CITY OF MORGAN HILL

City of Morgan Hill

Water Supply Assessment

For The

Downtown Specific Plan

FINAL DRAFT

May 2008

AKEL
ENGINEERING GROUP, INC.

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May 31, 2008

City of Morgan Hill
17555 Peak Avenue
Morgan Hill, CA 95037-4128

Attention: Kathy Molloy Previsich, Community Development Director
Jim Ashcraft, P.E., Public Works Director

Subject: Downtown Specific Plan – Water Supply Assessment
(SB 610 Requirements)

Dear Kathy:

We are pleased to submit this Water Supply Assessment (WSA) report for the Downtown Specific Plan project. This report is intended to satisfy the requirements of SB 610 by evaluating the impact of this project on the water supplies through a 20-year horizon, as stipulated in the SB 610 requirements.

The report quantifies this project's water supply requirements, potential impact on the City's supply availability, a revised City-wide water demand balance through 2030, discussions on the supply reliability, and supply vs. demand comparisons.

Many sections in this report refer to the City's 2005 Urban Water Management Plan, to the Santa Clara Valley Water District 2005 Urban Water Management Plan, and to other relevant reports and documents.

We are extending our thanks to City staff whose courtesy and cooperation were valuable components in completing this study and producing this report.

Sincerely,

AKEL ENGINEERING GROUP, INC.

Tony Akel, P.E.
Principal

Enclosure: Report

CITY OF MORGAN HILL

City of Morgan Hill

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City of Morgan Hill

Downtown Specific Plan
Water Supply Assessment

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DOWNTOWN SPECIFIC PLAN
WATER SUPPLY ASSESSMENT

1.0 PURPOSE

This Water Supply Assessment (WSA) report for the Downtown Specific Plan project is intended to satisfy the requirements of SB 610 by evaluating the impact of this project's water demands on the water supplies through a 20-year horizon, as stipulated in the SB 610 requirements.

The report includes a discussion of this project's water supply requirements and potential impact on the City's supply availability. The report also includes excerpts from the 2002 Water System Master Plan (2002 WSMP) and 2005 Urban Water Management Plan (2005 UWMP).

2.0 RELEVANT REPORTS

Several reports provide detail information and factual data related to this analysis. Exhibits from these reports were included in the appendices for ease of referencing.

City of Morgan Hill, Downtown Specific Plan (2008). This plan provides a detailed description of the project, including many useful tables and exhibits that have been included in the appendix of this report. Information included in this report regarding existing and proposed land use designations were used as the basis for this analysis.

City of Morgan Hill, 2005 Urban Water Management Plan (2005 UWMP). The City's 2005 Urban Water Management Plan (UWMP), which has been adopted by Council and submitted to the Department of Water Resources (DWR), addresses the requirements of the Urban Water Management Planning Act and includes the following elements: existing and future water demand projections, existing water supply facilities, groundwater basin condition, water demand management measures, and a water shortage contingency plan.

City of Morgan Hill, 2002 Water System Master Plan (2002 WSMP). The City's 2002 Water System Master Plan (WSMP) presents historical and projected water demands through 2030, identifies existing and future water system capacity deficiencies, recommends projects to correct these deficiencies, and identifies major water facilities for servicing future developments. These facilities include transmission mains, storage reservoirs, and supply wells.

Santa Clara Valley Water District, 2005 Urban Water management Plan (2005). This report is intended to meet the requirements of the California Urban Water Management Planning Act and to present important information on water supply, water usage, recycled water and water use efficiency programs in Santa Clara County. It also serves as a valuable

resource for securing and sustaining the water supply future for Santa Clara County, through 2030.

Santa Clara Valley Water District, Integrated Water Resources Planning Study (2003). This report documents the planning framework and supporting modeling tools that enable the District to identify and select specific water investment resources. The planning framework serves as a guide to assist ongoing analysis of the water supply alternatives and challenges that face the District.

Santa Clara Valley Water District, Groundwater Management Plan (2001). This report documents groundwater management programs and goals for ensuring the groundwater resources are sustained and protected throughout the District. The report includes groundwater supply management programs that replenish the groundwater basin, sustain the basin's water supplies, address groundwater conditions, and sustain storage reserves for use during dry periods. The report also includes groundwater monitoring programs that provide data to assist the District in evaluating and managing the groundwater basin.

3.0 PROJECT DESCRIPTION

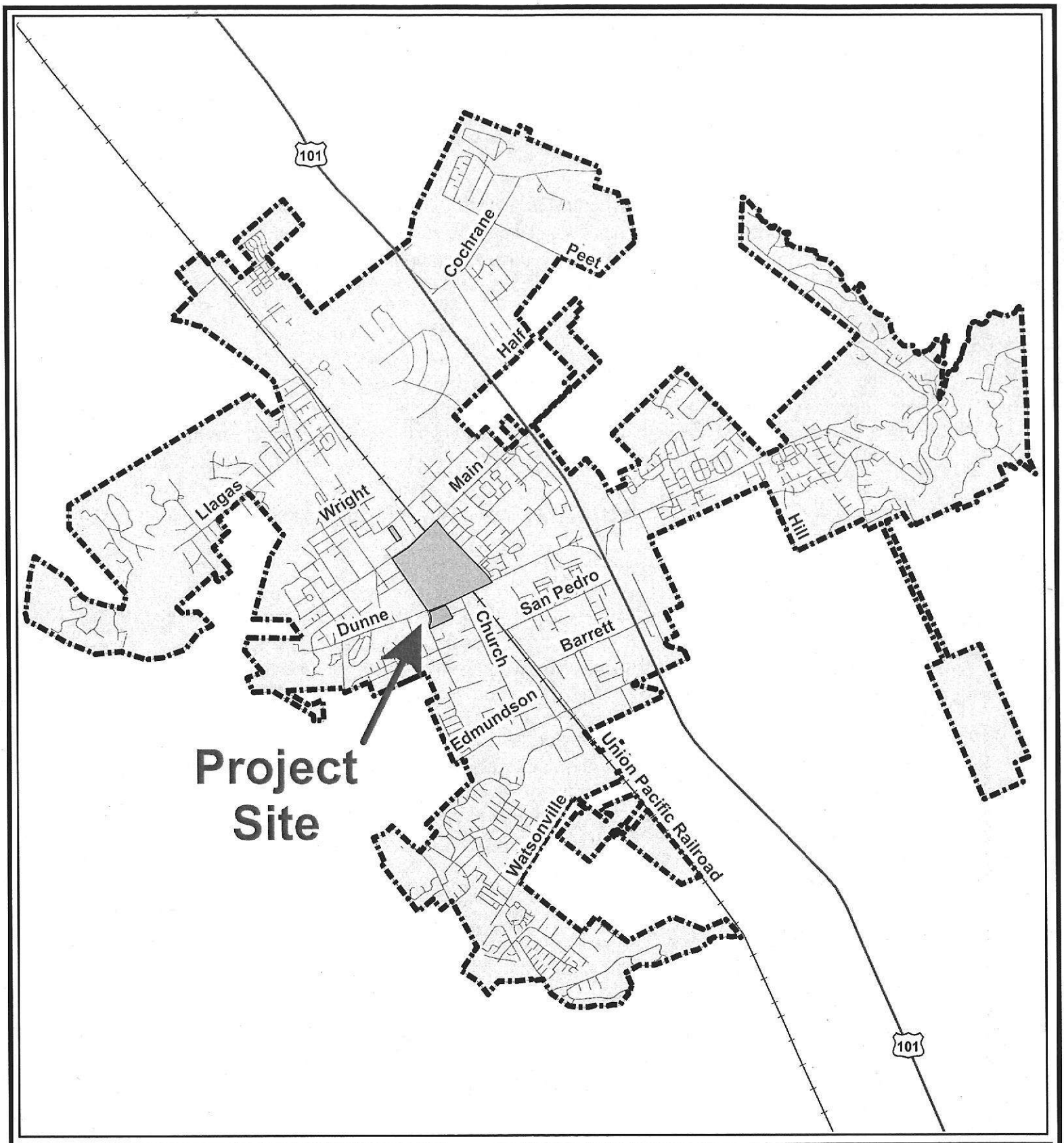
The Downtown Specific Plan (DSP) outlines an area of approximately 116 acres located in central Morgan Hill in the downtown area (Figure 1). The Specific Plan area is generally bound by Butterfield Boulevard on the east, East Dunne Avenue on the south, Del Monte Avenue on the West, and Main Avenue on the north (Appendix A).

The Specific Plan assigns "block numbers" for ease of reference, and includes blocks numbers 1 through 18, as shown on Appendix A. This study also includes changes in blocks 19 and 20. Only a small portion of Block 19, which is the existing Britton School and ball fields, is proposed to change. Block 20 is located at the southwest corner of West Dunne Avenue and Monterey Avenue.

The Specific Plan includes amending the current land use designations assigned to the area by the existing City of Morgan Hill General Plan (2001, as amended through 2007). The existing and approved land use designations include mostly residential, retail, office, and public facilities as outlined in the detailed development analysis, through the planning horizon of 2030, as shown on Appendix A.

The analysis, summarized in Table 1, lists the existing developments, net additional developments, and total developments for the intermediate horizon of 2015 (Phase 1), and the planning horizon of 2030 (Phase 2). More details about Block specific projections are listed in Appendix B.

The project site was within the existing City limits and ultimate growth boundary during the preparation of the City's 2002 WSMP and the 2005 UWMP.



Legend

- City Limits Boundary
- Project Area
- Local Roads
- Railroads
- Interstates

0 0.25 0.5 1 Miles

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FIGURE 1
PROJECT VICINITY
DOWNTOWN SPECIFIC PLAN
WATER SUPPLY ASSESSMENT
CITY OF MORGAN HILL

CITY OF MORGAN HILL

Table 1 Development Analysis (Blocks 1-20 and CC-R District Areas)

Downtown Specific Plan - Water Supply Assessment

City of Morgan Hill

Land Use	Existing Development [1,2]	Development by 2015 [1,2]		Development by 2030 [1,2]	
		Net New (from Existing)	Total	Net New (from Existing)	Total
Retail	213,365	21,221	234,586	93,490	306,855
Residential	201	850	1,051	1,190	1,391
Office/Service	122,248	30,157	152,405	85,591	207,839

Notes:

1) Source: Morgan Hill Downtown Specific Plan, RBF, May 8 2008.

2) Units: Retail (sq.ft.), Residential (D.U.), Office/Service (sq.ft.)

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Therefore, the 2005 UWMP addressed the water supplies required for development on this property, based on the City's existing land use element of the General Plan.

4.0 PROJECT WATER REQUIREMENTS

The methodology for estimating and projecting water demands in the 2002 WSMP (and 2005 UWMP) is typical of water master plans and was based on water demand coefficients. These coefficients are factors that vary depending on the land use types and are higher for land uses requiring larger amounts of water. The coefficients, which are usually expressed in gallons per day per acre, *are applied to acres* (based on their land use designation) for calculating the average water demands.

