CITY OF
FOLSOM
DISTINCTIVE BY NATURE

CITY OF FOLSOM
2010 Urban Water Management Plan

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LIST OF ATTACHMENTS

Attachment A	Copy of Coordination Letter sent to local agencies
Attachment B	City of Folsom Resolution No. 8857
Attachment C	City of Folsom Public Hearing Notice for 2010 UWMP
Attachment D	City of Folsom 2009 Consumer Confidence Report
Attachment E	City of Folsom Ordinance 1118
Attachment F	Folsom Municipal Code Section 13.26

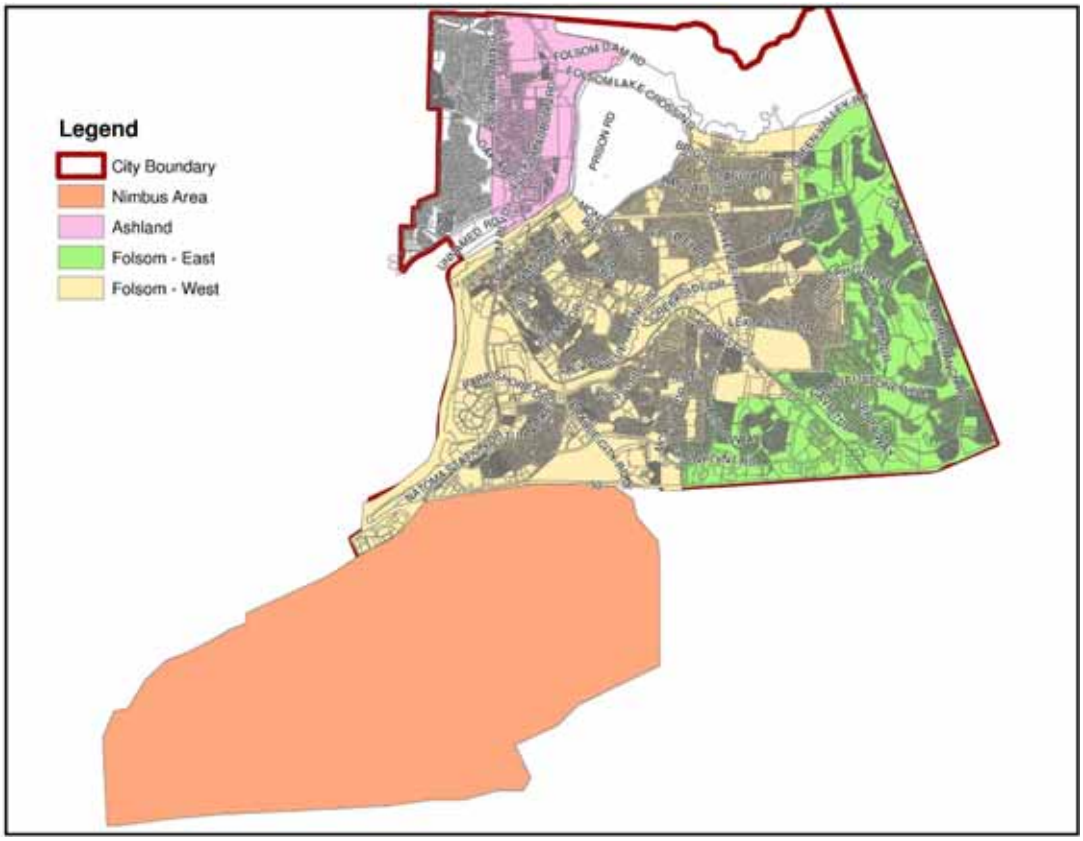

Figure 2-1. City of Folsom boundary.

The Folsom SPA is within the City's Sphere of Influence, but not currently within the City's boundaries. At the time this document was prepared the Folsom SPA was not yet annexed into the City. Upon completion of the environmental review process and annexation into the City, the Folsom SPA will be part of the City's water service area. The Folsom SPA will be located in the Southern portion of the City of Folsom and is bounded on the north by Highway 50, White Rock Road to the south, Prairie City Road to the west, and the Sacramento/El Dorado County line to the east.

The Nimbus Area was ratified pursuant to PUC Order No. 71889 (Jan. 24, 1967) and related agreement with Aerojet (Aug. 30, 1967). The Easton Area and Westborough Area are located in an unincorporated area of Sacramento County outside the City limits but within the City's water service area (Nimbus Area) and are situated south of Highway 50 and Folsom Boulevard east of Hazel Avenue. The Easton Area consists of two developments, Easton Place and Glenborough at Easton. The City of Folsom may relinquish water service to Westborough to Golden State Water Company pursuant to the agreement with them. At the time the UWMP was written, however, the conditions for implementation of the agreement were not met and the City does not have any proposed developments for Westborough.

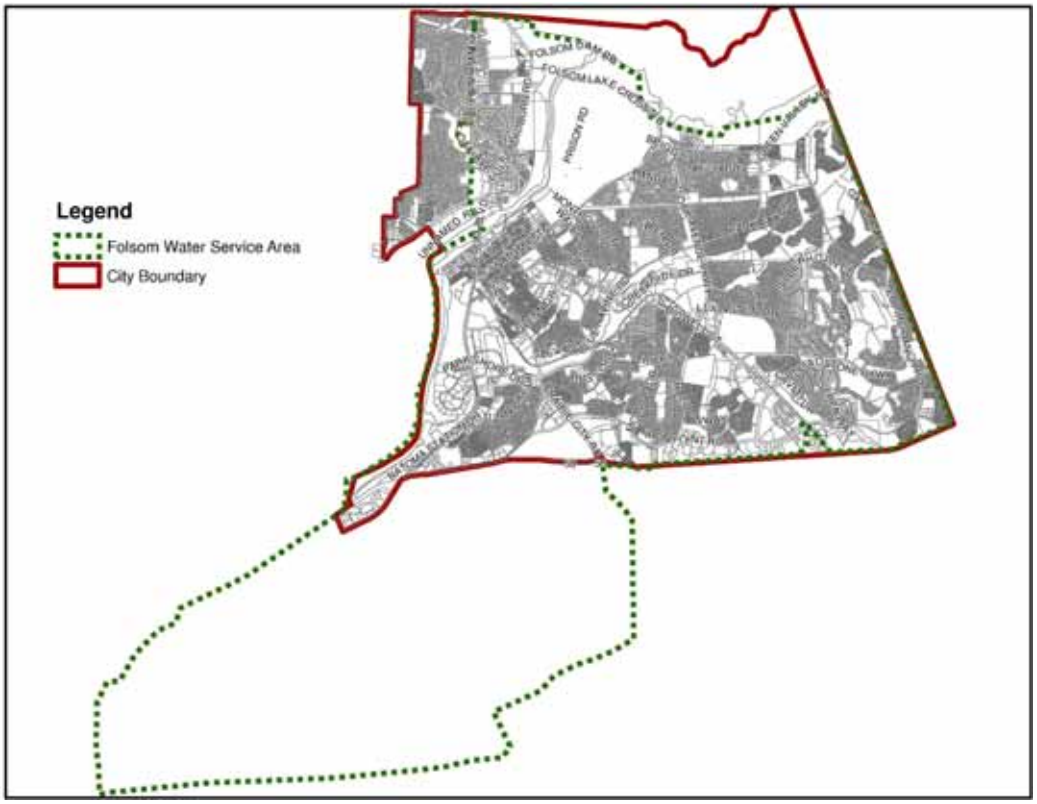

Figure 2-2. City of Folsom boundary and water service area limits.

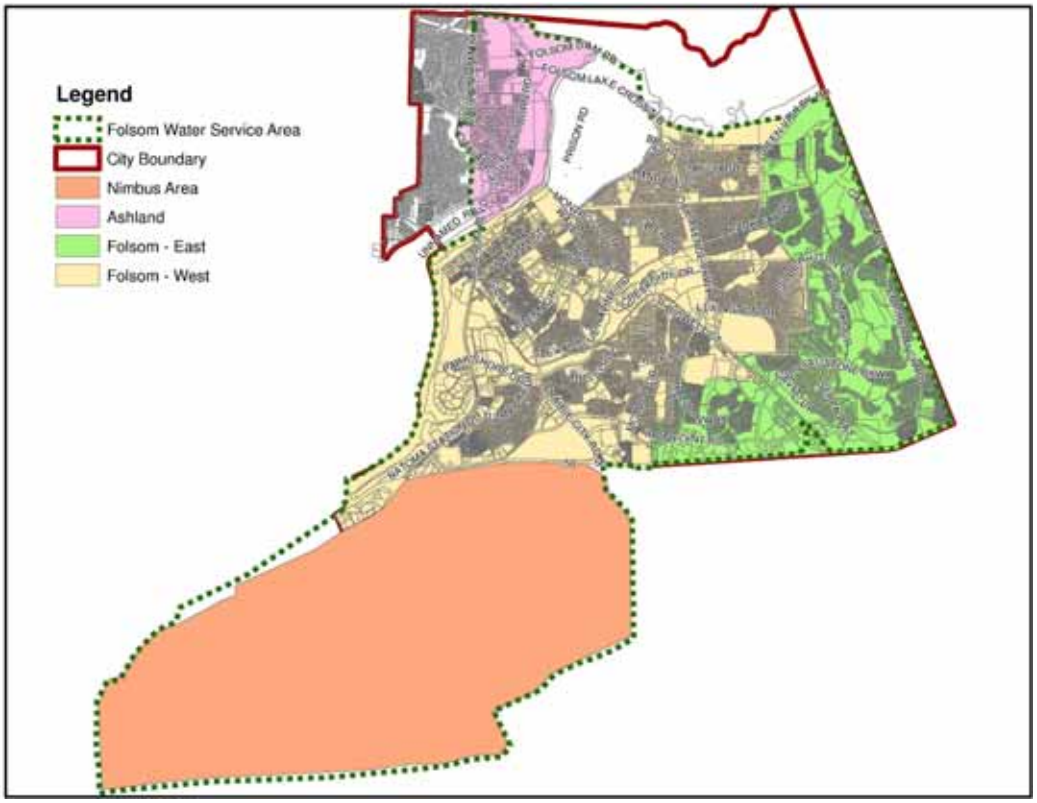

Figure 2-3. Four areas currently served by the City of Folsom.

