

## **Appendix C: Correspondences**

- UWMP Notice of Preparation, March 10, 2016
- Growth Projection Letter to Cities and Counties
- UWMP Public Draft Comments

## **Appendix C: Correspondences**

- UWMP Notice of Preparation, March 10, 2016



## CALIFORNIA WATER SERVICE

1720 North First Street  
San Jose, CA 95112-4598 Tel: (408) 367-8200

March 10, 2016

[Name\_F] [Name\_L]  
[Organization]  
[Address]  
[City], CA [ZipCode]

Dear [Title] [Name\_L]:

California Water Service (Cal Water) is committed to providing safe, reliable, and high-quality water utility service in our Visalia service area. At Cal Water, one of our top priorities is ensuring that our customers have a sustainable supply of water for decades to come.

With that in mind, we wanted to take this opportunity to let you know that we are updating our Urban Water Management Plan (UWMP) for this service area. This UWMP is reviewed and updated every five years pursuant to the Urban Water Management Plan Act, and will be completed by July 1, 2016. Our UWMP is a foundational document that supports our long-term water resource planning to ensure our customers have adequate water supplies to meet current and future demands.

Proposed revisions to our 2010 UWMP will be made available for public review, and we will be holding a public hearing, during which the updates for the 2015 UWMP will be discussed. The draft 2015 UWMP and the date, time and location of the public hearing will be available on our web site in a few weeks at [www.calwater.com/conservation/uwmp](http://www.calwater.com/conservation/uwmp). A hard copy of the draft UWMP will also be available at our Visalia Customer Center located at 216 North Valley Oaks Drive, Visalia, CA 93292.

If you have any questions about the UWMP for this service area, please contact Michael Bolzowski, Cal Water Senior Engineer, at (408) 367-8338 or e-mail [Planninginfo@calwater.com](mailto:Planninginfo@calwater.com).

Sincerely,

A handwritten signature in black ink that reads "Scott Wagner". The signature is written in a cursive style.

Scott Wagner  
Director of Capital Planning & Water Resources

Council Member Collins  
Council Member  
City of Visalia  
216 North Valley Oaks Drive  
Visalia, CA 93292  
greg.collins@ci.visalia.ca.us

Council Member Shuklian  
Council Member  
City of Visalia  
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Kimball Loeb  
Natural Resource Conservation Manager  
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Vice Mayor Gubler  
Vice Mayor  
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Supervisor  
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216 North Valley Oaks Drive  
Visalia, CA 93292  
sworthley@co.tulare.ca.us

## **Appendix C: Correspondences**

- Growth Projection Letter to Cities and Counties

## Blanusa, Danilo

---

**From:** Blanusa, Danilo  
**Sent:** Wednesday, August 19, 2015 9:53 AM  
**To:** 'Kimball Loeb (kloeb@ci.visalia.ca.us)'  
**Cc:** Salzano, Tom; Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.  
**Subject:** Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District  
**Attachments:** Letter to City Planning Officials - Attachmet - VIS.pdf

<b>Tracking:</b>	<b>Recipient</b>	<b>Delivery</b>
	'Kimball Loeb (kloeb@ci.visalia.ca.us)'	
	Salzano, Tom	Delivered: 8/19/2015 9:53 AM
	Bolzowski, Michael R.	Delivered: 8/19/2015 9:53 AM
	Keck, Jonathan	Delivered: 8/19/2015 9:53 AM
	Bailey, Scott A.	Delivered: 8/19/2015 9:53 AM

Dear Mr. Leob,

Pursuant to California Water Code, Division 6, Part 2.6, Sections 10610 through 10656, California Water Service is in the process of preparing the required 2015 update of our Urban Water Management Plans. These plans are required to be updated every five (5) years for each of our services areas (Districts). As you know our Visalia District provides water service to the City of Visalia.

The purpose of this communication is to solicit your assistance in reviewing and advising us with respect to one of the key elements of the plan, which is the development of a growth forecast for our district. This growth forecast is conducted based on growth in each customer service classification applicable to a particular district, which typically include:

- Single family residential
- Multi-family residential
- Commercial
- Industrial
- Government (City or County parks, median strips, landscaping and schools)
- Dedicated Irrigation (rare)
- Other (temporary construction meters)

The forecasted growth rates are combined with a demand per service factor applicable to each customer class to determine the future water demands for the district. These growth factors are adjustable and we want to review them with you so that we are consistent with anticipated growth that your planning efforts forecast. If adjustments are necessary we can do them now and avoid conflicts and confusion later in this process.

Some specific information regarding our approach to forecasting customer service growth is detailed as follows:

- **Residential** – Typically two residential customer service categories represent the vast majority of the service counts as well as subsequent water sales or demand in our districts. Cal Water considers both single family and multi-family residential services independently as individual classes, but combines them together in order to assess population growth and housing unit growth. While we use historical trends in the establishment for the growth rates for these two customer classes, we also analyze census data for population and housing factors and compare our forecast results for these two parameters with available data from City General Plans, as well as County Economic Forecast data and Regional government association forecasts as a reality or appropriateness check of our results.