4.1 2005 UWMP Demands

The 2002 WSMP and 2005 UWMP estimated the demand projections at ultimate buildout from this project's planning area at approximately **246 AFY**. Table 2 lists the land uses, acreages, 2002 WSMP land use coefficients, and corresponding water requirements for the project.

4.2 Updated Demands

Since the Downtown Specific Plan provides more specific details on projected land uses (Table 1), including the number of dwelling units for residential areas, and square feet of office space for commercial/retail areas, a modified methodology for projecting water demands is used in this analysis.

In this methodology, documented in Tables 3 and 4, the water demand coefficients are *applied to residential dwelling units and commercial square feet of office space*. The water demand coefficients are based on coefficients used in estimating the City's wastewater flows, as used in a 2007 wastewater treatment plant analysis. The wastewater flow coefficients are increased by 10% to account for landscaping needs, since not much landscaping is expected within the Specific Plan blocks.

Table 3 indicates that the revised water demand requirements for the project planning area at 2015 are estimated at approximately **269 AFY**, which is equivalent to the 2005 UWMP ultimate water projections from the same area. The revised water demand projections for ultimate buildout of 2030 are estimated at approximately **495 AFY** (Table 4).

Although the entire Downtown Specific Plan area was included in the water supply and demand analysis in the 2005 UWMP, the proposed change in land use will thus increase water demands for this planning area by **249 AFY**.

Table 2 Planning Area Water Demand Projections from 2002 WSMP

Downtown Specific Plan - Water Supply Analysis

City of Morgan Hill

Land Use	Average Annual Water Demand Coefficients[2]		Downtown Core		Outside Core		Block 19		Block 20		Total	
	(gpd/na)	(gpm/na)	Area (na)	Demand (gpm)	Area (na)	Demand (gpm)	Area (na)	Demand (gpm)	Area (na)	Demand (gpm)	Water Demand (gpm)	(AFY)
Residential Estate	360	0.3	3.23	0.81							0.8	1.3
Single Family Low	1,580	1.1										
Single Family Medium	2,160	1.5										
Multi-Family Low	3,170	2.2	12.50	27.52	4.69	10.33					37.8	61.0
Multi-Family Medium	4,610	3.2			9.02	28.88					28.9	46.6
Commercial	2,020	1.4	33.90	47.55					7.96	11.17	58.7	94.7
Industrial	2,590	1.8			5.25	9.44					9.4	15.2
Open Space	720	0.5										
Public Facilities	1,440	1.0	7.80	7.80	6.87	6.87	2.06	2.06			16.7	27.0
Total			57.43	83.68	25.83	55.52	2.06	2.06	7.96	11.17	141.3	**246**

Notes:

1) Source: 2002 WSMP, as used in the 2005 UWMP

2) units per net acre (na)

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Table 3 Planning Area Revised Water Demand Projections Through 2015
Downtown Specific Plan - Water Supply Assessment
City of Morgan Hill

Land Use	Existing Development[1]	Total Net New Development[1,2]	Total Development[1,2]	SCRWA Use-Specific Wastewater Flow Coefficient[3]		Water Demand Coefficient[4]		Existing Water Demand		Additional Water Demand		Total Water Demand	
								(gpm)	(AFY)	(gpm)	(AFY)	(gpm)	(AFY)
Retail	213,365	21,221	234,586	0.08	gpd/sq ft	0.088	gpd/sq ft	13.0	21.0	14.3	23.1	1.3	2.1
Residential	201	850	1,051	250	gpd/DU	275	gpd/DU	38.4	61.9	200.7	323.7	162.3	261.8
Office/Service	122,248	30,157	152,405	0.14	gpd/sq ft	0.154	gpd/sq ft	13.1	21.1	16.3	26.3	3.2	5.2
							Total	64.5	104.0	231.3	373.2	166.8	**269**

Notes:
1) Units: Retail (sq.ft.), Residential (D.U.), Office/Service (sq.ft.)
2) Source: RBF Consulting, updated 4/8/08
3) SCRWA Adopted Coefficients, Wastewater Treatment Plant Study, 2007.
4) Conversion Factor for Water Demand Coefficients: 10% higher than wastewater coefficients

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Table 4 Planning Area Revised Water Demand Projections Through 2030
Downtown Specific Plan - Water Supply Assessment
City of Morgan Hill

Land Use	Existing Development[1]	Total Net New Development[1,2]	Total Development[1,2]	SCRWA Use-Specific Wastewater Flow Coefficient[3]		Water Demand Coefficient[4]		Existing Water Demand		Additional Water Demand		Total Water Demand	
								(gpm)	(AFY)	(gpm)	(AFY)	(gpm)	(AFY)
Retail	213,365	93,490	306,855	0.08	gpd/sq ft	0.088	gpd/sq ft	13.0	21.0	5.7	9.2	18.8	30.2
Residential	201	1,190	1,391	250	gpd/DU	275	gpd/DU	38.4	61.9	227.3	366.6	265.6	428.5
Office/Service	122,248	85,591	207,839	0.14	gpd/sq ft	0.154	gpd/sq ft	13.1	21.1	9.2	14.8	22.2	35.9
							Total	64.5	104.0	242.1	390.5	306.6	**495**

Notes:
1) Units: Retail (sq.ft.), Residential (D.U.), Office/Service (sq.ft.)
2) Source: RBF Consulting, updated 4/8/08
3) SCRWA Adopted Coefficients, Wastewater Treatment Plant Study, 2007.
4) Conversion Factor for Water Demand Coefficients: 10% higher than wastewater coefficients

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5.0 CITY-WIDE WATER BALANCE UPDATE

This study included a City-wide water balance update that revisited the assumptions used in the 2002 Water System Master Plan and 2005 Urban Water Management Plan. Table 5 (Section A) provides a summary of the water balance listing 7,535 AFY for existing conditions, as used in the City's 2002 WSMP.

5.1 2002 WSMP and 2005 UWMP City-Wide Water Balance

The projected 2030 water demands, as calculated in the 2002 WSMP and as reflected in the 2005 UWMP, are estimated at 13,396 AFY (Table 5 Section B). It should be noted that the coefficients used for these projections reflect very low conservation efforts estimated at 9.4% and 4.0% for residential and non-residential land uses, respectively.

The coefficients used in Table 5 (Sections A and B) for estimating water demands at 2030 are deemed conservative, when compared to adjacent municipalities with similar size and consumption behaviors. It should also be noted that the City's 2005 UWMP used the same projections as the 2002 WSMP and did not take credit for additional water conservation practices.

5.2 City-Wide Water Balance Update

When more reasonable coefficients are used in Table 5 (Section C), the total water demand balance drops to 12,827 AFY at 2030. These revised coefficients reflect more reasonable conservation efforts estimated at 15.0% and 5.0% for residential and non-residential land uses, respectively.

The total projected City-wide water balance credit from the 2002 WSMP assumptions, and before taking into account the Downtown Specific Plan changes, is estimated at **569 AFY** (Table 5, Section D). For the purpose of this study, this represents the 2008 Water Balance update to the 2002 WSMP projections.

Changes to the assumptions in the Downtown Specific Plan project area are anticipated to result with a water balance reduction from the previous of 249 AFY, as stipulated in the previous section. After accounting for these changes, the City-wide **water balance credit** is reduced from 569 AFY to approximately **320 AFY** (Table 5, Section E).

5.3 Conservation Impact Updates

The projected credit in the City-wide water balance is further supported by the Water Conserving Landscapes Ordinance adopted by the City of Morgan Hill and by revised SCVWD projections for the Llagas subbasin that account for the District ongoing water conservation programs.

City of Morgan Hill Water Conserving Landscapes Ordinance (February 2006). This ordinance, which was adopted by the City council in February 2006, regulates landscape design, construction, and maintenance. It is intended to comply with Government Code

Table 5 Updated City-Wide Water Demand Balance

Downtown Specific Plan - Water Supply Assessment

City of Morgan Hill

Land Use Category	Land Use Code	Residential Density	2002 Service Area [1]	UGB Service Area [1]	Average Annual Water Demand Coefficients		Adjustment Factor [2,3]	Water Balance	
		(DU/ga)	(net acres)	(net acres)	(gpd/na)	(gpm/na)	(%)	(gpm)	(AFY)
A. Existing Conditions Water Balance (2002 WSMP and 2005 UWMP)									
Residential Estate	RE	< 1	513	1083	360	0.25	none	128	207
Single Family Low	SFL	1 - 3	597	1,144	1,580	1.10	none	657	1,059
Single Family Medium	SFM	3 - 5	1,083	1,734	2,160	1.50	none	1,625	2,620
Multi-Family Low	MFL	5 - 14	302	493	3,170	2.20	none	664	1,072
Multi-Family Medium	MFM	14 - 21	98	162	4,610	3.20	none	314	506
Commercial	COM, GCOM, OIND, GIND, MIX		339	774	2,020	1.40	none	475	766
Industrial	IND		382	725	2,590	1.80	none	688	1,109
Open Space	OS		151	1,005	720	0.50	none	76	122
Public Facilites	PUB		45	238	1,440	1.00	none	45	73
Rural County	RC		6	448	360	0.25	none	2	2
Totals			3,516	7,806				4,672	**7,535**
B. UGB Conditions Water Balance (2002 WSMP and 2005 UWMP)									
Residential Estate	RE	< 1	513	1083	330	0.23	9.4%	245	396
Single Family Low	SFL	1 - 3	597	1,144	1,440	1.00	9.4%	1,140	1,839
Single Family Medium	SFM	3 - 5	1,083	1,734	1,960	1.36	9.4%	2,357	3,801
Multi-Family Low	MFL	5 - 14	302	493	2,870	1.99	9.4%	983	1,585
Multi-Family Medium	MFM	14 - 21	98	162	4,170	2.90	9.4%	470	758
Commercial	COM, GCOM, OIND, GIND, MIX		339	774	1,930	1.34	4.0%	1,040	1,678
Industrial	IND		382	725	2,590	1.73	4.0%	1,253	2,020
Open Space	OS		151	1,005	690	0.48	4.0%	482	778
Public Facilites	PUB		45	238	1,380	0.96	4.0%	228	368
Rural County	RC		6	448	350	0.24	4.0%	107	173
Totals			3,516	7,806				8,305	**13,396**
C. 2008 Revised UGB Conditions Water Balance 2008 Update reflects more reasonable demand coefficients and Water Conservation efforts by City of Morgan Hill New Ordinance and according to Santa Clara Valley Water District projections									
Residential Estate	RE	< 1	513	1083	310	0.21	15.0%	230	371
Single Family Low	SFL	1 - 3	597	1,144	1,350	0.94	15.0%	1,070	1,725
Single Family Medium	SFM	3 - 5	1,083	1,734	1,840	1.28	15.0%	2,211	3,566
Multi-Family Low	MFL	5 - 14	302	493	2,690	1.87	15.0%	922	1,487
Multi-Family Medium	MFM	14 - 21	98	162	3,920	2.72	15.0%	441	711
Commercial	COM, GCOM, OIND, GIND, MIX		339	774	1,920	1.33	5.0%	1,029	1,660
Industrial	IND		382	725	2,460	1.71	5.0%	1,240	2,000
Open Space	OS		151	1,005	680	0.48	5.0%	477	770
Public Facilites	PUB		45	238	1,370	0.95	5.0%	226	365
Rural County	RC		6	448	340	0.24	5.0%	106	172
Totals			3,516	7,806				7,952	**12,827**
D. Projected Water Balance Credit before Downtown Specific Plan Changes									
Totals									**569**
E. Projected Water Balance Credit after Downtown Specific Plan Changes									
Totals									**320**