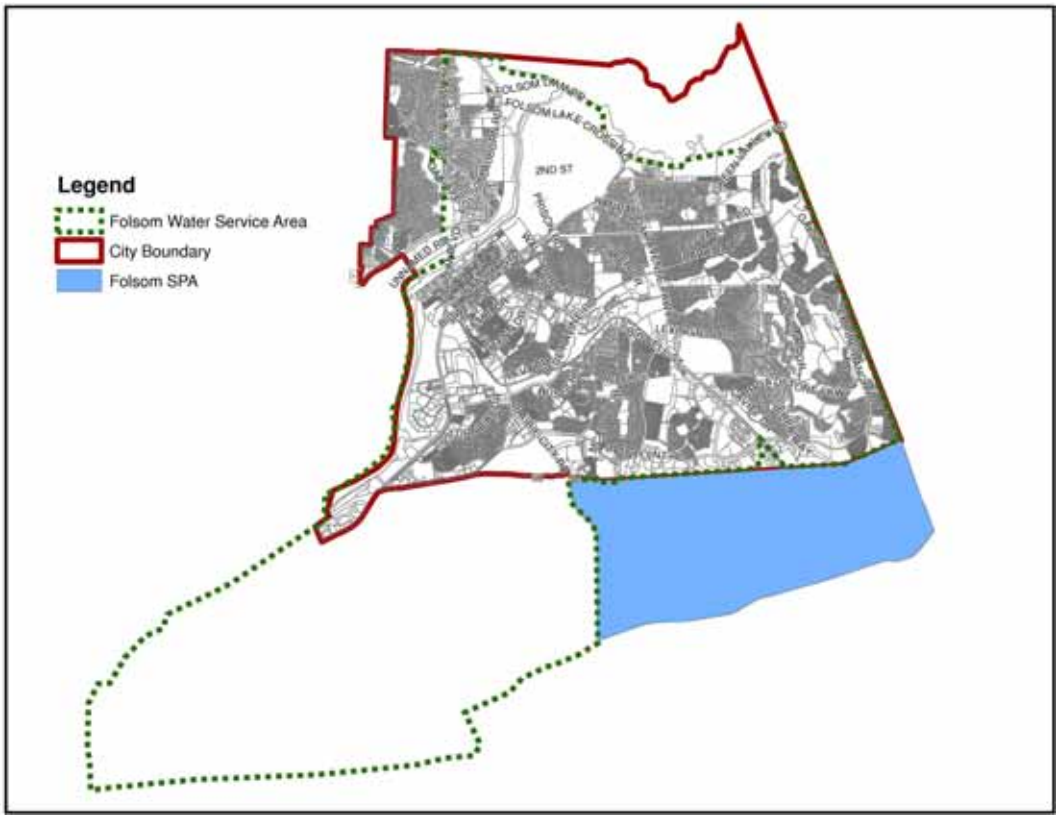

Figure 2-4. Folsom U.S. South of 50 Specific Plan Area.

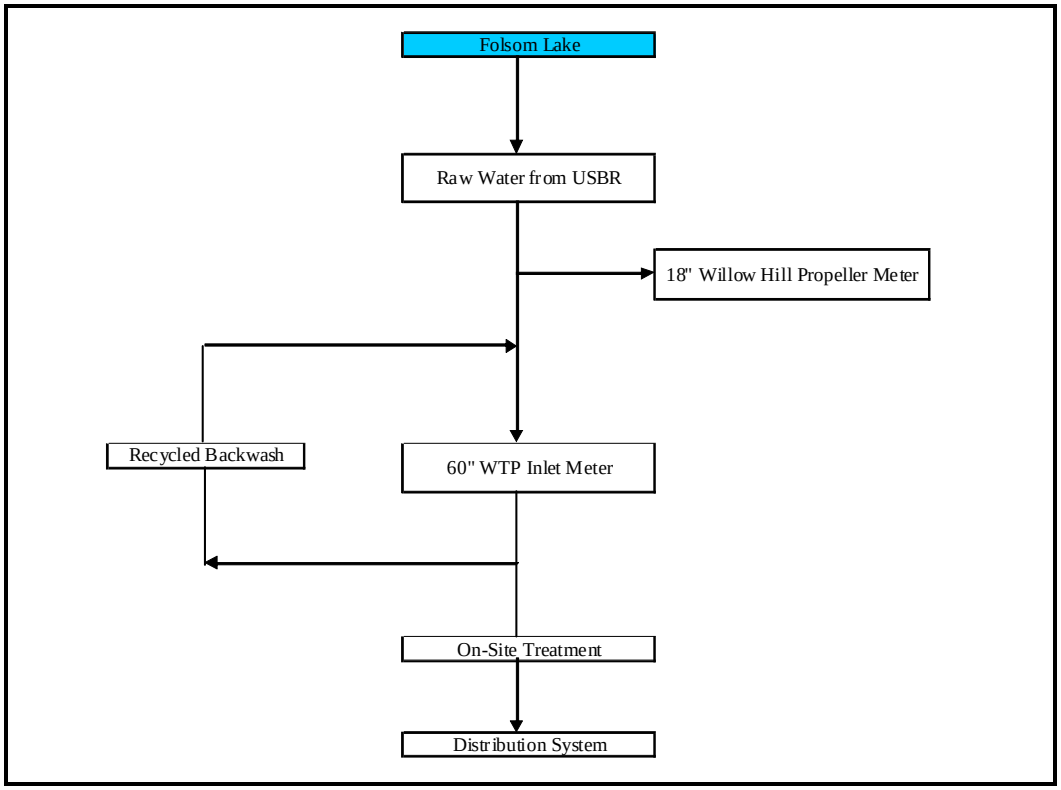

Figure 2-5. City of Folsom surface water delivery diagram.

2000 Census data (Census tracts and blocks), the City can calculate current and historical population figures for this area. **Table 2-2** shows the 2000 Census Tracts and the area within the City's boundary that each tract is located.

Table 2-2. City of Folsom 2000 Census Tracts.

Area within the City	2000 Census Tracts
American River Canyon	82.09, 82.10
Ashland Water Service Area	82.09, 82.10
Folsom Water Service Area - West	84.02, 84.03, 84.04, 85.01, 85.02, 85.03, 85.04
Folsom Water Service Area - East	85.01, 85.02, 85.03

Current population estimates and historical population was generated using the 2000 U.S. Census data. Both historical data (2000 Census) and future projections are analyzed. **Section 2.4.5** describes how the City calculated service area population. The 2000 Census and the City's land-use based build-out projections were used as the primary source for projecting the City's population for the areas north of Highway 50 (Ashland, American River Canyon, Folsom West, and Folsom East). These areas are within the City's boundaries and need to be calculated prior to calculating the service area population. Since the American River Canyon Area is within the City's boundaries, but not within the City's water service area, this population must be subtracted from the total population within the City's boundaries in order to calculate the service area population

Geographical Information System (GIS) data was used to identify "developed" and "build-out" conditions. Although the American River Canyon population is included in **Table 2-3,** current and projected population for this area is subtracted from the City's total population since the population of this area is not within the City's water service area. For the Folsom SPA and the Easton Place/Glenborough Project, each project's EIR was used as the primary source for projecting the City's population in these areas.

For the Ashland Area, American River Canyon Area, Folsom Service Area West, and the Folsom Service Area East, where residential build-out is anticipated in 2020, the number of dwelling units built each year is based on estimates provided by the City's Community Development Department. The number of dwelling units built each year are multiplied by the capita per dwelling unit factors discussed in **sub-section 2.4.4** and **Table 2-8.** The resulting projections are shown in **Table 2-3**.

Table 2-3. Projected population data for the City of Folsom within the City's Boundaries.

City of Folsom Population Projections[7]						
Date	**American River Canyon**	**Ashland**	**Folsom - West**	**Folsom - East**	**Folsom SPA[8]**	**Total Population within City Boundary[9]**
2010	5,392	4,124	40,923	13,948	0	64,388
2011	5,396	4,129	40,948	13,998	0	64,472
2012	5,409	4,139	40,989	14,073	0	64,611
2013	5,431	4,156	41,087	14,320	0	64,995
2014	5,461	4,179	41,249	14,741	0	65,631
2015	5,502	4,209	41,489	15,300	1,218	67,719
2020	5,841	4,342	42,393	20,779	6,086	79,441
2025	5,841	4,342	42,393	20,779	12,174	85,529
2030	5,841	4,342	42,393	20,779	18,255	91,610
2035	5,841	4,342	42,393	20,779	24,335	97,690

2.4.1 U.S. Census Bureau Historical Population Estimates

The U.S. Census Bureau conducts census surveys every ten years for the entire country, asking questions on household size, ethnicity, housing units, and other demographic statistics. The Census Bureau data provide detailed information for regions as small as Census blocks[10]. Historical data from 2000 census was used as a basis for the City population estimates. Based on the information provided by the Census Bureau for the census tracts and blocks within the City's boundary, the City can calculate single-family and multi-family capita per housing unit ratios. **Figure 2-5** shows how the City was divided into Census blocks for the 2000 Census.

A GIS-based map of the Census Blocks was used in conjunction with the map delineating the four areas north of Highway 50 to estimate population within each region. While most Census blocks for the City fell completely within one of the respective service areas, a few were split between two. For these instances, a rough estimate was made of the percentage of Census block area within each service area, and the total Census block population was split according to this percentage. This method is an approximation, and assumes uniform population density across Census blocks. Because of the small number of Census blocks requiring bisection, any error associated with the approximation should be relatively small.

[7] Population does not include "Group Quarters" from Folsom State Prison.
[8] The population estimates for the Folsom SPA are included as this area is within the City's Sphere of Influence and is proposed to be annexed into the City.
[9] The total population within the City's boundaries does not include the Glenborough at Easton and Easton Place projects, since these areas are not within the City of Folsom's boundaries. These projects are located in the unincorporated area of Sacramento County, but are each located within the City's water service area.
[10] A Census block is the smallest geographic unit for which the Census Bureau tabulates statistical data. Census blocks often correspond to individual city blocks, bounded by streets, but some Census blocks – especially those in rural areas – may encompass many square miles and contain boundaries that are not streets.

Table 2-4. 2000 Census data for the City of Folsom north of Highway 50.

2000 Census Data for the City of Folsom				
Service Area	**Vacant Units**	**Occupied Units**	**Population in Occupied Units**	**Housing Unit Ratio**
FSA – West	507	12,047	32,551	
Owner Occupied		9,131	25,927	2.84
Renter Occupied		2,916	6,624	2.27
FSA – East	126	1,239	3,438	
Owner Occupied		1,030	2,916	2.83
Renter Occupied		209	522	2.50
Ashland	69	2,002	4,030	
Owner Occupied		1,518	3,168	2.09
Renter Occupied		484	862	1.78
American River	68	1,872	4,844	
Owner Occupied		1,444	4,051	2.81
Renter Occupied		428	793	1.85

2.4.2 Land-Use Based Population Estimates

The City used current land-use information for the four service areas shown in **Table 2-6** for two time periods: "developed" and "build-out." For the purposes of this plan, developed conditions were assumed to be representative of the conditions at the end of 2009 across all service areas, while residential build-out conditions were projected to be reached by 2020 for the Ashland Area, Folsom West, and Folsom East. Due to the economic slow-down since 2008, the build-out dates from the 2005 UWMP have been adjusted with more current projections from the City's Community Development Department.