- **Commercial & Industrial** – Historical trend is a key influence in this customer class, however where we have seen negative trends in recent years for these categories due to the economic downturn, we typically employ either a zero rate of growth or a small, reasonable positive rate of growth. We have also undertaken during the last ten years some reassessment of customer service classifications that has resulted in reallocation of some customer service accounts between various classes. This reallocation, which included commercial, industrial, multi-family residential and in some cases government services, has made the analysis of growth a bit more difficult.
- **Government** – Growth trends are generally parallel to that of the residential sector, so we verify that our rate of grow is not dramatically out-of-sequence with the overall community.
- **Other** – The use of temporary-assigned construction meters varies considerably from year to year, and can represent considerable water demand. In this case, we select a growth rate that is stable, yet reflects the overall growth of the community.

We have included with this communication a set of tables and graphs (see attachment) that illustrate the parameters that influence the growth forecast as currently set up for this district. These include:

- A. The historical and projected service data in both graph and table form
- B. The 2000 and 2010 Census data for the districts service area
- C. Housing projection chart comparing Cal Water’s forecast (always in red) with those from other organizations
- D. Population projection chart comparing Cal Water’s forecast (always in red) with those from other organizations
- E. Table of population and housing values along with multi-family residential unit density and persons per housing unit density that are employed in this forecast effort.

Please note that the 2015 data, which we need to include in our finished forecast, is not yet final, and some minor fluctuation of these values is possible.

Please examine these documents to determine if you concur with our forecasted housing and population numbers. It would be greatly appreciated if you could, by **September 11, 2015**, provide us with an indication of your support or in the case you do not agree with our forecast a reason why and the appropriate rate or growth pattern that we should employ. **If I do not hear back from you by the end of business (EOB) on the above date I will assume that you concur with our forecast.**

If you need a more detailed explanation of these numbers or want to review them with us please feel free to contact me at (408) 367-8340 or by email at [tsalzano@calwater.com](mailto:tsalzano@calwater.com).

Thank you for your assistance in this effort.

Respectfully,

*Thomas A. Salzano*

Thomas A. Salzano  
Water Resource Planning Supervisor

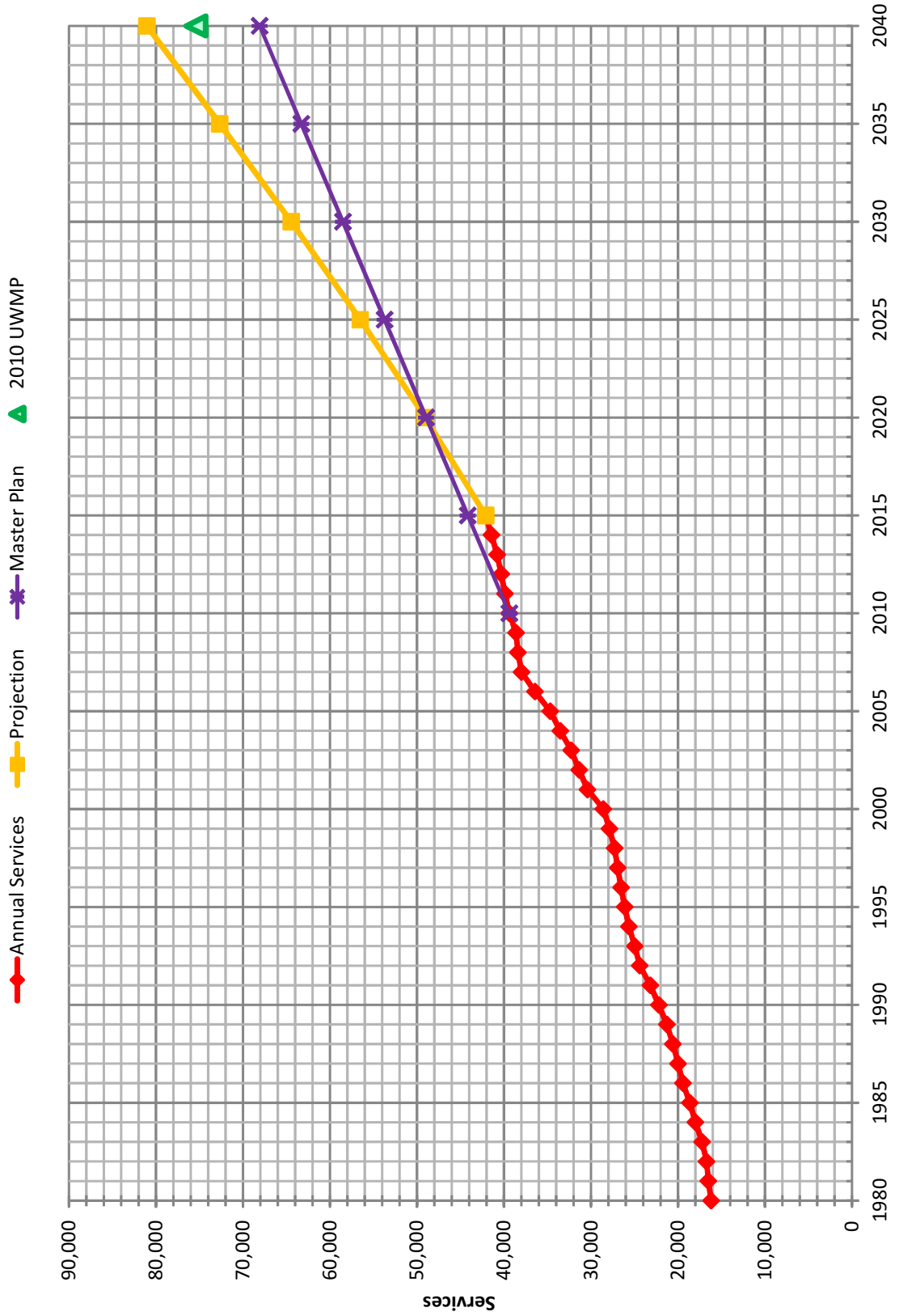
**Danilo Blanusa, P.E.**  
Senior Engineer  
**CALIFORNIA WATER SERVICE**  
408-367-8387