Notes:

1. Source: 2002 Water System Master Plan
2. 2002 Water System Master Plan coefficients applied to Net Land Use acreages. An adjustment factor was projected at 7% in residential areas and 3.5% in Other areas
3. Santa Clara Valley District estimates the groundwater demand on the Llagas Subbasin from Morgan Hill will drop to 10,475 AFY (from 11,192 AFY in 2005 UWMP) due to conservation. This results with approximately 717 AFY estimated saving

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65591 (the Water Conservation Landscape Act, and it promotes efficient water use, to manage peak season water demands, and to preserve water storage in order to ensure reliable and adequate public water supply. Though the conservation impact of this ordinance has not been quantified at this time, it supports the increase in City-wide conservation.

SCVWD South County Water Supply Plan - 2030 Groundwater Demands (June 26, 2007). The purpose of this memorandum was to document 2030 groundwater demands and pumping distribution for the purpose of determining the baseline water supply conditions for the South County Water Supply Plan project. The groundwater demands were based on documented assumptions and were generally consistent with the District 2005 Urban Water Management Plan.

One of the assumptions of this plan included 2030 municipal and industrial (M&I) conservation estimated at 4,092 acre-feet per year (AFY), based on 2000 Baseline and 2003 Integrated Water Resources Plan (2003 IWRP) "No Regrets" Conservation. A conservation factor of 0.87, equal to 2030 conservation divided by 2030 M&I demand, was applied in this memorandum.

According to District staff, and as documented by the memorandum calculations, the water conservation efforts are anticipated to result with reduction of the City of Morgan Hill 2030 demands from the Llagas subbasin to 10,475 AFY. Comparing this new projection to the City's 2005 UWMP projection for the Llagas subbasin of 11,192 AFY, results with an estimated conservation of 717 AFY in 2030 (Table 6).

5.4 Impact of Land Use Conversion from Agricultural to Municipal and Industrial

The City current inventory of agricultural lands was obtained from the Farmland Mapping and Monitoring Program (FMMP) maintained by the California Department of Conservation Division of Land Use Resource Protection (Figure 2). The mapping, dated 2007, indicates the total agricultural lands within the City's Urban Growth Boundary is approximately 8,215 acres. The net areas anticipated to convert to convert from agricultural lands to municipal and industrial (M&I) uses are estimated at approximately 7,151 acres.

This study did not include a detailed analysis of historical crops on the existing agricultural lands, but it is anticipated that such a study may demonstrate a reduction in groundwater pumpage when the agricultural lands convert to municipal and industrial uses. The City's 2005 UWMP did not account for reduction in pumpage that may result from this conversion.

5.5 Water Demand Balance Summary

This study finds the updated water balance presented in this section will result with an approximate water demand balance credit of 569 AFY, after incorporating the proposed changes

Table 6 Anticipated Conservation from the Llagas Subbasin

Downtown Specific Plan - Water Supply Assessment
City of Morgan Hill

Groundwater Subbasin	Amount of Groundwater Projected to be Pumped (AFY)					
	2005	2010	2015	2020	2025	2030
2005 UWMP [1]						
Llagas Subbasin	6,834	7,261	8,123	8,984	10,034	11,192
Coyote Valley Subbasin	1,345	1,430	1,599	1,769	1,975	2,204
Total Pumped	8,179	8,691	9,722	10,753	12,009	13,396
2007 Santa Clara Valley Water District Memorandum [2]						
Llagas Subbasin						10,475
Anticipated Conservation from the Llagas Subbasin						
						717

Notes:

1) City of Morgan Hill, 2005 Urban Water Management Plan (Table 6)

2) Santa Clara Valley Water District, South County Water Supply Plan - 2030 Groundwater Demands (June 26, 2007)

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Land Type	Total Area (Acres)	Open Space	Net Conversion
Prime Farmland	622.1	26.5	595.7
Farmland of Statewide Importance	80.9	0.2	80.7
Unique Farmland	30.3	-	30.3
Farmland of Local Importance	218.3	-	218.3
Grazing Land	1,080.5	566.3	514.2
Urban and Built-up Land	5,475.7	330.3	5,145.4
Other Land	707.6	140.4	567.2
Totals:	8,215.5	1,063.7	7,151.9

Data Source: State of California Department of Conservation Division of Land Resource Protection/Farmland Mapping & Monitoring Program (FMMP)

Legend

- UGB
- Base Map

FMMP 2006 Land Designations

- Urban & Built-up Land
- Grazing Land
- Farmland of Local Importance
- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Other Land
- Open Space

PRELIMINARY

FIGURE 2
AGRICULTURAL LANDS CONVERSION WITHIN CITY LIMITS
DOWNTOWN SPECIFIC PLAN
WATER SUPPLY ASSESSMENT
CITY OF MORGAN HILL

CITY OF MORGAN HILL

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of the Downtown Specific Plan. Prior to incorporating the changes, the water demand balance credit is estimated at 569 AFY. This water credit is supported by the following

- 2002 WSMP and 2005 UWMP city-wide projections are based on conservative water demand factors
- Anticipated conservation resulting from the City's Conserving Landscape Ordinance (2006)
- Projected conservation of 717 AFY from the Llagas subbasin, per the SCVWD memorandum (2007)
- Anticipated impact of Land Use conversion from Agricultural to Municipal and Industrial Lands

The demand increase for the Downtown Specific Plan area, which is calculated at 249 acre feet per year (AFY), represents a net increase of 2 percent to the previously projected 2030 demands, as presented in the 2005 UWMP. The revised City-wide water demand balance, after incorporating the Downtown Specific Plan, indicates a remaining credit of 230 AFY.

6.0 GROUNDWATER BASIN

The groundwater basin underlying the City is part of the Santa Clara Valley groundwater basin, which is not an adjudicated groundwater basin, as defined by the California Water Plan Update. The groundwater basin is divided into three interconnected subbasins that transmit, filter, and store water. These basins consist of the Santa Clara Valley Subbasin to the north, the Coyote Subbasin, and the Llagas Subbasin to the south (Appendix D). Current and projected water supplies from the Llagas and Coyote subbasins are shown on Table 7, as extracted from the District's 2005 UWMP and from the City's 2005 UWMP.

The District's 2003 IWRP created the "No Regrets" portfolio of supply alternatives to help ensure reliability. The portfolio was assigned that name because its implementation is unlikely to cause future regrets. The portfolio projects County-wide annual savings from agricultural and municipal and industrial conservation, additional groundwater recharge capacity, and an additional capacity in the Semitropic Water Bank. Other projects and programs included conservation, water recycling, and desalination. The District's current water recycling program, including the south county, is shown in Appendix E.

According the California Water Plan Update, the City of Morgan Hill lies within the Central Coast Hydrologic Region (Append F, Figure 1.1). This hydrologic region's water balance summary is shown In Appendix F, Table 4.1.

The Santa Clara Valley Water District groundwater management plan includes groundwater supply management programs that replenish the groundwater basin, sustain the basin's water

Table 7 Curent and Projected Water Supplies - SCVWD 2005 UWMP

Downtown Specific Plan - Water Supply Assessment

City of Morgan Hill

Groundwater Subbasin	Amount of Groundwater Projected to be Pumped (AFY)					
	2005	2010	2015	2020	2025	2030
Llagas Subbasin						
Llagas Subbasin	45,876	49,300	47,600	45,600	47,300	48,100
Recycled Water	2,500	2,500	3,100	3,100	3,100	3,100
Total	48,376	51,800	50,700	48,700	50,400	51,200
Coyote Subbasin						
Coyote Subbasin	8,000	8,000	8,000	8,000	8,000	2,204
Recycled Water and Additional Supplies		0	3,200	1,700	3,200	5,500
Total	8,000	8,000	11,200	9,700	11,200	7,704

Notes:

1) Source: Santa Clara Valley Water District, 2005 Urban Water Management Plan (Table 6-9 and Table 6-10)

2) City of Morgan Hill, 2005 Urban Water Management Plan (Table 3) also referred to these values.

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supplies, help to manage groundwater conditions, and sustain storage reserves for use during dry periods. The report also includes groundwater monitoring programs that provide data to assist the District in evaluating and managing the groundwater basin.

The District's 2005 UWMP identified several strategies related to groundwater to ensure long-term protection of the key components of the District's water supply including:

- Expanding the groundwater recharge capacity.
- Aggressively protecting and sustaining groundwater resources.
- Expanding conjunctive water management.
- Safeguarding existing supplies.

The City's 2005 UWMP and the District's 2005 UWMP include detailed discussions on the groundwater basin and on the collaborate efforts currently underway to manage the groundwater supplies.

7.0 WATER SUPPLY RELIABILITY

There are two aspects of supply reliability to be considered. The first relates to immediate service needs and is primarily a function of the availability and adequacy of the supply facilities and is considered for emergency reliability. The second aspect is climate-related, and involves the availability of water during mild or severe drought periods.

7.1 Groundwater Supply Facilities

The City of Morgan Hill (City) currently utilizes local groundwater as its sole source of supply. The City's municipal water system extracts its water supply from underground aquifers via 15 active groundwater wells scattered throughout the City (Table 8). The City pays a groundwater pumping tax to the Santa Clara Valley Water District (SCVWD), which is the principal groundwater management agency in the Santa Clara Valley. The SCVWD also serves as a major water wholesaler for the County and is the contracting agency for both the State Water Project and the Federal Central Valley Project.

The City has been constructing water transmission main facilities and storage reservoirs, in accordance with the 2002 WSMP. The addition of one or two new groundwater wells will provide enhanced City-wide reliability to the supply. The City is currently considering alternatives for siting 2 new supply wells with a projected capacity of approximately 1,000 gpm each. These facilities provide emergency storage sufficient to handle the service area needs during power outages or other emergencies. Adding supply and distribution system enhancements will also add reliability through redundancy.