The land-use data includes estimates for the number of multi-family and single-family housing units in each of the service areas. For projected build-out conditions, there were also a limited number of acres for which no projected housing unit numbers have yet been compiled. For the land-use based population projections, these acres were converted to housing units using unit-per-acre data for each designated land-use category.

Information was obtained from the City's GIS shape files and from the 2009 Housing Element. The City of Folsom's 2009 Housing Element includes a housing inventory of vacant sites available for residential development. The 2009 Housing Element also includes built and proposed projects with affordable housing, which are included in the land-use calculations. A summary of the land-use data provided is included as **Table 2-5**.

Table 2-5. Summary of residential land-use data for the City of Folsom

Summary of Land-Use Data				
Unit Type	**FSA - West**	**FSA - East**	**American River Canyon**	**Ashland**
Developed Conditions (2010)				
Single-Family Units	11,508	4,481	1,780	912
Multi-Family Units	3,632	505	215	1,247
Build-Out Conditions (2020)				
Single-Family Units	11,656	5,800	1,875	978
Multi-Family Units	4,094	1,744	309	1,291

With a total number of single- and multi-family housing units for each service area available for both the developed and build-out conditions, 2000 Census data was used to convert the housing units to population figures. Based on the 2000 Census block level population data, the capita per dwelling unit can be calculated for single-family and multi-family residences for each of the four areas listed in **Table 2-6.** The capita per dwelling unit is multiplied by the number of vacant or undeveloped housing units to obtain the population projection for build-out conditions. **Table 2-7** summarizes the population projections based on developed and build-out conditions.

For the Easton Place and Glenborough at Easton project, the proposed land uses and zoning are defined and described in the Environmental Impact Report for the project. The number of dwelling units is multiplied by a factor of 2.64 persons per dwelling unit to obtain the population projection of 12,891 people. This figure is included in the City's projected service area population, but not in the City's total population, as this service area is not within the City's boundaries. This service area is within the unincorporated area of Sacramento County.

For the Folsom SPA, the proposed land uses and zoning are defined and described in the Environmental Impact Report for the project. For this project, the single-family and multi-family dwelling units are 2.92 capita/DU and 1.94 capita/DU, respectively. The single-family population projection is 13,490 people and the multi-family population projection is 10,845 people, for a total of 24,335 people. This figure is included in the City's total population as well as in the service area population.

Table 2-6. Summary of residential land-use population projections.

Summary - Land Use Population Projections[11]				
	FSA - West	**FSA - East**	**American River Canyon**	**Ashland**
Land-Use Derived Population at Developed Conditions (2010)				
Occupied Single-Family Units	11,508	4,481	1,780	911
Occupied Multi-Family Units	3,632	505	215	1,247
Single-Family Population	32,675	12,686	4,994	1,903
Multi-Family Population	8,249	1,262	398	2,222
Derived Total Population	40,924	13,948	5,392	4,125
Land-Use Derived Population at Build-Out Conditions (2020)				
Occupied Single-Family Units	11,656	5,800	1,875	978
Occupied Multi-Family Units	4,094	1,744	309	1,291
Single-Family Population	33,103	16,414	5,269	2,044
Multi-Family Population	9,293	4,360	572	2,298
Derived Total Population	**42,393**	**20,779**	**5,841**	**4,342**

2.4.3 Selecting Population Projections

The U.S. Census data is widely used to establish historical population estimates. Census data was, as a result, chosen as the basis for projected population estimate for each of the four areas in **Table 2-6**. The 2000 Census data was used to calculate a capita per dwelling unit factor for each of the four service areas. To calculate population projections for build-out conditions, the City multiplied this factor by the projected dwelling units in each of the four areas. Population projections for the Glenborough at Easton, Easton Place, and the Folsom SPA are provided in each project's EIR.

Based on the Environmental Impact Report for the Glenborough at Easton and Easton Place Project, Glenborough at Easton would be developed in five phases over a 20-year period as described in **Section 3.3**. Easton Place would also be developed in five phases, with each phase being implemented based on market demand. Phasing of Easton Place may follow development of residential uses in Glenborough; however, Easton Place is considered an independent development and is not necessarily tied to

[11] **Table 2-6** does not include population projections for Glenborough at Easton, Easton Place, or The Folsom SPA. Land use projections for these proposed projects are described in their respective EIR's. The City of Folsom's service area population is detailed in **Table 2-8**.

each phase of development in Glenborough (i.e., phase B of Easton Place would not be contingent on development of phases 1 and 2 of Glenborough, and vice versa).

Table 2-7. Proposed phasing for Glenborough at Easton and Easton Place.

Year	Phases[12]	Projected Population
2010	1 (Glenborough)	2,194
2015	4 (Glenborough), A (Easton place)	2,864
2020	2 (Glenborough)	2,072
2025	3 (Glenborough), B (Easton Place)	3,733
2030	5 (Glenborough) ,C,D & E (Easton Place)	2,028
	Total Population	**12,891**

For the Folsom SPA, population estimates will match the estimates listed in the Environmental Impact Report, which will occur over a 20-year period from 2013 to 2033. Depending on the final phasing plan selected by the land developers and the housing market conditions, the actual population estimates may change after the development of the 2010 UWMP. The population phasing estimate for the City of Folsom's service area is shown in **Table 2-8**.

Table 2-8. Population projections for the City of Folsom's water service areas.

City of Folsom Service Area Population Projections						
Year	Ashland	Folsom - West	Folsom - East	Easton Place - Glenborough	Folsom SPA[13]	Total Water Service Area Population
2010	4,124	40,923	13,948	2,194	0	61,190
2015	4,209	41,489	15,300	5,058	1,218	67,275
2020	4,342	42,393	20,779	7,131	6,086	80,730
2025	4,342	42,393	20,779	10,864	12,174	90,552
2030	4,342	42,393	20,779	12,891	18,255	98,660
2035	4,342	42,393	20,779	12,891	24,335	104,740

[12] See **Section 3 – System Demands**, for a detailed breakdown of land use designations and dwelling units for each of the phases.

[13] Although the Folsom SPA is not currently within the City's limits or water service area, the project lies within the City's Sphere of Influence, and is proposed to be annexed into the City's limits.

Table 2-9. City of Folsom population and service area relationship.

Area	Within City Boundary	Within City Service Area	Included in Service Area Population	Included in City's Total Population
American River Canyon	Yes	No	No	Yes
Ashland	Yes	Yes	Yes	Yes
Folsom - West	Yes	Yes	Yes	Yes
Folsom - East	Yes	Yes	Yes	Yes
Glenborough at Easton	No	Yes	Yes	No
Easton Place	No	Yes	Yes	No
Westborough	No	Yes	No[14]	No
Folsom SPA	Yes	Yes	Yes	Yes[15]

[14] At the time the UWMP was developed, the City does not have any planned developments for the Westborough Area.

[15] The Folsom SPA is included in the City's total population based on proposed annexation into the City's boundaries.

count this amount. **Table 3-1** includes annual delivery data from the Folsom WTP to Folsom Service Areas East and West.

Table 3-1. Folsom Water Treatment Plant Annual Production.

WTP Delivery Data to Folsom Service Area East and West[17]	
Year	**Deliveries (acre-feet)**
1996	10,985
1997	13,801
1998	13,617
1999	16,355
2000	16,254
2001	21,516
2002	20,861
2003	20,879
2004	22,818
2005	21,674
2006	23,926
2007	23,379
2008	24,678
2009	22,041
2010	23,113

3.1.2 City of Folsom Raw Water Delivery

In addition to treated water supplies, raw water is also delivered by the City, but only to Aerojet's Industrial property located south of Highway 50. This water is conveyed by a pipeline that eventually empties into Willow Hill Reservoir. Aerojet diverts raw water from the reservoir to meet part of its needs. Historical records from the raw water meters at Aerojet indicate an average annual use of about 2,731 acre-feet. A significant change to projections in the 2005 UWMP is that Aerojet's future raw water demands are now projected to be the same as its previous average annual use. Assuming the conditions in the settlement agreement entered into between the City and Aerojet are completed, as explained in more detail in **sub-section 4.1.5**, the source of water supplied by the City to meet Aerojet's raw water demands will also change.

3.1.3 Sydney N. Peterson Water Treatment Plant

For the area north of the American River, water is diverted through the Sydney N. Peterson Water Treatment Plant (SNPWTP), where it is then pumped or conveyed by

[17] These deliveries do not include raw water deliveries to Aerojet or water delivered to the Ashland water service area.

3.2.1 Estimating Baseline Treated and Raw Water Demand

Baseline projections of future demand for the existing service areas[19] were estimated using land-use based projections of the number of residential dwelling units or acres of other land classifications, multiplied by unit demand factors that vary with each classification. The City anticipates full build-out within its Ashland, Folsom Service Area – West and Folsom Service Area – East by 2020. The vast majority of additional construction in the existing development areas will occur in the Folsom West and East service areas. Only minor infill projects are anticipated in the Ashland Service Area. Future projections for Glenborough at Easton and Easton Place are discussed in **sub-section 3.3.** Future projections for the Folsom SPA are discussed in **sub-section 3.4**.

Projected Land Use: The primary source for the land-use based water demand projections was data obtained from the City, including land-use classification data for the entire City for "developed" and "build-out" conditions. The data consisted of tables of acreage levels and housing unit numbers for individual developments within the City, indexed by service area. **Table 3-3** shows an aggregated summary of the "Developed" and "Build-out" conditions, organized by water service areas north of Highway 50.

Unit Water Demand Factors: Baseline unit water demand factors, which are used to establish an acre-foot-per-unit (or per acre) per year demand for a particular type of land-use, were applied to the values in **Table 3-3** to estimate future water demands. **Table 3-4** shows the unit demand factors used for the respective land-use designations.

The unit demand factors for residential land-use categories are separated by indoor and outdoor use. This was done to accommodate evaluation of conservation opportunities. In a similar fashion, the non-residential uses were also separated into indoor and landscape unit demands, rather than a traditional value that attempts to blend indoor and outdoor uses together.