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[calwater.com](http://calwater.com)



# Historical & Projected Services



**California Water Service Company - Visalia District  
Water Supply and Demand Analysis and Projections**

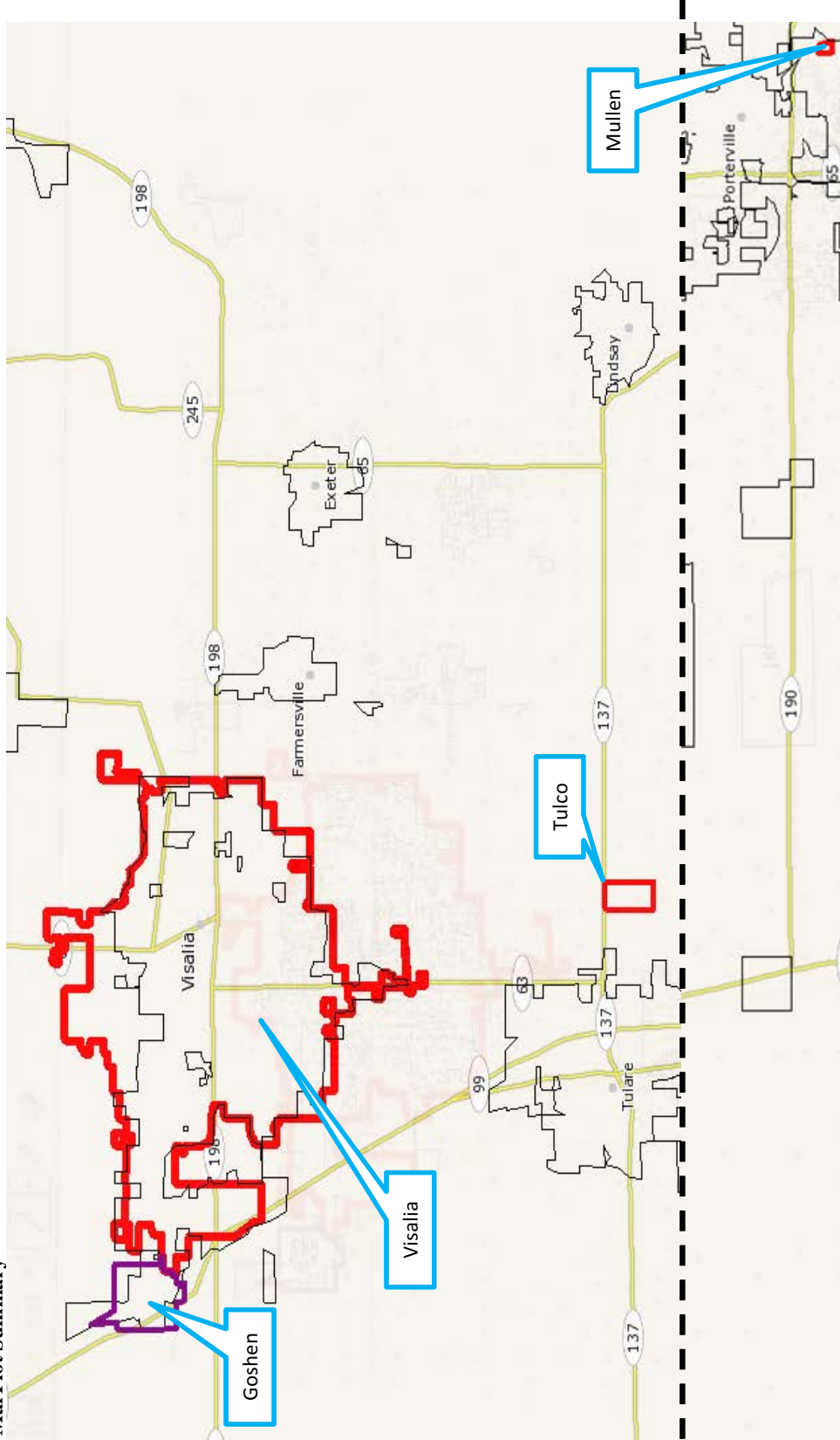
Customer Category	Selected Trend		Growth Rate	Actual Services				Projected Services						
				2000	2005	2010	2015	2020	2025	2030	2035	2040		
SFR	SFR_E	City	2.75%	24,871	30,491	34,634	37,253	43,713	50,675	58,037	65,663	73,390		
MFR	MFR_E	City	2.75%	188	196	474	984	1,155	1,338	1,533	1,734	1,938		
COM	COM_D	15 Yr. Avg.	1.40%	3,191	3,360	3,420	2,947	3,160	3,388	3,632	3,894	4,175		
IND	IND_D	15 Yr. Avg.	0.41%	60	64	63	64	65	67	68	69	71		
GOV	GOV_D	15 Yr. Avg.	2.22%	236	507	747	800	893	996	1,112	1,241	1,385		
OTH	OTH_E	City	2.5% to 2	36	70	38	48	54	61	68	75	83		
<b>TOTAL</b>	Average growth rate 2016-2040		2.66%	28,581	34,687	39,376	42,096	49,039	56,525	64,449	72,676	81,041		

