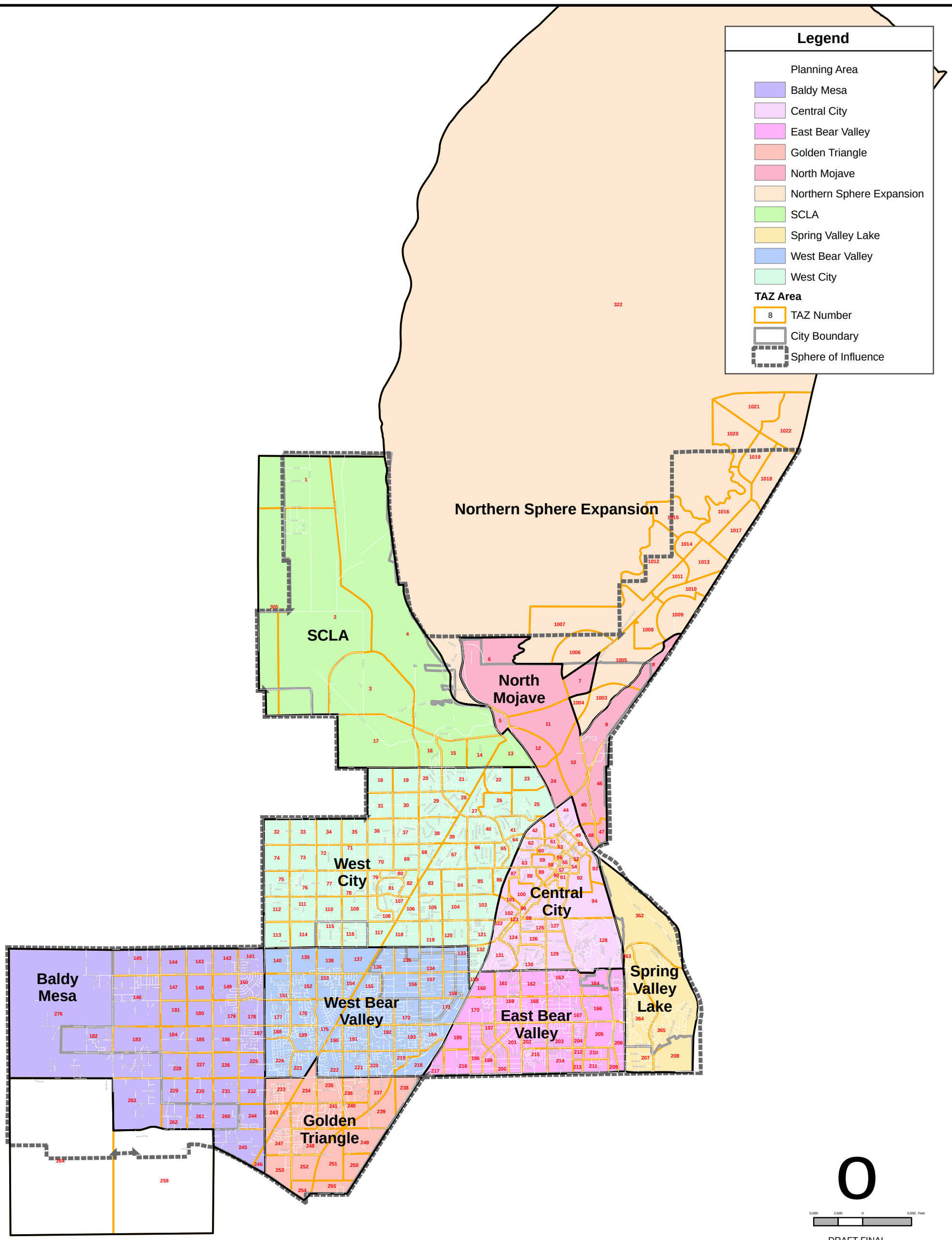
Vicinity Map and Service Area

Sewer System Master Plan
City of Victorville, CA

DATE: March 27, 2008

EARTH TECH INC., LONG BEACH, CA

TAB NO.



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CITY OF VICTORVILLE

DEPARTMENT OF ENGINEERING

Figure 2-2

Planning Areas and TAZ Areas

Sewer System Master Plan

City of Victorville, CA

DATE: March 27, 2008

EARTH TECH INC., LONG BEACH, CA

TAB NO.