For the non-residential acreage, provided on a "total acres" basis in **Table 3-3,** there is an additional need to identify the percentage of the total acreage for an individual land-use class by indoor or outdoor. For instance, a large retail shopping center only has a small percentage of the property landscaped and a moderate percentage with domestic and process water uses. Therefore, if a retail site is 10 acres only 0.5 acres may be landscaped and only 3 acres may have indoor uses. The remaining 6.5 acres

[19] The American River Canyon Area is not served by the City. The Ashland service area is served with water obtained from San Juan Water District under a contract with specific reliability provisions.

are “hardscapes” such as driveways, parking lots, and delivery alleys. The assumed percentages for the indicated acreage are shown in **Table 3-4** alongside the non-residential unit demand factors.

Table 3-3. Developed and build-out figures for water service areas north of Highway 50.

Land Use Designation (in dwelling units or acres)	Developed (2010)			Build-Out (2020)		
	Ashland	FSA West	FSA East	Ashland	FSA West	FSA East
Single Family Dwelling - Large Lot (DU)	262	112	0	283	128	0
Single Family Dwelling - Small Lot (DU)	155	10,851	4,393	177	10,952	5,662
Single Family Dwelling - Medium Lot (DU)	494	545	88	517	576	138
Two Family Residence (DU)	0	398	0	0	416	0
Neighborhood Apartment District (DU)	0	183	0	0	186	0
General Apartment District (DU)	0	636	246	43	991	849
Multi Family Residential (DU)	630	2,415	259	630	2,501	895
Mobile Home / Trailer Park (DU)	617	0	0	617	0	0
Business and Professional District (AC)	0	142	0	0	197	0
Neighborhood Business District (AC)	14	63	11	15	63	34
Central Business District (AC)	15	314	119	20	314	147
General Commercial District (AC)	22	384	238	22	407	250
Light Industrial District (AC)	0	452	0	0	498	0
General Industrial District (AC)	0	33	0	0	33	0
Limited Manufacturing District (AC)	0	40	135	0	42	183
Parks (AC)	2	282	105	2	294	144
Schools (AC)	9	218	71	9	293	71
Lighting and Landscape (AC)	1.7	150	100	1.7	150	110

Table 3-4. Baseline water unit demand factors for water service areas north of Highway 50.

Baseline Unit Demand Factors for Water Service Areas North of Highway 50			
Land-use Category	Use Class	Demand Factor	% of acreage
Residential (acre-feet/du/year)			
SFR – Large Lot SFR – Medium Lot	indoor	0.20	
	outdoor	0.45	
	Total	0.65	
SFR – Small Lot	indoor	0.20	
	outdoor	0.36	
	Total	0.56	
Two Family Residence Neighborhood Apartment District	indoor	0.20	
	outdoor	0.20	
	Total	0.40	
General Apartment District Multi Family Residential Mobile Home/Trailer Park	indoor	0.20	
	outdoor	0.10	
	Total	0.30	
Non-Residential (acre-feet/acre/year)			
Business and Professional District	Indoor	2	40%
	Landscape	4	10%
Neighborhood Business District	Indoor	1	40%
	Landscape	4	5%
Central Business District	Indoor	1.5	60%
	Landscape	4	10%
General Commercial District	Indoor	2	50%
	Landscape	4	10%
Light Industrial District	Indoor	2	60%
	Landscape	4	5%
General Industrial District	Indoor	2	60%
	Landscape	4	5%
Limited Manufacturing District	Indoor	2	60%
	Landscape	4	5%
Park	Indoor	0.5	5%
	Landscape	4	75%
Schools	Indoor	3	10%
	Landscape	4	50%
Lighting and Landscape	Landscape	4	n/a

Non-Revenue Water: The unit demand factors do not account for losses that occur in the distribution to these customers, or non-revenue water supplies, such as fire hydrant flushing, and construction water. Non-revenue water includes unbilled authorized uses, apparent losses, and real losses. To account for these factors in the overall demand requirements, the estimated demands are multiplied by a "non-revenue water" percentage, which is then added to the projected end-user demand to generate an overall estimate for demand for treated water supplies. The following

percentages have been estimated by the City to represent conditions within the various service areas. These values are consistent with the experience of other local purveyors with systems running high pressures.[20] Unaccounted for water percentages vary for residential versus non-residential as a result of smaller pipe sizes and material type as well as multitude of fittings at high pressures. Estimated percentages are shown in **Table 3-5**. Percentages between the Folsom West and East service areas also have been found to vary as a result of older developments in the Folsom West Service Area.

Table 3-5. Non-revenue water percentages.

Non-Revenue Water Percentage (as a % of total demand, including non-revenue water)	
	Folsom Service Area - West
Existing	25%
2035	15%
	Folsom Service Area - East
Existing	25%
2035	15%
	Ashland Service Area
Existing	25%
2035	15%

With anticipated buildout, which will reduce construction water demand, plans for metered billing, and other BMP activities planned by the City, the percentages are expected to decrease over the next 20 years. In addition to these activities, the City of Folsom has contracted with Water System Optimization, Inc. for a Two-Year Water Management Control Program. This water management control program is the foundation of the City's System Optimization Review (SOR), as it helps identify areas of conserved water and improves system efficiencies.

Final demand projections for the City's water service areas north of Highway 50 are presented in **Table 3-6**. Values shown are the summation of the total demand projections presented for Folsom Service Area – West, Folsom Service Area – East and Ashland Service Area. Water demands include the land-use values in **Table 3-3** multiplied by the associated unit demand factors and indoor/landscape percentages in **Table 3-4,** and the unaccounted for water for the treated distribution system. Project baseline demands for Glenborough at Easton and Easton Place are discussed in **sub-section 3.3** and the baseline unit demand factors are discussed in **sub-section 3.4**.

[20] The City has average operating pressures of up to 100 psi in some service areas as a result of the topography of the region.

Table 3-6. Projected baseline demands for water service areas north of Highway 50.

Projected Baseline Demand by Service Area and Land Use Designation (AF/YR)						
	Developed (2010)			Build-Out (2020)		
Land Use Designation	Ashland	FSA West	FSA East	Ashland	FSA West	FSA East
Single Family Dwelling - Large Lot	217	112	0	256	126	0
Single Family Dwelling - Small Lot	111	9,335	2,247	138	9,256	3,084
Single Family Dwelling - Medium Lot	410	544	52	469	565	87
Two Family Residence	0	245	0	0	251	0
Neighborhood Apartment District	0	112	0	0	112	0
General Apartment District	0	293	67	18	449	248
Multi Family Residential	241	1,113	71	263	1,132	261
Mobile Home / Trailer Park	236	0	0	258	0	0
Business and Professional District	0	262	0	0	357	0
Neighborhood Business District	11	58	6	13	57	20
Central Business District	26	627	141	36	616	186
General Commercial District	39	826	304	43	860	340
Light Industrial District	0	972	0	0	1,052	0
General Industrial District	0	71	0	0	70	0
Limited Manufacturing District	0	86	173	0	89	249
Parks	6	1,313	290	7	1,343	425
Schools	27	770	149	30	1,017	159
Lighting and Landscape	9	922	365	9	906	428
Total	**1,332**	**17,660**	**3,865**	**1,540**	**18,257**	**5,487**

As part of the UWMP, the City is required to provide San Juan Water District with water use projections in five-year increments to 20 years out or as far as data is

Proposed land uses are described in **Table 3-10 and Table 3-11**, with residential densities expressed as dwelling units per acre (DU/AC), and commercial densities expressed as acreages and square feet. The land use categories for the unincorporated area of Sacramento County vary slightly from the land use categories within the City of Folsom boundaries, thus the land use categories are named differently.

Table 3-10. Glenborough at Easton and Easton Place Residential Land Uses.

Residential Land Uses				
Land Use Category	**Quantity**	**Unit**	**DU/AC**	**DU**
Low Density Residential	378.5	AC	4.4	1659
Medium Density Residential	77.9	AC	8.0	627
High Density Residential	29.5	AC	15.8	466
Commercial Mixed Use				487
Transit District (Easton Place)				1194
Central District (Easton Place)				450
Residential Land Use Totals	**485.9**	**Acres**		**4883**

Projected water demands for Glenborough at Easton and Easton Place were derived using the same methodology described in **sub-section 3.2**. Water demand factors assumed for Glenborough at Easton and Easton Place are shown in **Table 3-12** and are similar to the water demand factors in **sub-section 3.2** based on actual water use observed within the City. Water demand projections for Glenborough at Easton and Easton Place are shown in **Table 3-13** were calculated by applying these water demand factors to proposed land uses in **Table 3-10** and **Table 3-11**, respectively.

The unit demand factors used in the 2005 UWMP represent historic conditions with a range of housing ages, plumbing fixtures, and irrigation systems, and therefore do not reflect demand conditions for completely new construction. Since the 2005 UWMP was adopted, the City of Folsom has completed a five-year single-family residential meter reading project that has validated the unit demand factors used in the 2005 UWMP for the City's existing service areas, including the factors listed in **Table 3-12**.

Based on the Water Supply Assessment for the Easton Project, the average annual unit demand was 0.67 af/du/yr. This figure, therefore, supports the use of a historic figure between 0.60 and 0.70 af/du/yr as a basis for further refinement of the unit demand factors for Easton Place and Glenborough at Easton.

Table 3-11. Glenborough at Easton and Easton Place Non-Residential Land Uses.

Non-Residential Land Uses			
Land Use Category	**Quantity**	**Unit**	**Sq. Ft.**
Commercial Mixed Use	69.1	Acres	223,200
Commercial	2.4	Acres	20,900
Office	37.1	Acres	455,400
Transit District (Easton Place)	30.3	Acres	283,000
Central District (Easton Place)	54.9	Acres	2,309,100
Market District (Easton Place)	54.7	Acres	935,800
Schools	40.2	Acres	
Parkways	43.5	Acres	
Parkways (Easton Place)	14.9	Acres	
Community Resource Area	25.6	Acres	
Parks	50.5	Acres	
Parks (Easton Place)	7.5	Acres	
Open Space	122.9	Acres	
Open Space - Alder Creek	270.2	Acres	
Major Roadways	60.9	Acres	
Major Roadways (Easton Place)	20.7	Acres	
Non-Residential Land Use Totals	**905.4**	**Acres**	**4,227,400**

The Non-Residential sector water demand for Easton Place and Glenborough at Easton is evaluated on a land-area coverage basis. Each non-residential land-use is assigned an average coverage percentage for each non-residential land-use type – indoor, hardscape, and outdoor irrigation. Land-use coverage percentages were estimated based upon historic City of Folsom data as well as proposed Floor Area Ratios in the Commercial categories.