**Notes:**

Original city projected growth rate used: 2.50% (2010-2020), 2.25% (2021-2030), 2.00% (2031-2040) did not estimate population to match VIS Gen Plan.  
Percent adjusted to match current General Plan and to account for Goshen, Mullen, and Tulco.  
The same percent growth rate used for both SFR and MFR

### California Water Service Company - Visalia District Water Supply and Demand Analysis and Projections

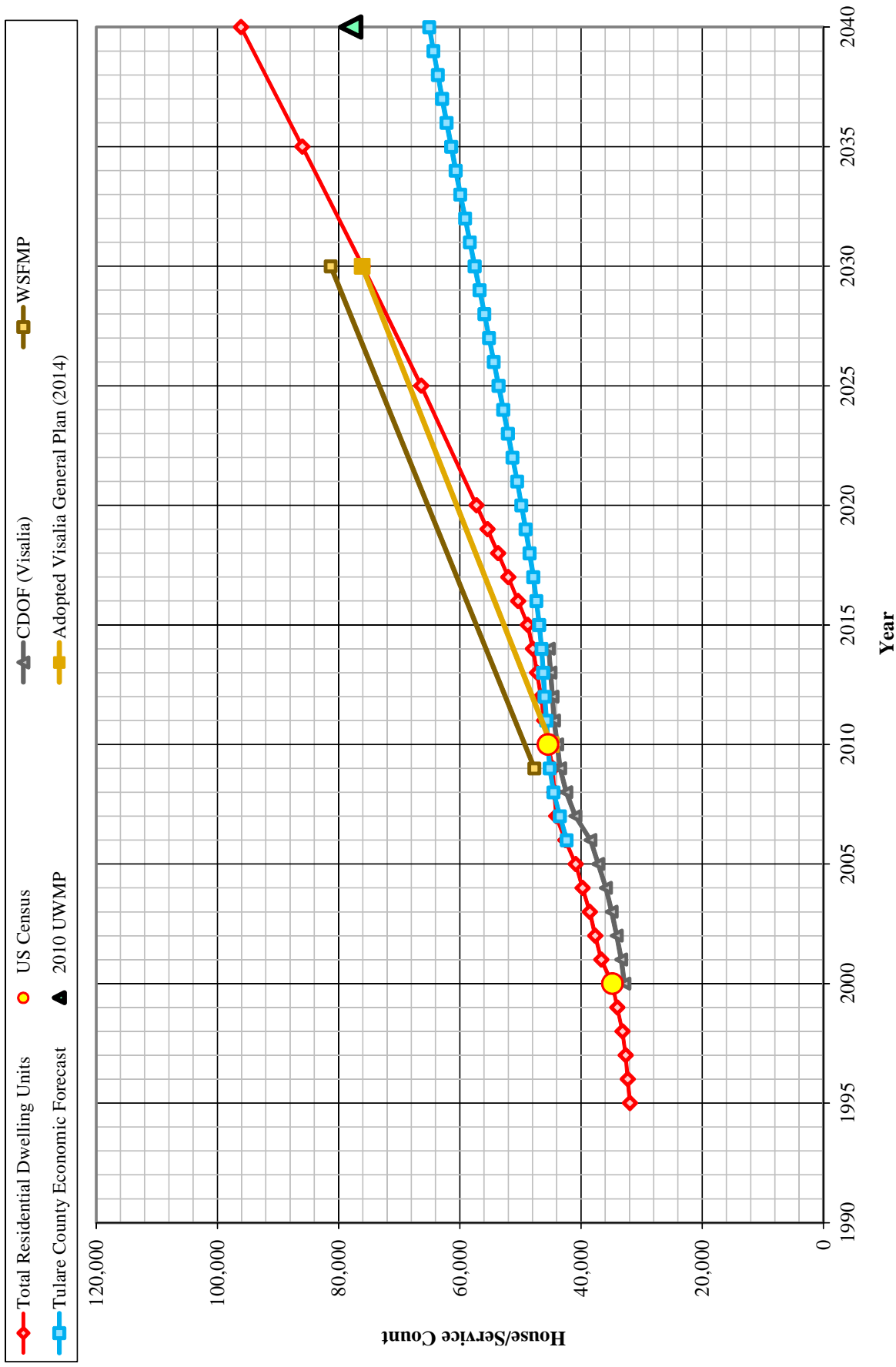