Table 8 **Existing Water Supply Facilities**
Downtown Specific Plan - Water Supply Assessment
City of Morgan Hill

Well No.	Description	Winter Production (MGD)	Summer Production (MGD)
1	BOYS RANCH I	1.69	1.32
2	BOYS RANCH II	0.79	0.54
3	BOYS RANCH III	0.65	0.50
4	DIANA I	1.38	1.34
5	DIANA II	1.82	1.80
6	DIANA III	0.58	0.53
7	DUNNE I	0.58	0.45
8	JACKSON I	0.66	0.61
9	MAIN WELL II	1.45	1.43
10	SAN PEDRO	0.81	0.59
11	TENNANT	0.59	0.59
12	NORDSTROM	1.50	1.42
13	BUTTERFIELD	0.79	0.76
14	DUNNE II	0.74	0.74
15	MAIN I	1.53	1.43
	Total	**15.56**	**14.05**

Notes

1. Source: 2005 UWMP.

Revised: 5/28/08

AKEL ENGINEERING GROUP, INC.

7.2 Supply During Single Dry and Multiple Dry Years

As stipulated in the City's 2005 UWMP, the District findings indicate "that they can maintain reliable supplies under historic hydrology for the period from 2005 through 2030, with development of additional supplies they outlined". Supply reliability for single dry and multiple dry years were discussed in the City's 2005 UWMP, as summarized on Table 9 and shown on Figure 3.

The annual quantity of available groundwater is addressed in the District' 2005 UWMP, Section 6, on a County basis, as described in the City's 2005 UWMP.

8.0 SUPPLY AND DEMAND COMPARISON

City-wide comparisons of projected supplies and demands are shown in Table 10. Based on the analysis in this study, the 2030 water demand projections are expected to remain as documented in the City's 2005 UWMP. Based on the City's s current plans to increase the water supply capabilities to meet maximum day demands and to provide standby production capabilities, the supply capacity will meet the demand requirements through 2030.

Table 10 indicates a total water demand of approximately 13,396 acre-feet projected for year 2030, compared with a similar projected supply capability for that same year.

9.0 SUMMARY

The City of Morgan Hill and the Santa Clara Valley Water Districts have both completed and adopted their 2005 Urban Water Management Plans, and both submitted their plans to the Department of Water Resources (DWR). The plans address the requirements of the Urban Water Management Planning Act and include the elements intended to meet the requirements of the Act including quantifying existing and future water demand projections, existing water supply facilities, groundwater basin conditions, water demand management measures, a water shortage contingency plans, and collaborative efforts and strategies for managing the water supply resource.

The Downtown Specific Plan area's water supply needs were addressed in the 2005 City's UWMP, though they were based on the City's existing Land Use Element of the General Plan.

Although the entire Downtown Specific Plan area was included in the water supply and demand analysis in the 2005 UWMP, the proposed change in land use will increase water demands for this planning area by **249 AFY**. This value represents approximately 2% of the projected 2030 demands, as presented in the City's 2005 UWMP.

The revised City-wide balance, using more reasonable water use coefficients, will result with a credit of **569 AFY** from the City's 2005 UWMP projections.

This water credit is supported by the following

- 2002 WSMP and 2005 UWMP City-wide projections are based on conservative water demand factors
- Anticipated conservation resulting from the City's Conserving Landscape Ordinance (2006)
- Projected conservation of 717 AFY from the Llagas subbasin, per the District's memorandum (2007)
- Anticipated impact of Land Use conversion from Agricultural to Municipal and Industrial Lands

After deducting the increase in projected water demands resulting from the changes in land uses from the Specific Downtown Project, the City-wide water demand balance remaining credit (from the 2005 UWMP assumptions) is estimated at **320 AFY.**

Table 9 Supply Reliability for Llagas and Coyote Subbasins

Downtown Specific Plan - Water Supply Assessment
City of Morgan Hill

Llagas	19,000	19,000	7,000
Coyote	2,600	2,400	1,600
Total	21,600	21,400	8,600
% of Normal	100%	99%	40%

Notes:

1) Source: City of Morgan Hill, 2005 Urban Water Management Plan (Tables 9 and 10)

Revised: 5/28/08

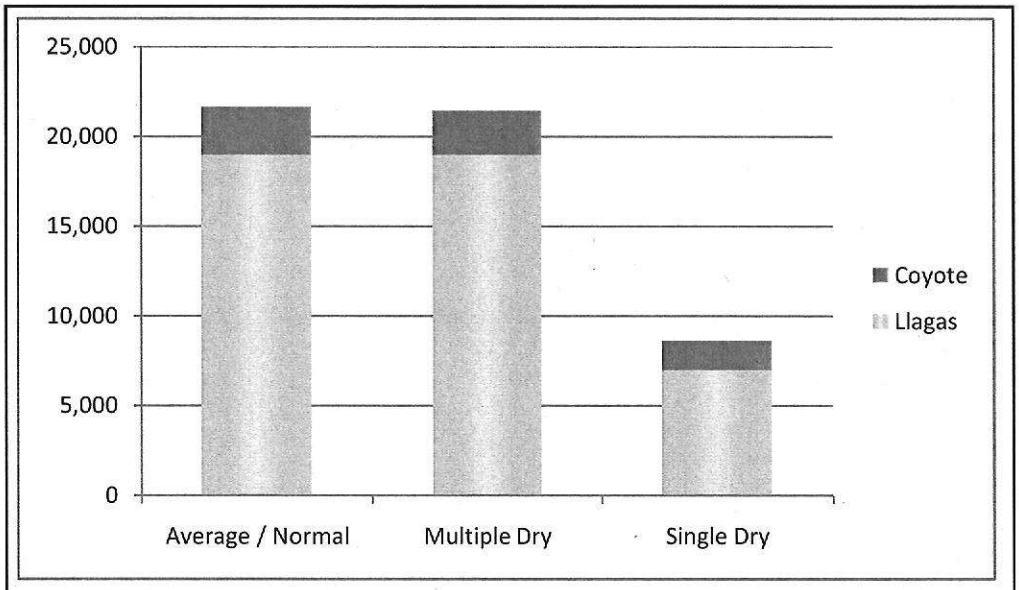

FIGURE 3

SUPPLY RELIABILITY FOR LLAGAS AND COYOTE SUBBASINS

Downtown Specific Plan - Water Supply Assessment
City of Morgan Hill

AKEL ENGINEERING GROUP, INC.

Revised: 5/28/08

Table 10 Supply and Demand Comparison

Downtown Specific Plan - Water Supply Assessment

City of Morgan Hill

Demand Condition	Water Demand	Groundwater Supply to be Pumped per 2005 UWMP		
	2005 UWMP Demand Projections	Llagas Subbbasin	Coyote Subbasin	Total
	(AFY)	(AFY)	(AFY)	(AFY)
2005	8,179	6,834	1,345	8,179
2010	8,691	7,261	1,430	8,691
2015	9,722	8,123	1,599	9,722
2020	10,753	8,984	1,769	10,753
2025	12,009	10,034	1,975	12,009
2030	13,396	11,192	2,204	13,396

Notes

1. SourceProposed Supply Adjustments to the 2005 UWMP

Revised: 5/28/08

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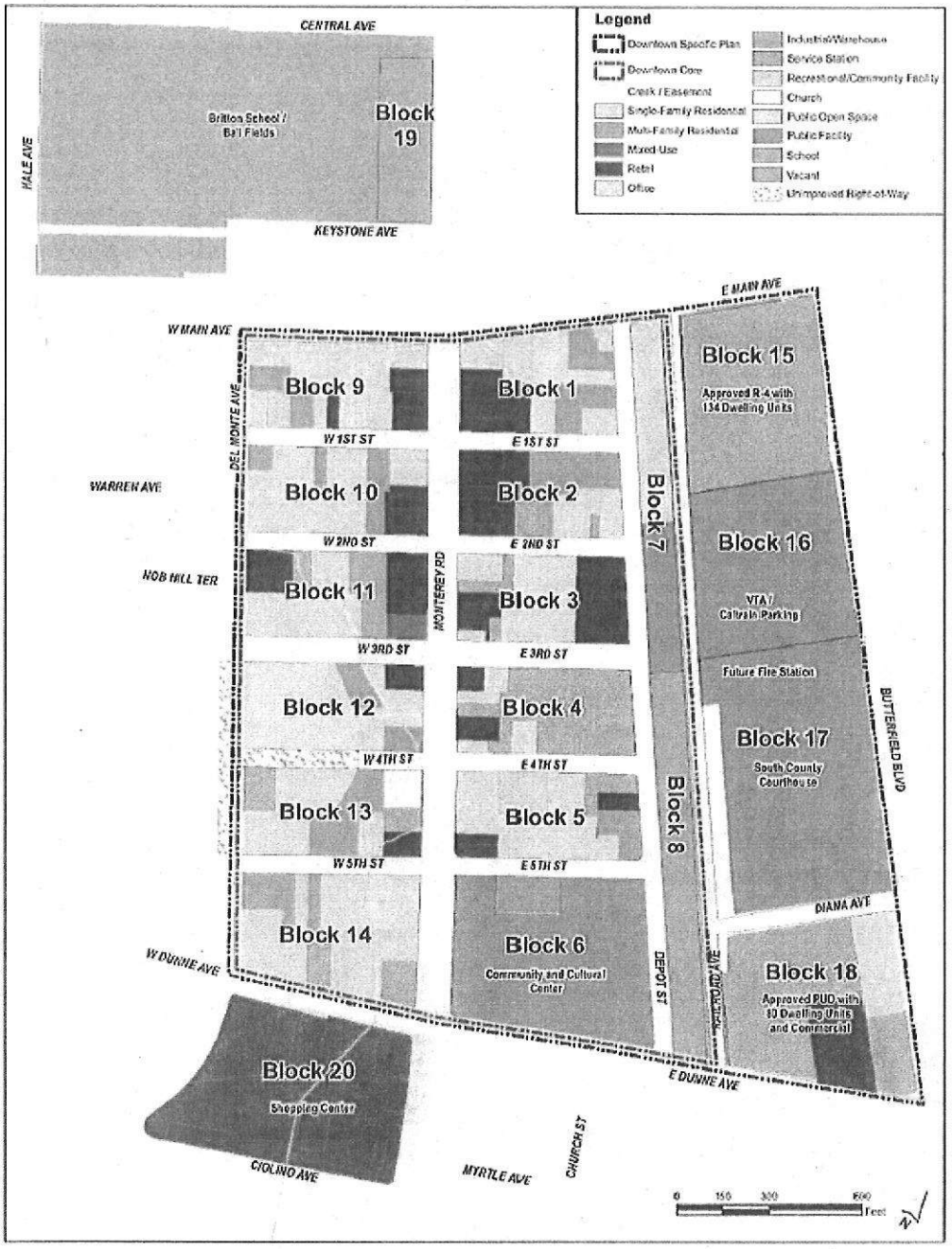
APPENDIX A