For purposes of this Urban Water Management Plan, non-revenue water for Glenborough at Easton and Easton Place is assumed to be 10% for both residential and non-residential water uses. This figure lower than the non-revenue water used in water demand projections for the City's existing service areas north of Highway 50, but is consistent with developments with newly constructed infrastructure and less variation in terrain (thus, lower and more consistent average system operating pressures).

Based on the Environmental Impact Report for the Glenborough at Easton and Easton Place Project, Glenborough at Easton would be developed in five phases over a 20-year period based on market demand. Easton Place would also be developed in five phases, with each phase being implemented based on market demand. Phasing of Easton Place may follow development of residential uses in Glenborough; however, Easton Place is considered an independent development and is not necessarily tied to each phase of

Table 3-13. Glenborough at Easton and Easton Place water demand projections.

Glenborough at Easton and Easton Place Water Demand Projections (acre-feet per year)					
Land Use Designation	**2010**	**2015**	**2020**	**2025**	**2030[25]**
Glenborough at Easton					
Low Density Residential	350.4	350.4	787.8	1078.4	1078.4
Medium Density Residential	91.8	91.8	154.6	351.1	351.1
High Density Residential	38.4	90.0	90.0	139.8	139.8
Commercial Mixed Use DU	0	146.1	146.1	146.1	146.1
Commercial Mixed Use Acres	0	34.9	34.9	34.9	34.9
Commercial	1.7	1.7	1.7	1.7	1.7
Office	0	35.6	35.6	35.6	35.6
School	0	0.0	23.7	46.7	89.9
Community Resource Area	0	0.0	79.4	79.4	79.4
Parkways (43.5 acres)	34.8	69.6	104.4	139.2	174.0
Parks	27.2	27.2	79.6	110.1	149.1
Easton Place					
Transit District (HDR)	0	127.8	127.8	127.8	358.2
Central District (HDR)	0	0.0	0.0	135.0	135.0
Market District (HDR)	0	0.0	0.0	0.0	0.0
Transit District Commercial	0	13.8	13.8	13.8	21.7
Central District Commercial	0	0.0	0.0	57.1	101.8
Market District Commercial	0	0.0	0.0	0.0	75.8
Parkways (14.9 acres)	0	11.9	11.9	23.8	59.6
Parks	0	0.0	0.0	0.0	22.7
Sub - Total	544	1,000.8	1,691.2	2,520.5	3,054.7
Total demand without non-revenue water =					3,055
Non-Revenue Water (10%) =					305
Total treated demand (AF/YR) =					**3,360**

[25] Projected demands after year 2030 will remain the same, since build-out is scheduled to occur for the Easton Place and Glenborough at Easton developments in 2030.

3.4.3 Folsom SPA Non-Residential Outdoor Demand Factors

For this analysis, all commercial construction in the Community, General and Regional Commercial categories is one story and the building footprint utilizes the maximum targeted floor area. For the Office Park category, some of the units have multiple stories and the indoor coverage percentage is reduced accordingly.[36] For the Folsom SPA, the unit demand numbers for the non- residential classifications are provided in **Table 3-17.**

The non-residential unit demand factors include a 5% conservation-based non-residential indoor unit demand to incorporate water efficient fixtures of the CAL Green Code. The landscape unit demand factors for each non-residential land use category also includes an conservation-based outdoor unit demand factor to meet the 85% of reference evapotranspiration conclusions related to the California Model Water Efficiency Landscape Ordinance.

For the Folsom SPA, water use projections will match the estimates listed in the Environmental Impact Report, which will occur over a 20-year period from 2013 to 2033. Depending on the final phasing plan selected by the land developers and the housing market conditions, the actual population estimates may change after the development of the 2010 UWMP. And, depending on the final phasing plan selected by the land developers and the housing market conditions, these estimates may change prior to the 2015 Urban Water Management Plan as well.

[36] While the City of Folsom Zoning Code (§ 17.22.050) would seem to provide for buildings in categories similar to the Commercial and Office Park categories for the Folsom SPA to have more than one story, it is not certain what type of businesses will ultimately be sited in the Office Park and Commercial categories. Therefore, the building area coverage estimate is driven primarily by Tully & Young's professional opinion relative to new commercial and office park developments in the City of Folsom.

Table 3-17. Folsom SPA Non-Residential Unit Demand Factors.

Folsom SPA Non-Residential Unit Demand Factors				
Land-use Category	**Acres**	**Use Class**	**Coverage (%)**	**Use Class Unit Demand (AF/AC/YR)**
Mixed Use, Non-Residential	23.6	Indoor	20%	1.66
		Hardscape	45%	0.00
		Landscape	35%	3.73
Office Park	89.2	Indoor	25%	1.90
		Hardscape	35%	0.00
		Landscape	40%	3.73
General Commercial	212.9	Indoor	25%	1.66
		Hardscape	45%	0.00
		Landscape	30%	3.73
Community Commercial	38.8	Indoor	25%	1.66
		Hardscape	45%	0.00
		Landscape	30%	3.73
Regional Commercial	110.8	Indoor	28%	1.90
		Hardscape	47%	0.00
		Landscape	25%	3.73
Park	118.2	Indoor	2%	0.48
		Hardscape	3%	0.00
		Landscape	95%	3.73
Local Park	3.5	Indoor	2%	0.48
		Hardscape	3%	0.00
		Landscape	95%	3.73
Schools	179.3	Indoor	25%	2.85
		Hardscape	25%	0.00
		Landscape	50%	3.73
Open Space	1053.1	Indoor	0%	0.00
		Hardscape	0%	0.00
		Landscape	100%	0.00
Major Circulation	171.6	Indoor	0%	0.48
		Hardscape	90%	0.00
		Landscape	10%	3.73

For purposes of this Urban Water Management Plan, non-revenue water for Folsom SPA is assumed to be 10% for both residential and non-residential water uses. This is lower than the non-revenue water percentage used in water demand projections for the City's existing service areas north of Highway 50, but is consistent with developments with newly constructed infrastructure and less variation in terrain (thus lower and more consistent average system operating pressures). Water demand projections for Folsom SPA shown in **Table 3-18** were calculated by applying the residential and non-residential water demand factors to proposed land uses in **Table 3-16** and **Table 3-17**, respectively.

Table 3-19. Water Service Area 2005 metered and non-metered water use by sector.

	2005				
	Metered		Non-Metered		Total
Water use sectors	# of accounts	Volume (AF)	# of accounts	Volume (AF)	Volume (AF)
Single family	48	40.3	15,860	14,479	14,519
Multi-family	265	989.7	0	0	990
Commercial	523	2418.3	0	0	2,418
Industrial	6	1014.9	0	0	1,015
Municipal (Institutional & Governmental)	9	168.7	0	0	169
Landscape	377	2636.4	0	0	2,636
Schools	29	333.8	0	0	334
Aerojet Non-Potable Water	1	2,893	0	0	2,893
Total	**1,258**	**10,495**	**15,860**	**14,479**	**24,974**

Table 3-20. Water Service Area 2010 metered and non-metered water use by sector.

	2010				
	Metered		Non-Metered		Total
Water use sectors	# of accounts	Volume (AF)	# of accounts	Volume (AF)	Volume (AF)
Single family	898	662.5	16,587	7831.6	8,494
Multi-family	359	1344.3	0		1,344
Commercial	683	6005.9	0		6,006
Industrial	5	349.5	0		349
Municipal (Institutional & Governmental)	35	375.4	0		375
Landscape	437	4151.5	0		4,152
Schools	35	2135.2	0		2,135
Aerojet Non-Potable Water	1	3567.0	0		3,567
Total	**2,453**	**18,591**	**16,587**	**7,832**	**26,423**

Table 3-21. Water Service Area 2015 metered and non-metered water use by sector.

	2015				
	Metered		Non-Metered		Total
Water use sectors	# of accounts	Volume (AF)	# of accounts	Volume (AF)	Volume (AF)
Single family	18,666	8,675	0	0	8,675
Multi-family	1,176	1,483	0	0	1,483
Commercial	704	5,800	0	0	5,800
Industrial	15	393	0	0	393
Municipal (Institutional & Governmental)	42	393	0	0	393
Landscape	465	3,971	0	0	3,971
Schools	0	2,029	0	0	2,029
Aerojet Non-Potable Water	1	2,731	0	0	2,731
Non-revenue water	0	0	0	2,659	2,659
Total	**21,069**	**25,476**	**0**	**0**	**28,135**

Table 3-22. Water Service Area 2020 metered and non-metered water use by sector.

	2020				
	Metered		Non-Metered		Total
Water use sectors	# of accounts	Volume (AF)	# of accounts	Volume (AF)	Volume (AF)
Single family	21,376	10,227	0	0	10,227
Multi-family	2,735	2,017	0	0	2,017
Commercial	752	6,075	0	0	6,075
Industrial	31	461	0	0	461
Municipal (Institutional & Governmental)	58	579	0	0	579
Landscape	518	4,078	0	0	4,078
Schools	37	2,134	0	0	2,134
Aerojet Non-Potable Water	1	2,731	0	0	2,731
Non-revenue water	0	0	0	3,007	3,007
Total	**25,508**	**28,303**	**0**	**0**	**31,310**

The City's service area population was detailed in **sub-section 2.4**, which describes how the American River Canyon population is calculated using the 2000 Census data. For historical purposes, the service area population is calculated using a combination of 2000 Census data and population estimates from the California Department of Finance. Historical population figures are shown in **Table 3-27.**

Census data is, however, only acquired at ten-year intervals. California Department of Finance estimates help resolve this timing issue by providing annual population figures for the entire City and for the individual group quarters facilities. For the non-census years between 2000 and 2010, the CDOF population estimates were used in calculating the base daily per capita water use. Since the CDOF does not identify population estimates based on service area within the City, a combination of Census data factors with land-use categories and CDOF estimates are used to calculate service area population for Folsom Service Area – East, Folsom Service Area – West, and Ashland Service Area.

In order to calculate the City's service area population for the current year and projected years, there are two additional steps required. First, the current and projected population from the American River Canyon Area is subtracted. Second, the population projections for the Glenborough at Easton, Easton Place, and Folsom SPA are added, since these areas are within the City's water service area.

Table 3-27. City of Folsom service area population.