Marplot Summary



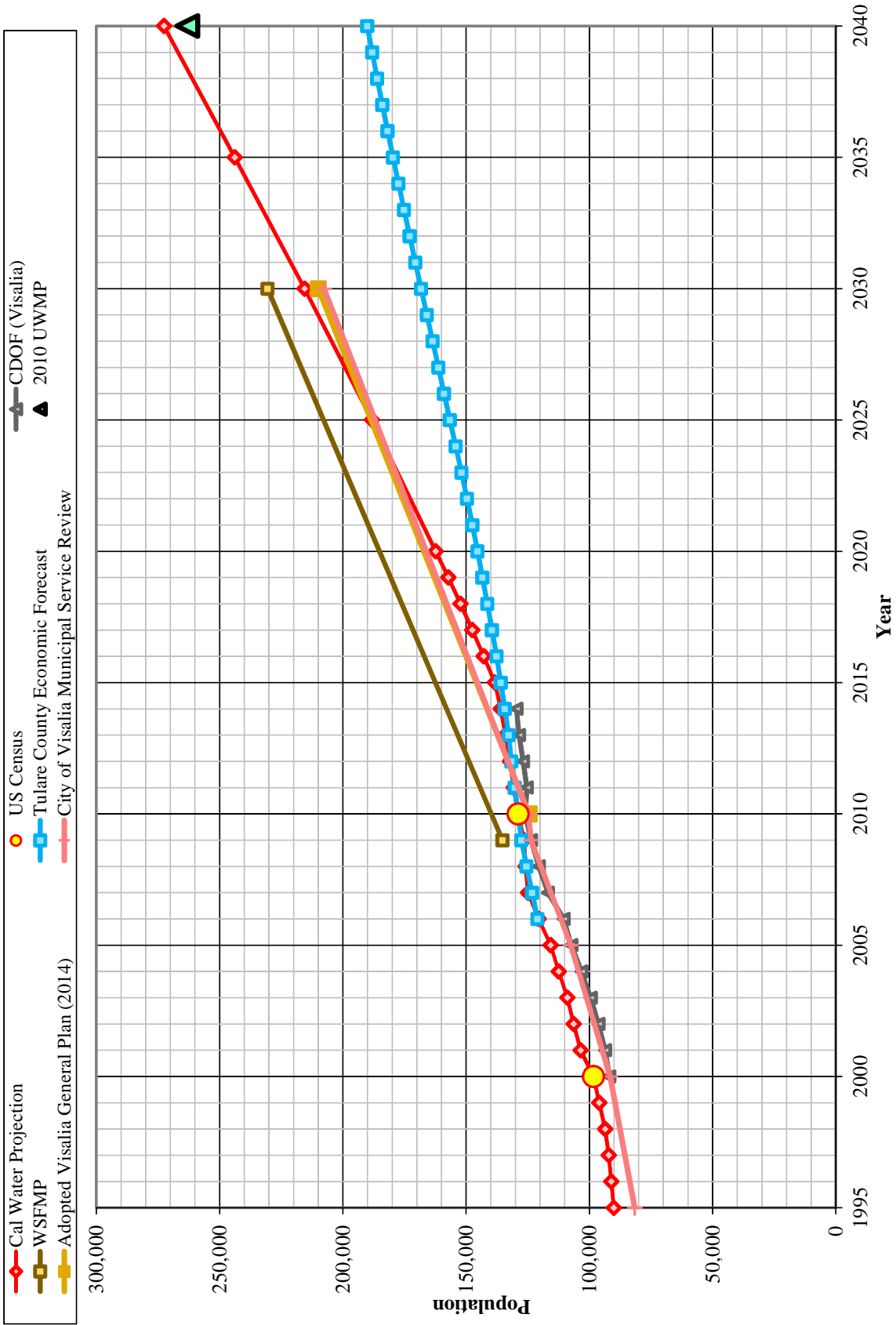
System	Census Blocks	Population	Housing Units (HU)	Density	Census Blocks	Population	Housing Units (HU)	Density	Percentage Population Change	Percentage HU Change	Density Change
Visalia	1,221	98,325	34,832	2.82	1,488	124,965	44,358	2.82	127.1%	127.3%	99.8%
Goshen					52	3,072	841	3.65			
Mullen					2	138	47	2.94			
Tulco					7	737	210	3.51			
	1,221	98,325	34,832	2.82	1,549	128,912	45,456	2.84	131.1%	130.5%	100.5%