CITY OF MORGAN HILL

DOWNTOWN SPECIFIC PLAN

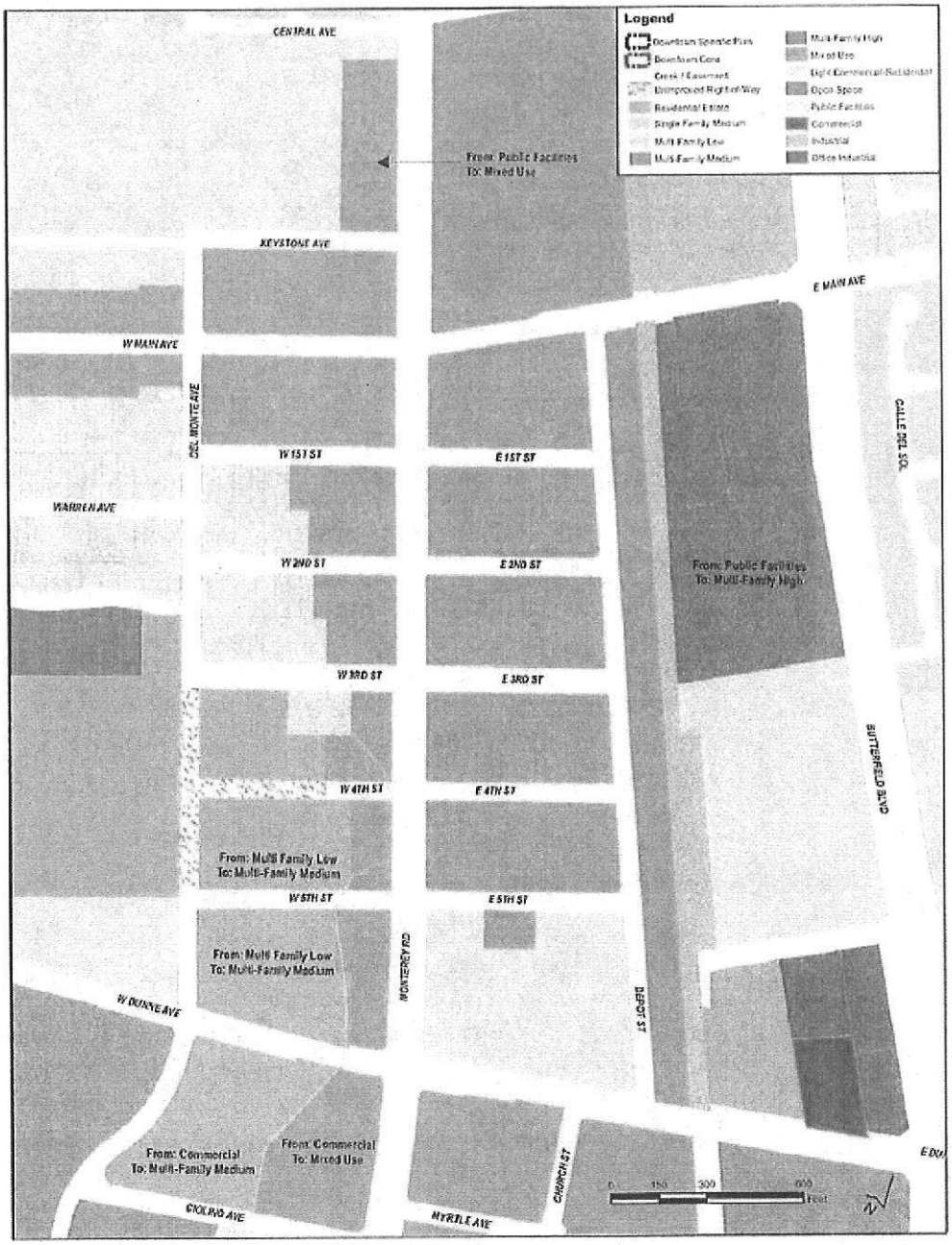
LAND USE

(PUBLIC REVIEW DRAFT, MAY 2008)



Existing and Approved Land Uses

Figure 3



Proposed General Plan Land Use Designations

Figure 4

Proposed Zoning Designations

Figure 5

APPENDIX B

CITY OF MORGAN HILL

DOWNTOWN SPECIFIC PLAN

DEVELOPMENT ANALYSIS – UPDATE APRIL/MAY 2008

City of Morgan Hill
Downtown Specific Plan
2030 Development Summary - Blocks 1-20 (Downtown Specific Plan Boundary and Blocks 19-20)

Land Use	Existing Development [1]	Development by 2015		Development by 2030	
		Net New	Total	Net New	Total
Retail	213,365 Sq Ft	21,221 Sq Ft	234,586 Sq Ft	93,490 Sq Ft	306,855 Sq Ft
Residential	201 DU	850 DU	1,051 DU	1,190 DU	1,393 DU [2]
Office/Service	122,248 Sq Ft	30,157 Sq Ft	152,405 Sq Ft	85,591 Sq Ft	207,839 Sq Ft

[1] *Blocks 1-20 excluding public facilities (including schools, Community and Cultural Center, churches, social halls) and industrial*

[2] *Includes an additional 10 dwelling units to account for the increase in density for the CC-R zoning district*

Assumptions		
Existing Retail Development to be Replaced by Projected Redevelopment		
	16,800 sq ft	from the existing Downtown Mall at Monterey Road and First Street (Block 2)
	20,050 sq ft	from the existing bookstore building along Depot Street (Block 3)
	2,050 sq ft	from the existing liquor store at Monterey Road and Third Street (Block 4)
	90,000 sq ft	from the existing shopping center at Monterey Road and Dunne Avenue (Block 20)
total	*128,900 sq ft*	

City of Morgan Hill
Downtown Specific Plan
2030 Development Analysis

RBF CONSULTING

	DEVELOPMENT PROJECTIONS BY BLOCK						
	Block	2015			2030		
		Retail	Residential	Office / Service	Retail	Residential	Office / Service
	Within Specific Plan Boundary						
Within Core	1	12,372	13	15,245			
	2	26,029	59	0			
	3	42,138	115	0			
	4	39,981	232	0			
	5				26,225	1	15,523
	6				0	0	0
	7	12,601	46	0			
	8				0	0	0
	9				16,154	62	0
	10				12,838	26	0
	11				17,052	30	0
	12				0	0	0
	13	0	14	0	0	13	0
	14	0	35	14,912	0	35	14,911
	TOTAL	**133,121**	**514**	**30,157**	**72,269**	**167**	**30,434**
Outside Core	15	0	134	0			
	16				0	186	0
	17				0	0	0
	18	0	80	0			
	TOTAL	**0**	**214**	**0**	**0**	**186**	**0**
	Outside Specific Plan Boundary						
	19				0	27	25,000
	20	17,000	90	0			
	TOTAL	**17,000**	**90**	**0**	**0**	**27**	**25,000**
	GRAND TOTAL	**150,121**	**818**	**30,157**	**72,269**	**380**	**55,434**

5/8/2008

Table C-3
Existing Development

Use	# of Residential Units	Square Footage
Single-Family Res.	69	84,266
Duplex	34	37,809
Triplex/Fourplex	40	32,670
Multi-Family (5+Units)	34	34,911
Condominium/Townhouse	16	15,727
Group Home		2,412
Retail		102,445
Retail (Granary Gallery)		400
Theater		9,730 *
Restaurant/Bar		10,790
Office		109,948
Office (Granary)		12,300
Service Stations		1,518
Social Clubs		4,705
Public Buildings		32,534 **
Churches		6,476
Schools		9,966 ***
Total	**193**	**508,607**

*Not currently in use
**Community Center
***Gavilan College Satelite Campus

Summary of Above Existing Conditions

Residential	193	207,795	
Retail		123,365	
Office		122,248	
Industrial		1,518	
Public		53,681	
TOTAL	**193 Units**	**508,607**	**Square Feet**

Source: Morgan Hill Downtown Specific Plan

APPENDIX C

CITY OF MORGAN HILL

WATER CONSERVING LANDSCAPE ORDINANCE

(ADOPTED BY CITY COUNCIL ON FEBRUARY 1, 2006)

Chapter 18.73

WATER CONSERVING LANDSCAPES

Sections:

18.73.010 Purpose.

The purposes of this chapter are to promote efficient water use, to manage peak season water demand, and to preserve water storage in order to ensure a reliable and adequate public water supply by regulating landscape design, construction, and maintenance. It is also the purpose of this chapter to comply with Government Code section 65591, et seq., the Water Conservation in Landscaping Act.

18.73.020 Definitions.

For the purpose of this chapter, the following words shall have the meanings set forth below:

A. "Applicant" means any individual, person, firm, entity or agency applying for a new water service connection or for a change to an existing service connection.

B. "Common area" means those areas in a residential development maintained by either the developer or a homeowner's association.

C. "Community garden" means a plot of land used by a community group for the cultivation of flowers, vegetables, or fruit.

D. "Director" means the Director of the Community Development Department of the City of Morgan Hill, or the Director's authorized representative.

E. "Increase in service" means an additional water meter or larger capacity meter is required to serve the proposed development, as determined by the Director.

F. "Hydrozone" means a distinct grouping of plants with similar water needs and climatic requirements.

G. "Landscape water budget" means, for design purposes, the upper limit of annual applied water for the established landscape. It is based on the region's reference evapotranspiration, type of plant material, and landscape area.

H. "Modified service" means a substantial change in the water use characteristics of an existing service connection (for example, converting from a single family residential service to multiple residential service, or from a residential use to a commercial use).

I. "Reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants.

J. "Relandscaping" means any project that is required to modify the existing landscape as a condition of a land use approval, site review, or a discretionary permit.

K. "Runoff" means irrigation water that is not absorbed by the soil or landscape area to which it is applied and flows onto other areas.

L. "Total Landscaped Area" means the total outdoor area of a parcel upon which plants, pools, water features, and hardscapes not intended for the use of vehicles are placed.

M. "Turf" means any hybridized grasses that, when regularly mowed, form a low, dense growth of leaf blades and roots which require frequent watering during the growing season. N. "WUCOLS" means Water Use Classification of Landscape Species, a guide published by University of California Cooperative Extension.

18.73.030 Applicability.

A. New, Increased, or Modified Development. The Director shall be responsible for assuring that all new development within the City shall comply with the standards set forth in this chapter as a condition of receiving a land use approval, except as indicated below.

B. Transfer of Ownership. A transfer of ownership in itself shall not necessitate any change to be in compliance with this Ordinance.