Year	City of Folsom Total[43]	American River Canyon[44]	Service Area
1996	36,141	4,626	31,515
1997	38,441	4,677	33,764
1998	40,019	4,729	35,290
1999	44,940	4,780	40,160
2000	49,852	4,831	45,021
2001	52,492	4,952	47,540
2002	55,855	5,095	50,760
2003	57,804	5,238	52,566
2004	59,300	5,254	54,046
2005	60,816	5,269	55,547
2006	62,073	5,294	56,779
2007	63,752	5,318	58,434
2008	64,427	5,343	59,084

[43] This figure does not include the "Group Quarters" of the Folsom State Prison.
[44] The population figures in the American River Canyon are within the City's boundaries, but this area in not within the City's water service area. Therefore, this population figure is subtracted from the City's total population obtained from CDOF.

In order to calculate the 5-year and 10-year base daily per capita water use, the gross water identified in **Table 3-26** and **Table 3-28** is converted from acre-feet per year to gallons per day. The service area population is identified in **Table 3-27.** After converting the gross water use from acre-feet per year to gallons per day, the annual daily per capita water use is calculated as shown in **Equation 1.** The base daily per capita water use for the 5-year and 10-year base period is shown in **Table 3-29.**

Table 3-28. City of Folsom 5-year base period water use.

Year[46]	Water Treatment Plant Inlet	Willow Hill Reservoir[47]	Recycled Backwash	San Juan Water District	Gross Water (acre-feet)
2004	22,818	2,700	1,386	1,415	25,547
2005	21,674	2,893	1,154	1,561	24,974
2006	23,469	2,900	1,545	1,695	26,519
2007	23,962	3,020	1,498	1,820	27,304
2008	23,744	3,020	1,729	1,608	26,644

Equation 1. Base daily per capita water use calculation.

$$\text{Gallons per Capita per Day (GPCD)} = \frac{\text{Gross Water Use (Gallons)}}{\text{Service Area Population}}$$

Table 3-29. City of Folsom 5-year and 10-year base daily per capita water use.

Year	Service Area Population	Gross Water (acre-feet)	5-Year GPCD	10-Year GPCD
1996	31,515	14,761	n/a	418
1997	33,764	17,603	n/a	465
1998	35,290	17,376	n/a	440
1999	40,160	20,196	n/a	449
2000	45,021	20,278	n/a	402
2001	47,540	25,354	n/a	476
2002	50,760	23,414	n/a	412
2003	52,566	23,913	n/a	406
2004	54,046	25,547	422	422
2005	55,547	24,974	401	401
2006	56,779	26,519	417	n/a
2007	58,434	27,304	417	n/a
2008	59,084	26,644	403	n/a
Base daily per capita water use[48]			**412**	**429**

[46] Data presented in this table is for the Calendar Year listed, from January 1 through December 31.
[47] Raw water delivered for non-potable industrial uses at Aerojet.
[48] Base daily per capita water use is calculated by adding the values in the column and dividing by the number of rows.

3.8.1 California Model Water Efficient Landscape Ordinance

In 2006, the California Legislature enacted, and the Governor signed, the Water Conservation in Landscaping Act (Gov. Code §§ 65591-65599), which requires the Department of Water Resources to update the Model Water Efficient Landscape Ordinance (MWELO). On September 10, 2009, the Office of Administrative Law (OAL) approved the updated MWELO, which requires that a local agency implement the provisions of the MWELO by January 1, 2010. Because the City of Folsom is a "local agency" under the MWELO, it must require "project applicants" to prepare plans consistent with the requirements of MWELO for review and approval by the City of Folsom.

The MWELO provisions likely to have a significant effect on the landscape design and resulting outdoor water demand include preparation of a Landscape Design Plan with a water budget that is 70% of reference evapotranspiration.[49] The provisions of the MWELO are applicable to new construction with a landscape area greater than 2,500 square feet.[50] The MWELO "highly recommends" use of a dedicated landscape meter on landscape areas smaller than 5,000 square feet, and requires weather-based irrigation controllers or soil-moisture based controllers or other self-adjusting irrigation controllers for irrigation scheduling in all irrigation systems.[51] The MWELO provides a methodology to calculate total water use based upon a given plant factor and irrigation efficiency.[52] Finally, MWELO requires the landscape design plan to delineate hydrozones (based upon plant factor) and then assign a unique valve for each hydrozone (low, medium, high water use).[53]

3.8.2 Metering and Volumetric Pricing

In 2003, the California Legislature enacted, and the Governor signed, legislation that set in motion the requirement for the City of Folsom to install meters on all service connections to residential and nonagricultural commercial buildings constructed prior to January 1, 1992. As a result, Water Code § 526 now requires the City to charge for water based upon the actual volume of water delivered by March 1, 2013. Based on the City's 2007 Water Meter Implementation Plan, the City will begin billing all customers based on volumetric use beginning January 2013.

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[49] California Code of Regulations (CCR), Tit. 23, Div. 2, Ch. 27, Sec. 492.4. The MWELO provides the local agency discretion as to whether to calculate the water budget assuming effective precipitation (Eppt) 25% of annual. Use of Eppt would reduce the water budget further.
[50] CCR Tit. 23, Div. 2, Ch. 27, Sec. 490.1.
[51] CCR Tit. 23, Div. 2, Ch. 27, Sec. 492.7(a)(1)(A)-(B).
[52] In calculating Estimated Total Water Use, the MWELO requires use of at least a 71% irrigation efficiency factor. Assuming 71% irrigation efficiency, the average plant factor must be 0.50. It would be possible to stay within the water budget if the average plant factor were higher than 0.50 by designing a system with an irrigation efficiency higher than 71%.
[53] CCR Tit. 23, Div. 2, Ch. 27, Secs. 492.3(a)(2)(A) and 492.7(a)(2).

2015 Interim Target of 386 GPCD, but will not meet the 2020 Target of 343 GPCD based on current water use conditions. In order to meet the 2020 Target, the City will implement the measures described above, **sub-sections 3.8.1 thru 3.8.5**. See **Table 3-31** for the potential water use savings in GPCD based on the City's 2010 population data.

Table 3-31. City of Folsom water use savings based on 2010 population.

Water Use Reduction Type	Low AF/YR Savings	High AF/YR Savings	2010 Service Area Population	Low GPCD	High GPCD
Water Management Control Program	1,000	2,500	61,190	15	36
Metering and Volumetric Pricing	1,000	4,000	61,190	15	58
Model Water Efficient Landscape Ordinance	200	400	61,190	3	6
California Green Building Code Standards	400	800	61,190	6	12
CUWCC BMPs	500	1,000	61,190	7	15
TOTAL	**3,100**	**8,700**	**61,190**	**45**	**127**

In the 2015 UWMP, the City will be able to provide additional information based on water use reductions from the CUWCC BMP's and the City's transition to the GPCD reporting requirements described in the **Section 6, Demand Management Measures.** The GPCD approach evaluates compliance by evaluating the overall reduction in per capita water demand over time, which indicates the increase in efficiency in water demand over time, by dividing demand by population, which gives an average water consumption value per person served.

Table 4-1. City of Folsom Surface Water Supplies

City of Folsom Surface Water Supplies			
Water Right	**Supply Volume**	**Point of Delivery**	**Area Served**
Pre-1914	22,000 AF	Folsom Reservoir and Folsom South Canal	City of Folsom and Surrounding Regions
Pre-1914	5,000 AF	Folsom Reservoir and Folsom South Canal	City of Folsom and Surrounding Regions
CVP Project Supply	7,000 AF	Folsom Reservoir	Folsom East Area
Pre-1914 and CVP Supply	1,540 AF	Folsom Reservoir	Ashland Area

4.1.1 Pre-1914 Rights for 22,000 Acre-Feet per Year

The City's 22,000 acre-foot entitlement is based on a pre-1914 appropriative right from the South Fork of the American River established by the Natoma Water Company (Natoma) in 1851. Natoma's original pre-1914 water right established a maximum diversion rate "to fill a Canal Eight feet wide and Four feet deep with a current running Ten miles per hour." This correlates to a diversion rate of 60 cfs and a maximum allocation of 32,000 acre-feet per year. This right is held with Golden State Water Company pursuant to a co-tenancy agreement.

The place of use under the pre-1914 right included a wide area that encompasses the City and additional surrounding areas (including Easton Place/Glenborough). The 1851 filing is the earliest in priority of perfected appropriative rights on the South Fork of the American River. This water right was formally recognized in the settlement agreement between the U.S. Bureau of Reclamation ("Reclamation") and the City of Folsom. Under this agreement, Reclamation delivers this entire water supply without reduction on a permanent basis.

4.1.2 Pre-1914 Rights for 5,000 Acre-Feet per Year

The City's 5,000 acre-foot entitlement is also based on Natoma's pre-1914 appropriative right from the South Fork of the American River. In November 1994, the City executed a contract with Southern California Water Company-Folsom Division (SCWC) under which the City acquired the right to lease 5,000 acre-feet of water per year (of SCWC's remaining 10,000 acre-feet per year under the original Natoma purchase) for an indefinite period. This right is held with Golden State Water Company pursuant to a co-tenancy agreement. This water right was also formally recognized in the settlement agreement between Reclamation and the City of Folsom.

combined, these facilities will provide the City with an additional water supply of approximately 3,250 acre-feet per year. Water derived from the GET facilities will be used to meet industrial demands within the Aerojet Industrial Property (projected to average 2,731 acre-feet per year) as well as other potential non-potable demands throughout the City.

Because the City has not yet developed additional non-potable uses for the GET water supply, the amount of GET water represented will show this supply as only that which is projected to be used by Aerojet industrial facilities. Any GET water remaining above and beyond the demonstrated use by Aerojet can be used by the City for other non-potable demands.

4.1.5.2 Other Groundwater within the City's Water Service Area

Other groundwater use within the City's service area is limited to private use by the Empire Ranch Golf Course and as an emergency supply for Intel Corporation. The golf course uses groundwater in the spring and early summer months as a primary source of irrigation water. As the irrigation season progresses, groundwater levels typically decline and the golf course purchases supplemental potable surface supplies from the City. Intel has established two emergency backup wells capable of delivering 100 GPM and 15 GPM, respectively.

To better understand the groundwater conditions and supply potential that may underlie the golf course and other areas within the City limits, the City completed a Groundwater Resources Investigation through an AB 303 grant. Two test wells were installed for this study in localized areas of high electrical resistivity in ancestral paleochannels of the American River. These wells are considered to be of the South American Groundwater Sub-basin (5-21.65) of the Sacramento Valley Basin. The two test wells yielded 200 to 400 GPM during short-term pumping tests, but additional aquifer testing would be required to confirm the sustainability of the yields.