MARPLOT disclaimer: The population and housing number given above are only rough estimates. They are based on the US Census Blocks. Although Census Blocks are polygons, MARPLOT uses the centroid, or center point, rather than the entire polygon. If a Census Block centroid is within any of the MARPLOT selected objects, the population and housing numbers for that block are tallied, even if only part of the block is within the selected object. It is possible for a block not be counted if its centroid is not within selected objects, even though part of the block is within the selected objects.

# Housing Projections



# Population Projections



### California Water Service Company - Visalia District Water Supply and Demand Analysis and Projections Population Estimate

Year	US Census		Persons per Housing Unit	Single Family Residential		Multi Family Residential		Flat Rate Residential Services (DU)
	Population	Housing Units		Residential Services (DU)	Residential Units (DU)	Services (DU)	Density	
2000	98,325	34,832	2.823	24,871	188	9,961	53.0	0
2010	128,912	45,456	2.836	34,634	474	10,822	22.8	0
	31.1%	30.5%	0.5%	39.3%	152.3%	8.6%	-56.9%	

Year	SFR and FLT Residential Services (DU)		Multi Family Residential		Total Residential Dwelling Units	Persons per Housing Unit	Estimated District Population
	Services	Residential Units (DU)	Services	Residential Units (DU)			
1995	22,638	9,273	175	9,273	31,910	2.823	90,077
1996	23,048	9,237	174	9,237	32,285	2.823	91,136
1997	23,389	9,246	175	9,246	32,635	2.823	92,123
1998	23,737	9,427	178	9,427	33,164	2.823	93,617
1999	24,264	9,741	184	9,741	34,005	2.823	95,989
2000	24,871	9,961	188	9,961	34,832	2.823	98,325
2001	26,604	10,047	197	10,047	36,652	2.824	103,510
2002	27,518	10,133	190	10,133	37,651	2.825	106,382
2003	28,321	10,220	190	10,220	38,541	2.827	108,946
2004	29,444	10,306	197	10,306	39,750	2.828	112,416
2005	30,491	10,392	196	10,392	40,883	2.829	115,674
2006	32,115	10,478	196	10,478	42,593	2.831	120,569
2007	33,528	10,564	195	10,564	44,092	2.832	124,870
2008	33,776	10,650	300	10,650	44,426	2.833	125,875
2009	33,898	10,736	428	10,736	44,634	2.835	126,522
2010	34,634	10,822	474	10,822	45,456	2.836	128,912
2011	35,178	10,908	757	10,908	46,086	2.836	130,699
2012	35,607	10,994	938	10,994	46,601	2.836	132,158
2013	36,031	11,231	958	11,231	47,262	2.836	134,033
2014	36,629	11,299	964	11,299	47,928	2.836	135,923
2015	37,253	11,531	984	11,531	48,783	2.836	138,349
2016	38,463	11,906	1,016	11,906	50,369	2.836	142,845
2017	39,713	12,292	1,049	12,292	52,006	2.836	147,487
2018	41,004	12,692	1,083	12,692	53,696	2.836	152,281
2019	42,337	13,104	1,118	13,104	55,441	2.836	157,230
2020	43,713	13,530	1,155	13,530	57,243	2.836	162,340
2025	50,675	15,685	1,338	15,685	66,360	2.836	188,196
2030	58,037	17,964	1,533	17,964	76,001	2.836	215,536
2035	65,663	20,325	1,734	20,325	85,988	2.836	243,859
2040	73,390	22,716	1,938	22,716	96,107	2.836	272,556

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Notes: linear extrapolation used to estimated MFR-DU from 2000. Estimate extend until 2012 due to reclassification, afterwards a constant MFR Unit Density is u.