C. Relandscaping. Existing water customers that are required to relandscape or modify their landscapes as part of a land use approval process shall also be required to comply with the standards in the relandscaped area. Land use approval applications that do not result in a requirement to relandscape or modify a landscape shall not be required to comply with the standards of this Ordinance.

D. Single-Family and Two-Unit Residences. New single-family and two-unit residential

customers shall be required to meet only the provisions regarding turf limits listed in subsection (d) of Section 6 if the landscaping is not being designed and installed by a developer as a component of a new development. The entire Ordinance applies to landscapes in new single-family and two-unit residential developments at which the landscaping is being installed by a developer as a component of the development.

E. Common Areas. Common areas of all new residential development shall be required to comply with the standards set forth below.

F. Recreation Areas. Schoolyards, parks, playgrounds, sports fields, and golf courses are exempt from the turf area limit set forth in subsection (d)(1) of Section 6. Every other standard listed in the Ordinance is applicable to schoolyards, parks, playgrounds, sports fields, and golf courses.

G. Exemptions. The standards do not apply to community gardens; ecological restoration projects that do not require a permanent irrigation system; registered historical sites where landscaping establishes an historical landscape style, as determined by a public board or commission responsible for architectural review or historic preservation; and enclosed, private yards and patios in multi-family residential developments. The standards do not apply to all development that has either been constructed or has submitted an application for a building permit before the effective date of this Ordinance.

18.73.040 Landscape Plan Review and Approval Required.

A complete landscape plan must be submitted and found to satisfy the requirements of this chapter before a building permit can be issued. Landscape plans submitted as part of a building plan application through the building department will be routed to the Planning Division in accordance with procedures established by the Chief Building Official for review. The landscape plan shall include a statement signed by a licensed landscape architect certifying that the plan is in compliance with the requirements of this chapter.

18.73.050 Contents of Plans.

Landscape plans shall consist of separate planting, irrigation, and landscape grading plans, all drawn at the same size and scale, and shall accurately and clearly include the following information:

A. Planting Plan. Planting plans shall identify and locate the following:

1. New and existing trees, shrubs, ground covers, and turf areas within the developed landscape area;

2. Planting legend indicating all plant species by botanical name and common name, spacing, and quantities of each type of plant by container size;

3. Designation of hydrozones;

4. Area, in square feet, devoted to landscaping and a breakdown of the total area by landscape hydrozones;

5. Property lines, streets, and street names;

6. Building locations, driveways, sidewalks, retaining walls, and other hardscape features;

7. Appropriate scale and north arrow;

8. Planting specifications and details.

B. Irrigation Plan. Irrigation plans shall identify and locate the following:

1. Irrigation point of connection (POC) to water system;

2. Static water pressure at POC;

3. Location and size of water meter(s);

4. Backflow prevention devices as may be required under Section 16.04.420 of the municipal code;

5. Location, size, and type of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads and nozzles, pressure regulator, drip and low volume irrigation equipment;

6. Total flow rate (gallons per minute), and design operating pressure (psi) for each overhead spray and bubbler circuit; and total flow rate (gallons per hour) and design operating pressure (psi) for each drip and low volume irrigation circuit;

7. Precipitation rate (inches per hour) for each overhead spray circuit;

8. Irrigation legend with the manufacturer name, model number, and general description for all specified equipment, separate symbols for all irrigation equipment with different spray patterns, spray radius, and precipitation rate;

9. Irrigation system details for assembly and installation;

10. Recommended irrigation schedule for each month, including number of irrigation days per week, number of start times (cycles) per day, minutes of run time per cycle, and estimated amount of applied irrigation water, expressed in gallons per month and gallons per year, for the established landscape;

11. Calculation of landscape water budget.

C. Grading Plan. (Note: Not required when landscaped slopes on the site are less than 10%.):

1. Finish grades, contours, and spot elevations;

2. Elevations of building floors, parking lots, and streets;

3. Location and height of retaining walls;

4. Drainage patterns and drainage control facilities.

18.73.060 Landscape Water Conservation Standards.

A. Dedicated Landscape Water Meter.

1. Separate City water service meters shall be required for all new landscaping, other than single family and two-unit residential customers, and for renovated landscape sites that result in expansion of the total landscaped area by more than 500 square feet. This meter shall be designated as an irrigation account.

B. Landscape Water Budget.

1. The landscape water budget for new landscapes shall be based on 70 percent of reference evapotranspiration per square foot of landscaped area assuming a minimum irrigation efficiency of 70%.

2. The estimated annual water use, calculated by adding the amount of water recommended in the irrigation schedule, or by another method approved by the Director, shall not exceed the annual landscape water budget.

C. Landscape Design.

1. High water use plants, decorative pools, fountains, and water features shall be limited to not more than 10 percent of the total landscaped area. Water in decorative pools and fountains must be recirculated.

2. All other plantings in nonturf areas shall be composed of low to moderate water use plants, as identified in *Water Use Classification of Landscape Species* (WUCOLS Guide) or East Bay MUD's *Plants and Landscapes for Summer-Dry Climates of the San Francisco Bay Region* or other species, including native plants, that are well adapted to the climate of the region and require minimal water once established.

3. Plants having similar water requirements shall be grouped together in distinct hydrozones.

4. Planting of trees, shade trees, and the protection and preservation of existing native species and natural areas is encouraged.

D. Turf Limits.

1. The turf area shall be limited to not more than 25 percent of the total developed landscape area if an overhead spray sprinkler system is used. If subsurface irrigation is used exclusively to irrigate the turf area, the turf area shall be limited to not more than 50 percent of the total landscaped area. The limit does not apply to sites requiring large turf areas for their primary function as a recreation surface and there are no design alternatives, such as schoolyards, parks, and ball fields. For single-family homes and two-unit residences with landscaped areas smaller than 2,000 square feet, a total of 500 square feet of turf area shall be allowed providing the turf area complies with Sections 6(d)(2) and 6 (d)(3),.

2. Turf shall not be placed in areas less than 8 feet wide or on slopes greater than 10 percent.

3. Turf varieties shall be water-conserving species, such as tall and hard fescues.

E. Irrigation Design.

1. All irrigation systems shall be designed to avoid runoff, over-spray, low-head drainage and other similar conditions where water flows off-site on to adjacent property, non-

irrigated area, walks, roadways, or structures.

2. Overhead sprinkler irrigation systems are prohibited in median strips, parking islands, parkway strips and similar narrow areas measuring less than five feet wide from curb to curb. Drip or low volume irrigation equipment may be required in certain other cases (i.e., sloping sites) where it is determined by the Director that overhead spray irrigation would result in waste of water due to excessive runoff from the site.

3. Overhead sprinkler irrigation systems shall be separated from adjacent sidewalks, driveways, or other paved surfaces, wherever feasible, by a mulched border at least two feet in width consisting of shrubs, groundcover, or other landscape treatment that is not spray irrigated.

4. Plants that require different amounts of water shall be irrigated by separate irrigation circuits and valves.

F. Irrigation Equipment.

1. A pressure regulator shall be installed.

2. All irrigation systems shall be equipped with a controller that includes dual or multiple programming capability, multiple start times, and a percent switch. Controllers that direct irrigation in relationship with CIMIS ETo data are specifically qualified to meet this provision.

3. Sprinkler heads shall have matched precipitation rates within each control circuit valve and shall be selected for proper coverage and application rate, thereby minimizing over spray and runoff.

4. Irrigation systems shall be equipped with rain sensing devices to prevent irrigation during rainy weather.

5. Anti-drain check valves shall be installed at strategic points to minimize or prevent low-head drainage.

6. All irrigation equipment installed shall meet the Plumbing Code adopted by the City when the application is submitted.

G. Soil Preparation and Mulching.

1. Soil shall be prepared for planting by ripping and incorporating an organic amendment at the rate of six cubic yards per 1,000 square feet into the top six inches, or amended with organic material as recommended by landscape architect or soil laboratory report.

2. All exposed surfaces of nonturf areas within the developed landscape area must be mulched with a minimum three-inch layer of organic material, except in areas of groundcover planted from flats, mulch depth shall be 1½ inches.

18.73.070 Inspections and Certifications.

The Director shall have the right to enter upon any premises to make an inspection at any time before, during, and after irrigation system and landscape installation for the purpose of enforcing this chapter.

A. Certification of Completion before Occupancy. A licensed landscape architect or licensed contractor, certified irrigation designer, or other licensed or certified professional in a related field shall conduct a final field observation and shall provide a certificate of substantial completion to the City before a Certificate of Occupancy is issued. The certificate shall specifically indicate that plants were installed as specified, that the irrigation system was installed as designed, and that an irrigation audit has been performed, along with a list of any observed deficiencies. Certification shall be accomplished by completing and delivering a Certificate of Substantial Completion in a form acceptable to the City.

B. Final Inspection Before Occupancy. The Director may make a final inspection after completion of work to determine if the landscape improvements were completed in accordance with approved plans and with this chapter, and to require corrective measures if the requirements of this chapter are not satisfied. If corrective measures are necessary, the Certificate of Occupancy will not be issued until corrective measures are complete.

18.73.080 Irrigation System Management and Maintenance.

A. Maintenance. Landscape shall be maintained in good working condition and properly adjusted to ensure water efficiency. Any broken or malfunctioning equipment, including but not limited to main and lateral lines or control valves shall be repaired promptly with identical equipment to maintain the original design integrity.

B. Irrigation System Inspections. Irrigation system shall be inspected regularly to correct misaligned, clogged or broken heads, missing heads and risers, stuck valves, and leaks. The irrigation meter shall be read periodically to check consumption and detect any leakage.

C. Watering Schedule. Watering schedules shall be adjusted periodically to reflect seasonal variations in plant water requirements. Whenever possible, irrigation management shall incorporate the use of real-time, ET0 data from the California Irrigation Management Information System (CIMIS) or similar weather-based irrigation scheduling system.

D. Irrigation Operation. Irrigation shall be scheduled between the hours of 10:00 p.m. and 10:00 a.m. when daily temperature and wind conditions are at a minimum.

18.73.090 Water Use Monitoring.

The City may monitor water use at each site with a dedicated irrigation meter for comparison with the landscape water budget on an annual basis. Water use will be based on utility records of the irrigation meter.

18.73.100 Alternative Approaches.

The purpose of this Ordinance is to make optimum use of the water resources available to the City Water Department service area and to manage peak season water demands. As technology changes and more information is available regarding plant materials, irrigation equipment and techniques, and maintenance techniques that enhance water conservation, the Director may allow the substitution of well-designed conservation alternatives or innovations which equally reduce water consumption and meet the intent of this chapter.

18.73.110 Penalties.

Any individual, person, firm, or agency violating any provisions of this chapter shall be subject to the penalties provided in Chapter 1.24, General Penalty.