The wells were constructed with steel casing so they can be utilized as irrigation supply wells at some point in the future if desired by the City. Although analyses indicate good water quality in both wells, supply wells constructed for potable use must have a sanitary seal of at least 50 feet bgs. Wells constructed with the minimum seal would most likely result in a significant reduction in groundwater production, thereby resulting in a non-economic municipal groundwater supply. Moreover, additional groundwater protection would need to be considered if the aquifer were used for a potable supply since the dredge tailings are highly

regional and local water planning objectives through water transfers and exchanges.

4.3.4.3 Water supply for potential growth

The City may consider water transfers and exchanges as a viable water supply option for potential new growth within or without its existing boundaries that has not been contemplated in the planning horizon presented in this Urban Water Management Plan. Although the City currently has no intent to expand its service area beyond the discussions in existing planning documents, or provide any permanent supplies outside its service area boundary, in the event such a potential action were to happen or unforeseen significant increased industrial development occurs within its service area (due to high water using industries) the City may consider entering water exchange or transfer arrangements.

4.3.5 Water Transfer Mechanisms

There are numerous mechanisms that may be used to meet Folsom's water transfer objectives described above. Below is a discussion of some of these mechanisms that may be available to the City.

4.3.5.1 Water conservation

The City is undertaking aggressive activities to meet water conservation objectives. These conservation activities include assessing infrastructure and end-user water conveyance and use. In particular, the City has embarked on a System Optimization Review Program in conjunction with the United States Bureau of Reclamation in order to improve its short-term and long-term water management efforts. All water supplies conserved through the City's efforts will be retained by the City and potentially made available for alternative uses as provided under California Water Code Section 1011. These new water supplies that have not been used in the City's service area may be made available for other beneficial uses within the City's service area.

4.3.5.2 Water management

The City is actively engaged in water management activities to optimally control its surface water and groundwater supplies for the best available uses. The City intends to pursue groundwater banking and storage arrangements in the context of regional cooperation and activities. Specifically, the City is actively engaged in the Central Sacramento County Groundwater Management program as well as working within its SOR Program to identify water storage and banking opportunities. These banking and storage opportunities in both efforts will be developed in order to flexibly and reliably manage the City's entire water supply portfolio for beneficial purposes within and without its service area.

in the three stages of reduction. Under these arrangements, those suppliers would use other surface or groundwater supplies in lieu of surface water taken from the American River that is equivalent to the amount that the City will continue to divert.[77] Accordingly, the Water Forum stakeholders have agreed to support the City entering into agreements to augment supplies in dry years.

In summary, the Water Forum Agreement could affect how the City would use its surface water allocation from the American River in specified dry years, but assumes that the City would enter into agreements with other suppliers to offset all or a portion of this reduction. Under the Water Forum Agreement, however, in any given year the City has a 95 percent probability of diverting at least 27,000 acre-feet of its surface diversion rights from Folsom Reservoir because there is a 95 percent probability in any given year of there being sufficient inflow to Folsom Reservoir to avoid Stage 2 reductions under that Agreement (see **Table 5-1**). In addition, the WFA includes provisions that will provide Folsom with alternative water supplies in years when its diversion might be reduced. Unknown future conditions related to climate change may have an impact on the historical probability calculation.

5.1.2 Central Valley Project Contract Supply

For the water supply discussed in Section 4.1, the primary SCWA-U.S. Bureau of Reclamation contract addresses supply reductions. The contract states that if the CVP supply is reduced because of "physical operations of the Project, drought, or other physical causes beyond the control of [the Bureau]" Reclamation "shall apportion the available Project Water supply . . . among existing contracts and future contracts . . . ." Accordingly, when supply reductions to municipal and industrial users (M&I) are required, water will be allocated by Reclamation. There are no required reductions for American River water purveyors.

The supply forecasts coupled with Reclamation's discretion often result in deliveries that do not match the contract supply. During the projection period, Reclamation may declare a "reduced supply" based on hydrologic conditions. Based on that declaration, Reclamation, as a matter of policy, may reduce municipal and industrial deliveries to a minimum of 75% of the contract entitlement, but retains the discretion to require greater reductions.

Reclamation also uses another accounting technique that further diminishes the supply allocations. Reclamation delivers only 75% of the contracting entities' historical use based on the last three years of full deliveries. For example, if the City

[77] In some instances, suppliers may transfer excess surface water supplies to Folsom, but the Water Forum Agreement is silent on this issue.

Municipal Code Section 13.26.06 has specific penalty provisions for violations under Stages 1-5. **Table 5-2** shows the various penalties associated with violating water shortage restrictions and prohibitions. **Figure 5-2** shows the City's water treatment plant production decreased after the City announced a Stage 2 water reduction in September 2008. **Figure 5-3** shows daily flows during this same period, with no landscape irrigation allowed on Mondays of each week. After the Stage 2 declaration, the City noticed almost a 20% reduction in water demands from the projected deliveries in September 2008. For the Calendar Year 2009, there was approximately a 12% reduction in water demands from the projected USBR deliveries to the City's WTP.

Table 5-2. Penalties associated with violating water shortage restrictions.

Violation	Penalty
First	Personal or written notification of penalty
Second (within 3 months of first violation)	Written notification and issuance of notice to correct
Third (within 6 months of first violation	Issuance of administrative penalty, mandatory installation of water meter, discontinued water service, and/or other penalties as provided in the notice of violation and as determined by the Utilities Director

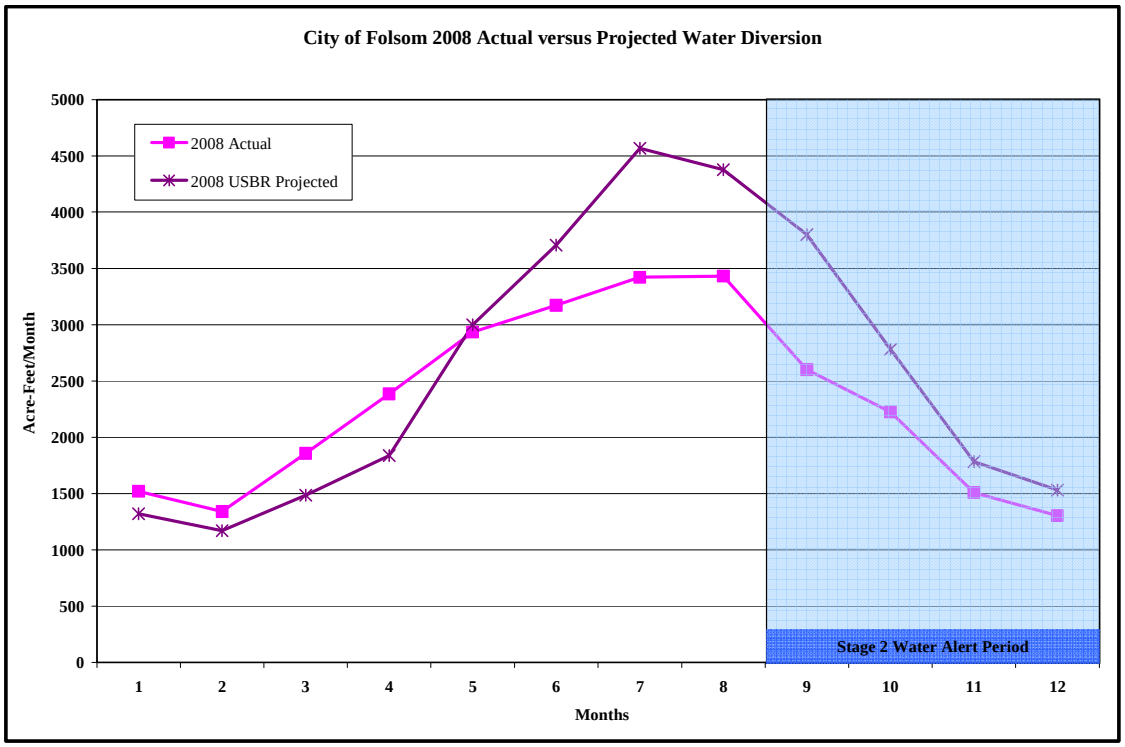

Figure 5-2. Water Treatment Plant production after Stage 2 declaration.

This Urban Water Management Plan assesses the City's water supplies based on: (1) the City's existing water supplies as required by Water Code §10610; and (2) the Water Forum Agreement's dry year diversion reduction and replacement water supply provisions. The average, or normal, water year supply projections are 37,250 acre-feet. This does not account for the 8,000 acre-feet of water for the Folsom SPA, as the WFA was developed prior to the City acquiring this water supply. As noted in **sub-section 4.2**, these supplies are distinct from the overall reductions assigned to the City in the Water Forum Agreement.

5.4.1 Single Dry Year

Based on the Water Forum Agreement, the unimpaired inflows to Folsom Reservoir are equivalent to those experienced in 1977 (approximately 332,000 acre-feet) and the Water Forum Agreement triggers a "conference year". The City's diversions are limited to 20,000 acre-feet, and agreements with other water suppliers are triggered to offset a portion of the City's reduction. For purposes of this Urban Water Management Plan, these agreements are assumed to provide an additional 7,000 acre-feet of water because the provision of such an amount of water by other water suppliers consistent with the provisions of the Water Forum Agreement.[81] In addition, GET A & B facility water of 3,250 acre-feet is available. Projected supplies are 30,250 acre-feet.

5.4.2 Multiple Dry Years

For multiple dry years, the unimpaired inflows to Folsom Reservoir are equivalent to those experienced for the three driest consecutive years of record – namely 1987, 1988 and 1989 (approximately 705,000 acre-feet, 545,000 acre-feet, and 1,979,000 acre-feet, respectively) and the Water Forum Agreement triggers a Stage 2 reduction the first year, a Stage 3 reduction the second year, but no reduction in the third year.[82] The City's diversions would be limited to 27,000 acre-feet in Year 1, and 22,000 acre-feet in Year 2. No reductions would occur in Year 3. Similar to the Single Dry Year condition and pursuant to the Water Forum Agreement, agreements with other water suppliers would be triggered in Year 2 to provide an additional 5,000 acre-feet. In addition, GET A & B facility water of 3,250 acre-feet is available. Projected water supplies are 30,250 acre-feet, 30,250 acre-feet and 37,250 acre-feet, for Year 1, Year 2, and Year 3 respectively.

[81] The Water Forum Agreement includes provisions for the City to offset reductions through agreements for water supplies from other water suppliers. Though these replacement water supply agreements are not yet in place, the City anticipates agreements to provide replacement supplies to levels allowed under the City's Pre-1914 water rights.