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The City provided dwelling unit counts and population for the year 2005. This information was provided to Earth Tech in an Excel spreadsheet titled "*VVSED-SubtotalbyPlngAreaDistricts-010208.xls".* The heading on the file identifies the data as "City of Victorville Land Use & Socio-Economic Data – December 2005". In the spreadsheet these data were cross referenced with traffic analysis zones (TAZ) areas. The number of single family and multi-family EDUs and retail and non-retail employee population that existed within each TAZ area as of December 2005 was provided. These data were used to define residential and employment population figures for the current conditions (year 2006) scenario in the hydraulic model. A summary of the data is shown in Table 2-2.

Table 2-2 City of Victorville December 2005 Traffic Analysis Zone (TAZ) Population and Dwelling Unit Data

Land Use*	Totals
Single Family Dwelling Units (SDU)	25,970
Multi-Family Dwelling Units (MDU)	6,953
Total Dwelling Units	32,923
Retail Employees (RET)	10,105
Non Retail Employees (NRET)	17,159
Total Employees	27,264
Avg. persons/occupied Dwelling Unit**	2.94
Est. Dec. 2005 Population	**96,794**

* Data from spreadsheet filename: *VVSED-SubtotalbyPlngAreaDistricts-010208.xls*
**The average number of persons per occupied dwelling unit defines an EDU. Therefore, based on TAZ data the population equivalent of one EDU equals 3.2 persons. Note that the City of Victorville Planning Department uses a value of 2.9 persons per EDU for both single family and multi family land uses. This value was used to develop wastewater flows in the hydraulic model.

The number of single family and multi-family EDUs and retail and non-retail employee population that were connected to the sewer system as of December 2005 was estimated based on information provided by the City for each TAZ area. The number of "sewered" SDU, MDU, RET, and NRET as of December 2005 is presented in Table 2-3 for each planning area.

Table 2-3 Residential and Commercial Employee Population by Planning Area, Year 2005

Planning Area	SDU	MDU	RET	NRET
Baldy Mesa	829	0	5	0
Central City	3,574	2,074	2,742	4,743
East Bear Valley	2,404	1,468	2,707	3,959
Golden Triangle	321	0	665	118
North Mojave	55	287	50	479
SCLA	78	0	0	2,956
Spring Valley Lake	0	0	0	0
West City	5,162	2,331	1,215	3,363
West Bear Valley	8,418	0	2,459	1,279
Northern Sphere Proposed Expansion	0	0	0	27
Outside Victorville Sphere of Influence	0	0	0	0
TOTAL	**20,841**	**6,160**	**9,843**	**16,924**

Notes: Population represented in this table is for residential and commercial units connected to the Victorville sewer system.
SDU – Single Family Dwelling Unit
MDU – Multi-Family Dwelling Unit
RET – Retail Employee
NRET – Non-Retail Employee

Population projections for 2014 and 2030 were estimated based on data provided by the City Planning Department. The Planning Department provided the number of single family and multi-family EDUs and retail and year 2005, and projected population for 2035 and ultimate buildout in the Excel spreadsheet titled "VVSED-SubtotalbyPlngAreaDistricts-010208 ". The number of EDUs and employee population was then calculated for years 2014 and 2030 by TAZ area using straight-line interpolation between 2005 and 2035 data. The projected single family and multi-family EDUs and retail and non-retail employee population for each planning area are presented for Years 2014 and 2030 in Tables 2-3 and 2-4, respectively. Wastewater flows for these two planning horizons were based on the data presented in Tables 2-3 and 2-4, as further discussed in Section 3.5. The population data provided by the City Planning Department is provided in Appendix A.

Table 2-3 Projected Residential and Commercial Employee Population by Planning Area, Year 2014

Planning Area	SDU	MDU	RET	NRET
Baldy Mesa	4,967	2,872	1,912	167
Central City	3,802	2,183	3,010	4,807
East Bear Valley	2,875	1,652	3,424	4,375
Golden Triangle	1,296	467	1,883	168
North Mojave	990	443	111	3713
SCLA	231	0	75	8494
Spring Valley Lake	0	0	0	0
West City	7,633	4,546	3,043	4023
West Bear Valley	9,071	397	3,525	1344
Northern Sphere Proposed Expansion	4,139	4,113	1,489	2,432
Outside Victorville Sphere of Influence	286	0	0	0
TOTAL	**35,291**	**16,674**	**18,472**	**29,523**

Notes: Population represented in this table is for residential and commercial units connected to the Victorville sewer system.
SDU – Single Family Dwelling Unit
MDU – Multi-Family Dwelling Unit
RET – Retail Employee
NRET – Non-Retail Employee