18.73.120 Limit of City Responsibility.

The City of Morgan Hill has limited water resources that are vulnerable to shortage in drought conditions. Residential, commercial and irrigation accounts in the water department service area are therefore subject to water restrictions or mandatory rationing during a declared drought emergency. Compliance with this chapter does not guarantee the survival of landscape plants or the availability of water for landscape irrigation based on this chapter. Irrigation shall be scheduled according to any emergency water use ordinance in effect. (Ord. 1751 N.S. § 1, 2006)

APPENDIX D

GROUNDWATER MANAGEMENT PLAN (2001)

SANTA CLARA VALLEY WATER DISTRICT

Figure 2-2
District Reservoir Locations

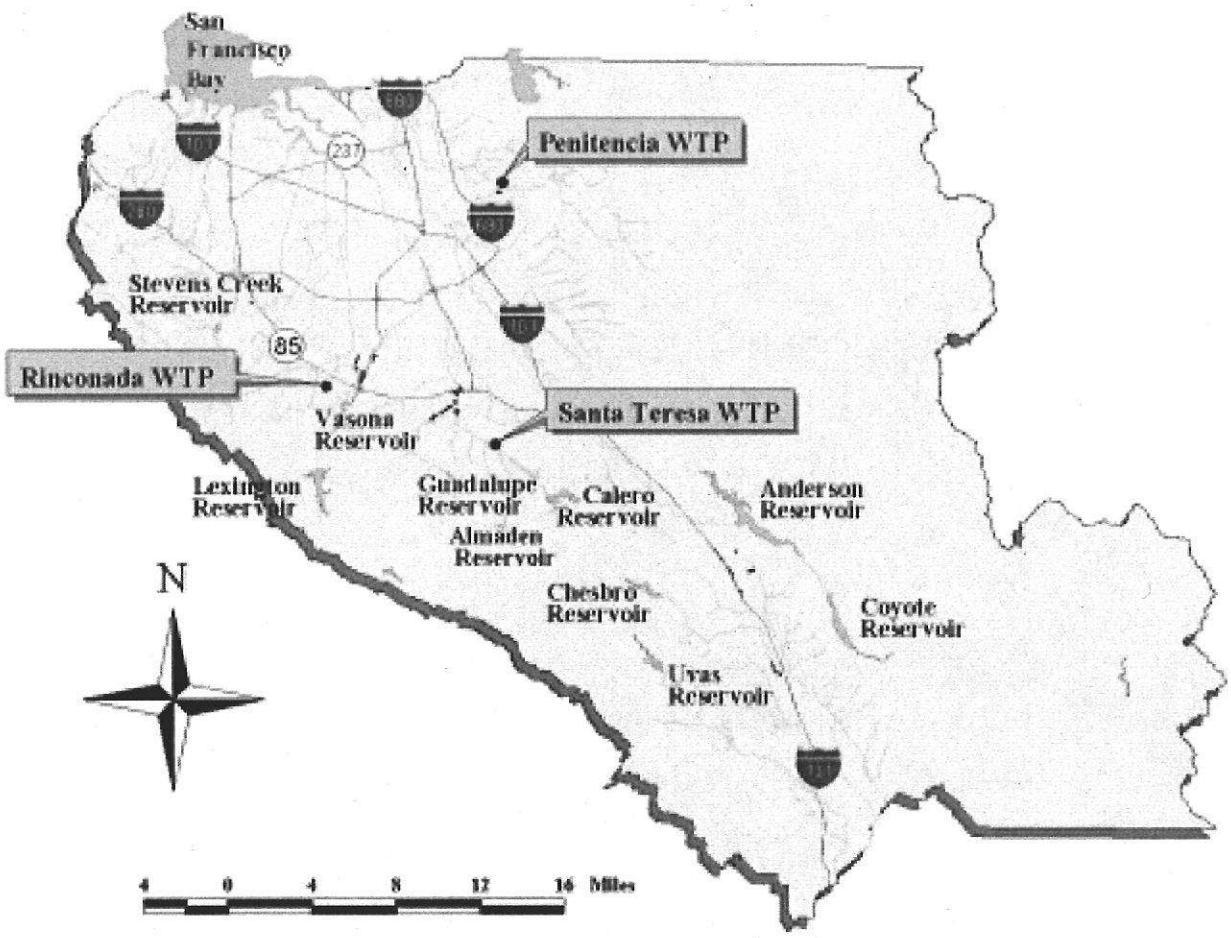


Figure 2-3
Santa Clara County Groundwater Subbasins

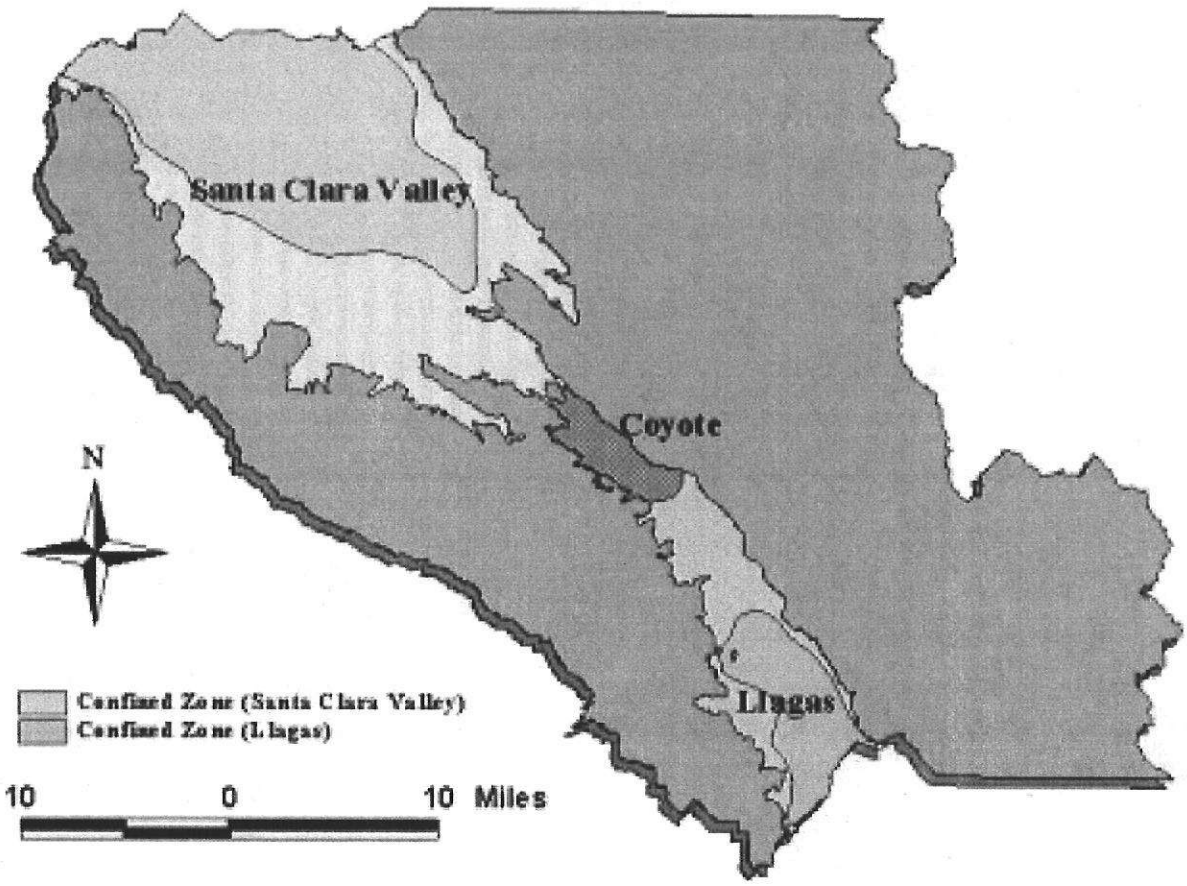
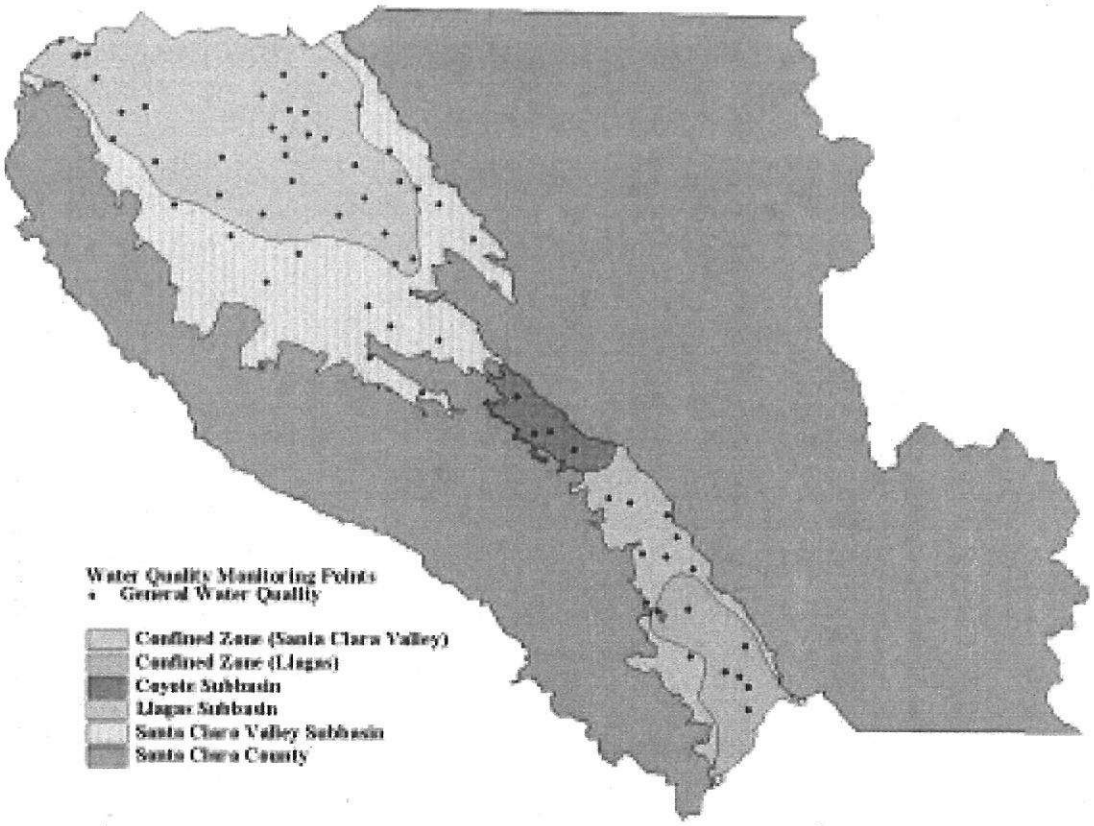