[82] These years were chosen from the 72-year record of unimpaired flows used for the analysis in Water Forum Agreement EIR.

Table 5-4. City of Folsom basis for base water years.

Basis of Water Year Data	
Water Year Type	**Base Year(s)**
Average Water Year	1999
Single-Dry Water Year	1977
Multiple-Dry Water Years	1987, 1988, 1989

Table 5-5. Supply reliability for the City of Folsom under the WFA.

Supply Reliability (Acre-Feet)				
Average / Normal Water Year	**Single Dry Water Year**	**Multiple Dry Water Years**		
		Year 1	**Year 2**	**Year 3**
37,250	30,250	30,250	30,250	37,250
Percent of Average/Normal Year:	81%	81%	81%	100%

For purposes of the sufficiency analysis, this reduction results in 30,250 acre-feet being available in both single and multiple-dry year conditions. As illustrated in **Table 5-6**, the City has sufficient water in normal years to meet projected demands of the Folsom Service Area – West, Folsom Service Area – East and Glenborough/Easton. However, modest shortfalls between available supplies and baseline demands would be expected in Single Dry Year and Multiple Dry Year conditions.

At 2030, this shortfall is estimated to be no larger than 1,519 acre-feet. To offset this projected shortfall during the infrequent dry hydrologic conditions represented, the City will declare a water shortage condition and implement actions allowed under its FMC 13.26. A temporary reduction in demand of about 6 percent would provide about 1,920 acre-feet, enough to balance available supplies with customer demands. Therefore, with the combination of available pre-1914 water rights, GET A & B facility water, supplemental surface water from other purveyors, and moderate temporary demand reduction measures, the City will also have sufficient water during Single Dry Year and Multiple Dry Year conditions.

Water District, but under the conditions of a dam failure, this intertie would likely be unavailable, since this supply of water is also served from the Folsom Dam.

5.6.2 Power Failure

In the event of a power failure, the City has stand-by generators at the Water Treatment Plant and each of the pump stations within the distribution system. The City performs monthly maintenance checks for each of the locations to ensure proper operation and fuel levels of the standby generators and equipment. Depending on the length of the power failure, the City would have to ensure that fuel levels are maintained at each of the standby generators for each location.

5.6.3 Flooding

In the event of flooding, there are several concerns. First, if the flooding would cause a dam failure or a breach at the dam, then the City would have to implement the proposed limited emergency connections discussed in **sub-section 5.6.1.** If the flooding does not cause any damage to the dam, there is a potential for water quality degradation of existing surface water supplies due to runoff into the American River. The City has the capacity to continue its water treatment process and can make changes to adjust to the incoming surface water quality.

5.6.4 Earthquakes

In the event of an earthquake, severe damage could occur if the damage causes a dam failure. In the case of a dam failure, refer to **sub-section 5.6.1**. If the extent of the damage does not cause damage to the dam, there is a potential to damage and cause failure to underground water distribution infrastructure and structural damage to the Water Treatment Plant infrastructure. Depending on the extent of the damage to the Water Treatment Plant, the City could use emergency intertie connections to serve potable water to various parts of the City.

Another possible scenario includes damage and/or failure to the existing raw water supply pipe to the Water Treatment Plant. Since this is the only surface water supply to the City, the failure of this pipe would cause surface water supply interruption to the City's WTP. During this time, the City would initiate an emergency water supply shortage proclamation. The City would also utilize existing emergency interties. In February 2009, the City of Folsom experienced a failure of the existing 42-inch raw water main that delivers untreated surface water to the City's WTP. Due to the time of year of the pipeline failure, the City was able to maintain potable water service to existing customers through existing water storage tanks.

In the event that this type of failure were to occur during the middle of the day in the summer, the City could only expect to delivery up to half a day of potable water or less, depending on the storage levels at the time of failure. In this scenario, the City would ask residents to limit water use and consumption. The City would also use the emergency intertie connections to help supplement potable water. The City is actively working with regional water purveyors to create redundant supply systems that could provide water in the event of a catastrophic failure.

5.6.5 Revenues and Expenditures Affected by Water Shortages

The City is currently working with Regional, State, and Federal agencies to develop a conjunctive use program that will help address the potential impacts of water shortages. This program may offset potential shortages in revenues and additional expenditures. The City may also consider adopting drought rates to address potential water shortages.

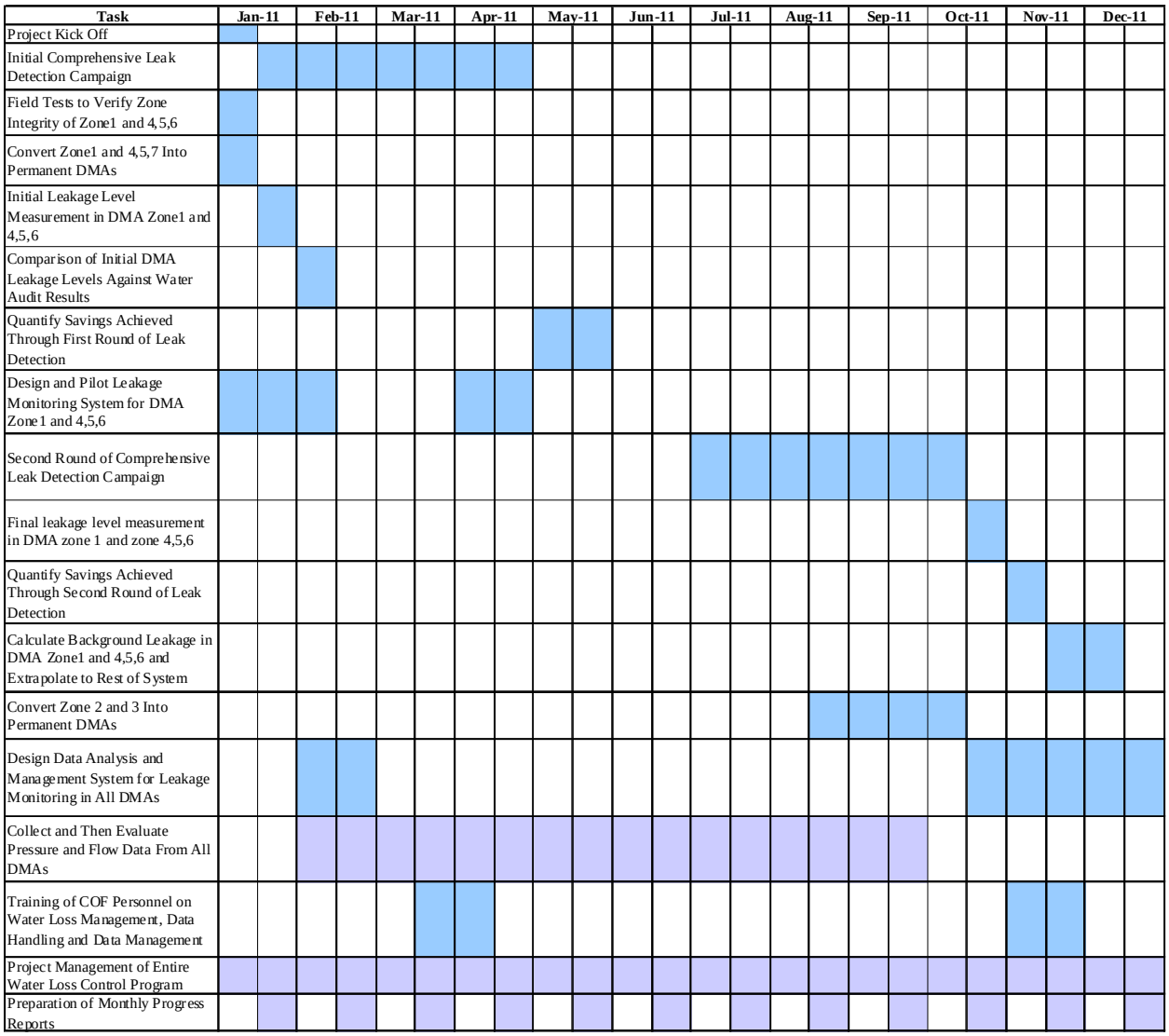

Figure 6-1. Tasks for Year 1 of the Water Management Control Program

The proposed water management control program will potentially achieve a savings of approximately 2,500 acre-feet of water per year. The results of this water management control program will also place the City in a position for future grant opportunities through the Bureau's Water Marketing and Efficiency Grant program.

matter will include water efficient landscape design, plant selection, irrigation, composting, and River Friendly Landscaping Principles. The City is currently cooperating regionally through the Regional Water Authority to provide training to landscape professionals with the Green Gardener Training Program as well as a variety of seminars throughout the year. Don Smith, the City's Water Management Coordinator serves as the Chair of the Regional Water Authority's Landscape Committee.

The estimated annual budget for our Irrigation Efficiency Program is $119,410.

Section 7. Climate Change

Climate change may affect water demand, water supply, and water quality. The potential for early runoff or reduced snowpack are two of the climatic changes that could have a direct affect on the City of Folsom's supply and water quality. Based on future water demand requirements, the City does not anticipate that climatic change will affect the current and proposed water supplies. Determining the exact implications of climate change at this time is speculative.

Global climate change may ultimately affect the amount of water stored within the California Sierra Nevada snowpack, alter the amount of precipitation in the Sacramento and American River watersheds, and increase temperatures. Because the snowpack acts as additional water storage, a reduced snowpack or reduced total precipitation may affect the amounts of water stored in reservoirs, including CVP reservoirs, the timing of reservoir releases, and the total water volumes available for spring and summer diversion and use. None of these changes are currently foreseeable and will be monitored in the future to assess trends in snowpack, runoff patterns, and consumer use.

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
6	Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.	10621(b)	Plan Preparation		Section 1.2
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	10621(c)	Plan Preparation		Section 1.3
8	Describe the service area of the supplier	10631(a)	System Description		Section 2.1
9	(Describe the service area) climate	10631(a)	System Description		Section 2.3
10	(Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .	10631(a)	System Description	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.4
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	System Description	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.4

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a)	System Description		Section 5
13	Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).	10631(b)	System Supplies	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 4.1 & 4.2
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . .?	10631(b)	System Supplies	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4.1.5

No.	UWMP requirement [a]	Calif. Water Code reference	Subject [b]	Additional clarification	UWMP location
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	System Supplies		Section 4.1.5.1
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	System Supplies		Section 4.1.5
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	System Supplies		Section 4.1.5
18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	System Supplies		Section 4.1.5.1
19	For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	10631(b)(2)	System Supplies		Section 4.1.5