## Blanusa, Danilo

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**From:** Kim Loeb <KLoeb@ci.visalia.ca.us>  
**Sent:** Wednesday, September 09, 2015 10:14 AM  
**To:** Salzano, Tom  
**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanusa, Danilo  
**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Blue Category

Hi Tom,

We don't have video conferencing capabilities within the City, but we would be happy to go to the Cal Water Visalia District office if available.

Thanks,  
Kim

---

**From:** Salzano, Tom [mailto:TSalzano@calwater.com]  
**Sent:** Wednesday, September 09, 2015 9:59 AM  
**To:** Kim Loeb  
**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanusa, Danilo  
**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Kim,  
Thank you for your review and comments on our housing and population projections. I agree that it would be a beneficial next step to have a conference call between our two planning groups to discuss this further. From some of the comments we have received from other communities the use of projections contained in a city's General Plan for these two parameters, may over state the actual growth trends. But, then in the past we have been criticized for putting too much emphasis on historical trends and not considering the information contained in the general plan. Our desire is to apply the most appropriate, realistic growth rate for the community.

I have checked our calendars and the following dates and times are available next week:  
Monday Sept. 14<sup>th</sup> in the afternoon  
Wednesday Sept. 16<sup>th</sup> in the afternoon  
Thursday Sept. 17<sup>th</sup> either morning or afternoon

We have video conferencing capabilities here if that would be available on your side. That ability is also available at our district office, but I am not available to check with them today on its availability on any of those dates. I bring these up since I think it might be useful to share more of our planning tool with you particularly with regard to the flexibility of adjusting the designated growth rate for different customer classes. And, the impact that this has on the water demand and the necessary water supply to meet that demand. Apparently we could also share those files with you through the ATT Conferencing Center we use, but have not tried that feature in the so do not know how effective it is.

Thank you,

Tom

*Thomas A. Salzano*

Water Resource Planning Supervisor

California Water Service

1720 North First Street, San Jose, CA 95112-4598

(408) 367-8340

tsalzano@calwater.com

---

**From:** Kim Loeb [mailto:KLoeb@ci.visalia.ca.us]

**Sent:** Wednesday, September 09, 2015 8:35 AM

**To:** Blanusa, Danilo

**Cc:** Salzano, Tom; Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell

**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Hi Tom & Danilo,

The City of Visalia Planning staff has reviewed this information and provides these comments:

I have reviewed the growth forecasts that Cal Water has provided us and would concur with Cal Water's data as it pertains to the City of Visalia's housing and population projections. The data provided in Cal Water's email attachment make reference to the adopted Visalia General Plan and its projected buildout population for the year 2030, which anticipated an average annual growth rate (AAGR) of 2.6% between the years of 2010 and 2030. Cal Water stated in their email below that they want the growth factors for their projections to take into account the City's anticipated growth. Their projections appear to meet or exceed a 2.6% AAGR, even though Visalia has experienced well below a 2.6% AAGR for the last five years.

For the five years since 2010, the actual population growth rate has averaged 1.04% which is slightly more than 1,000 persons per year.

I think it would be prudent for the two planning staffs to have a conference call to discuss the forecasts. Please provide some dates and times that work for Cal Water staff and I will coordinate a call.

Regards,

Kim Loeb

Natural Resource Conservation Manager

City of Visalia

559.713.4530

[kloeb@ci.visalia.ca.us](mailto:kloeb@ci.visalia.ca.us)

[www.GoGreenVisalia.com](http://www.GoGreenVisalia.com)





**From:** Blanusa, Danilo [<mailto:dblanusa@calwater.com>]

**Sent:** Wednesday, August 19, 2015 9:53 AM

**To:** Kim Loeb

**Cc:** Salzano, Tom; Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.

**Subject:** Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Dear Mr. Loeb,

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The purpose of this communication is to solicit your assistance in reviewing and advising us with respect to one of the key elements of the plan, which is the development of a growth forecast for our district. This growth forecast is conducted based on growth in each customer service classification applicable to a particular district, which typically include:

- Single family residential
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The forecasted growth rates are combined with a demand per service factor applicable to each customer class to determine the future water demands for the district. These growth factors are adjustable and we want to review them with you so that we are consistent with anticipated growth that your planning efforts forecast. If adjustments are necessary we can do them now and avoid conflicts and confusion later in this process.

Some specific information regarding our approach to forecasting customer service growth is detailed as follows:

- **Residential** – Typically two residential customer service categories represent the vast majority of the service counts as well as subsequent water sales or demand in our districts. Cal Water considers both single family and multi-family residential services independently as individual classes, but combines them together in order to assess population growth and housing unit growth. While we use historical trends in the establishment for the growth rates for these two customer classes, we also analyze census data for population and housing factors and compare our forecast results for these two parameters with available data from City General Plans, as well as County Economic Forecast data and Regional government association forecasts as a reality or appropriateness check of our results.
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- **Government** – Growth trends are generally parallel to that of the residential sector, so we verify that our rate of grow is not dramatically out-of-sequence with the overall community.
- **Other** – The use of temporary-assigned construction meters varies considerably from year to year, and can represent considerable water demand. In this case, we select a growth rate that is stable, yet reflects the overall growth of the community.