Figure 4-1
Water Quality Monitoring Wells

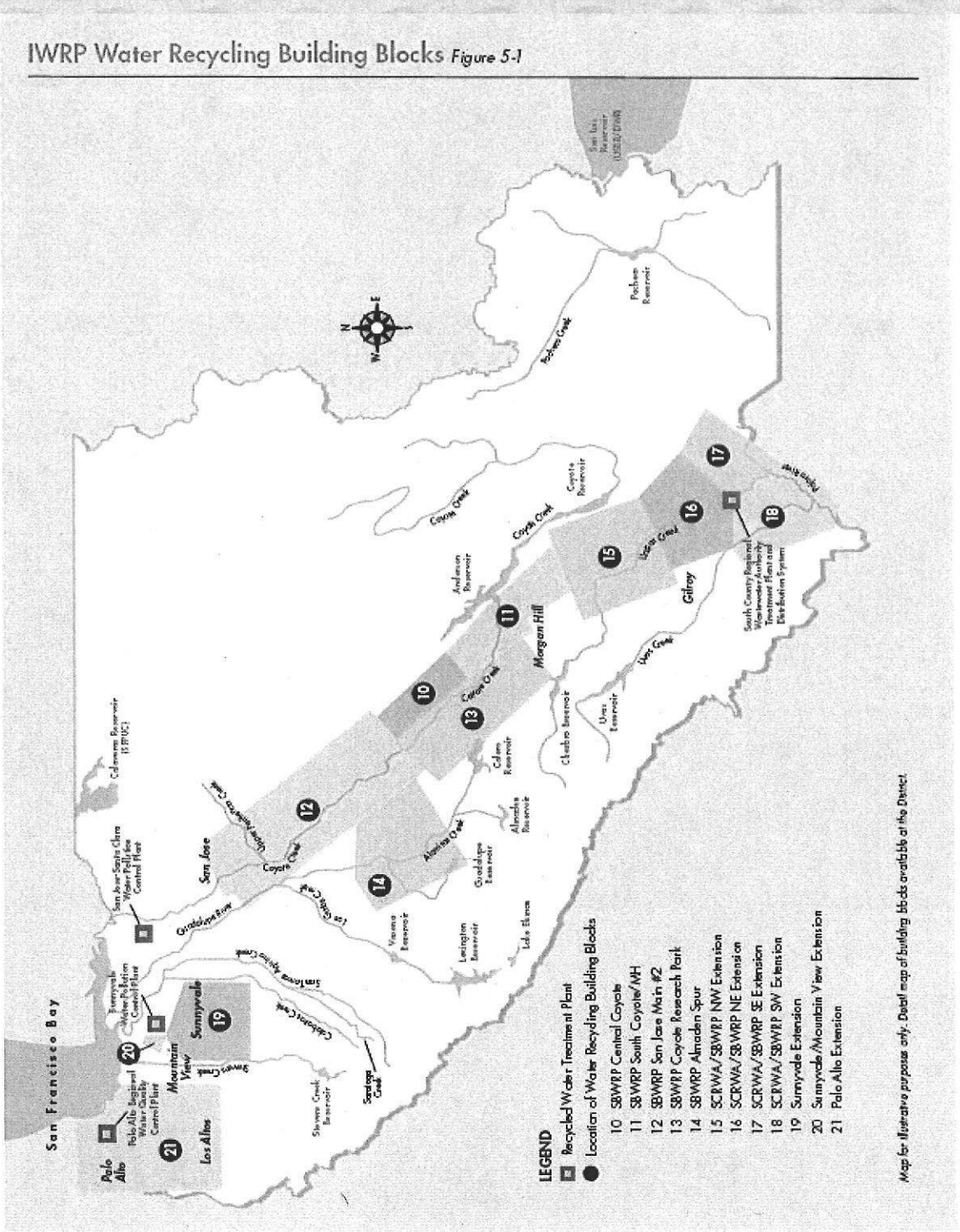


APPENDIX E

SANTA CLARA VALLEY WATER DISTRICT

INTEGRATED WATER RESOURCES PLAN 2003

IWRP Water Recycling Building Blocks *Figure 5-1*



City of Morgan Hill

DOWNTOWN SPECIFIC PLAN
WATER SUPPLY ASSESSMENT

APPENDIX F

CENTRAL COAST HYDROLOGIC REGION

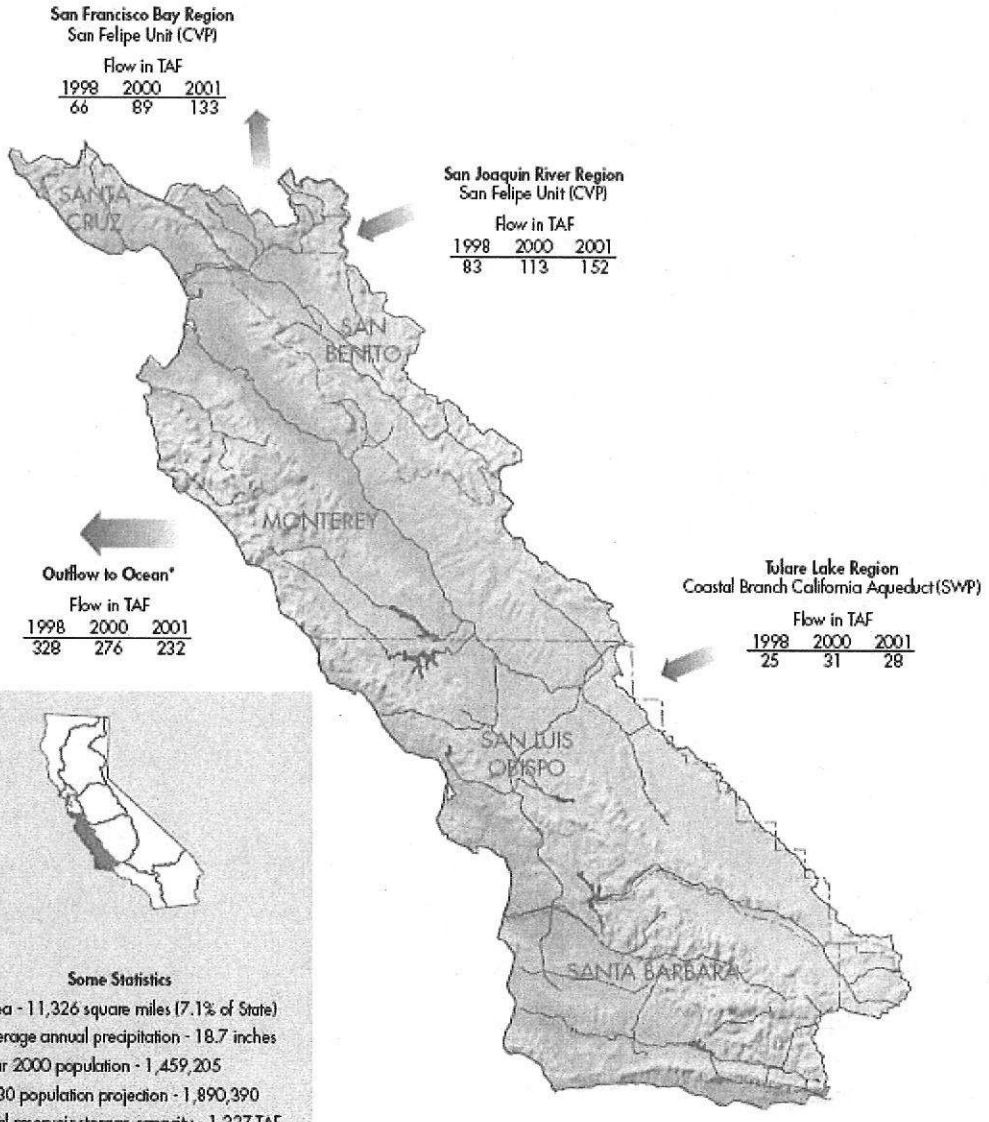
CALIFORNIA WATER PLAN UPDATE 2005

May 2008

Figure 1-1 Hydrologic Regions with Mountain Counties and Legal Delta

The California Department of Water Resources divides the state into 10 hydrologic regions that correspond to its major drainage basins. This water plan update also describes the Mountain Counties and Sacramento-San Joaquin Delta as two overlay areas of special interest.

Figure 4-1 Central Coast Hydrologic Region



The Central Coast Hydrologic Region extends from San Mateo to Santa Barbara counties and is within the Coast Range. Arrows indicate annual flows entering and leaving the region for water years 1998, 2000, and 2001.

**Outflow to Ocean includes Wild and Scenic Rivers, regulated flows, and estimated wastewater outflows.*

Table 4-1 Central Coast Hydrologic Region water balance summary - TAF

Water Entering the Region – Water Leaving the Region = Storage Changes in Region

	Water Year (Percent of Normal Precipitation)		
	1998 (225%)	2000 (110%)	2001 (107%)
Water Entering the Region			
Precipitation	25,202	12,596	11,848
Inflow from Oregon/Mexico	0	0	0
Inflow from Colorado River	0	0	0
Imports from Other Regions	108	144	180
Total	**25,310**	**12,740**	**12,028**
Water Leaving the Region			
Consumptive Use of Applied Water * (Ag, M&I, Wetlands)	622	754	860
Outflow to Oregon/Nevada/Mexico	0	0	0
Exports to Other Regions	66	89	133
Statutory Required Outflow to Salt Sink	174	95	49
Additional Outflow to Salt Sink	154	181	183
Evaporation, Evapotranspiration of Native Vegetation, Groundwater Subsurface Outflows, Natural and Incidental Runoff, Ag Effective Precipitation & Other Outflows	24,502	12,362	11,688
Total	**25,518**	**13,481**	**12,913**
Storage Changes in the Region [+] Water added to storage [-] Water removed from storage			
Change in Surface Reservoir Storage	401	8	-14
Change in Groundwater Storage **	-609	-749	-871
Total	**-208**	**-741**	**-885**
Applied Water * (compare with Consumptive Use)	1,074	1,291	1,442

***Footnote for applied water**

Consumptive use is the amount of applied water used and no longer available as a source of supply. Applied water is greater than consumptive use because it includes consumptive use, reuse, and outflows.

****Footnote for change in Groundwater Storage**

Change in Groundwater Storage is based upon best available information. Basins in the north part of the state (North Coast, San Francisco, Sacramento River and North Lahontan regions and parts of Central Coast and San Joaquin River regions) have been modeled – spring 1997 to spring 1998 for the 1998 water year and spring 1999 to spring 2000 for the 2000 water year. All other regions and year 2001 were calculated using the following equation:

GW change in storage =
intentional recharge + deep percolation of applied water + conveyance deep percolation - withdrawals

This equation does not include the unknown factors such as natural recharge and subsurface inflow and outflow.