We have included with this communication a set of tables and graphs (see attachment) that illustrate the parameters that influence the growth forecast as currently set up for this district. These include:

- A. The historical and projected service data in both graph and table form
- B. The 2000 and 2010 Census data for the districts service area
- C. Housing projection chart comparing Cal Water’s forecast (always in red) with those from other organizations
- D. Population projection chart comparing Cal Water’s forecast (always in red) with those from other organizations
- E. Table of population and housing values along with multi-family residential unit density and persons per housing unit density that are employed in this forecast effort.

Please note that the 2015 data, which we need to include in our finished forecast, is not yet final, and some minor fluctuation of these values is possible.

Please examine these documents to determine if you concur with our forecasted housing and population numbers. It would be greatly appreciated if you could, by **September 11, 2015**, provide us with an indication of your support or in the case you do not agree with our forecast a reason why and the appropriate rate or growth pattern that we should employ. **If I do not hear back from you by the end of business (EOB) on the above date I will assume that you concur with our forecast.**

If you need a more detailed explanation of these numbers or want to review them with us please feel free to contact me at (408) 367-8340 or by email at [tsalzano@calwater.com](mailto:tsalzano@calwater.com).

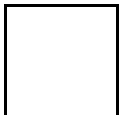
Thank you for your assistance in this effort.

Respectfully,

*Thomas A. Salzano*

Thomas A. Salzano  
Water Resource Planning Supervisor

**Danilo Blanusa, P.E.**  
Senior Engineer  
**CALIFORNIA WATER SERVICE**  
**408-367-8387**



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## Blanusa, Danilo

---

**From:** Salzano, Tom  
**Sent:** Thursday, September 24, 2015 3:53 PM  
**To:** Kim Loeb  
**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanusa, Danilo  
**Subject:** Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Kim,  
I wanted to let you know that in response to your recommendation during our conference call last week we did some investigation into the Model Water Efficient Landscape Ordinance: 2015 Revision. With respect to how much water will be saved by the implementation of this landscape ordinance on new construction, the State is estimating that on the residential side the typical customer will use 20 percent less water per year than what is allowed by the 2009 ordinance and for commercial landscaping the savings will be 35 percent.

Armed with that information we conducted a calculation where we applied these percent savings to our calculated outdoor water use percents for each customer class. This enabled us to determine a reduction in the demand per service value that can be applied to all new services for each customer class based on the anticipated growth rates for that customer class. We combined this with the demand forecast for the existing services to get a revised total demand forecast. The net effect of this forecast process revision was a reduction in 2040 total demand of 3,331 AF. As would be expected majority of the saving is in the single family residential at 2,400 AF in 2040. Prior to this calculation we were forecasting a total demand for the Visalia District in 2040 of 63,482 AF and afterwards 61,151 AF.

I wanted to pass some numbers of interest in this calculation. We base our annual indoor water use for each customer class on 90% of the January sales times 12. Then, of course the difference between that and total sales gives us the estimated outdoor use. We used a ten year average covering the years 2004 to 2013. You had mentioned that outdoor use is 2/3 of the total demand but as you will see the actual percent is a bit less.

	% outdoor	Existing DPS Gal/Day	New Development DPS Gal/Day	Existing Services in 2015	Projected New Services in 2040
SFR	54%	549	490	37,259	36,144
MFR	36%	2,017	1,871	984	955
COM	41%	1,571	1,346	2,948	1,260
IND	40%	4,327	3,720	64	7
GOV	73%	3,038	2,267	800	518

I wanted to let you know that we have address your recommended adjustment. Therefore, we do not need you to track down any additional numbers unless you think our methodology at addressing your recommendation is somehow flawed.

Thanks for the good recommendation.

Tom

*Thomas A. Salzano*

Water Resource Planning Supervisor

California Water Service

1720 North First Street, San Jose, CA 95112-4598

(408) 367-8340

tsalzano@calwater.com

---

**From:** Kim Loeb [mailto:KLoeb@ci.visalia.ca.us]

**Sent:** Monday, September 14, 2015 12:05 PM

**To:** Salzano, Tom

**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanus, Danilo

**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Hi Tom,

Either Wednesday or Thursday afternoon will work for us. Will it be a conference call, or should we go over to the Visalia District office for video?

Thanks,

Kim

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**From:** Salzano, Tom [mailto:TSalzano@calwater.com]

**Sent:** Wednesday, September 09, 2015 9:59 AM

**To:** Kim Loeb

**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanus, Danilo

**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

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I have checked our calendars and the following dates and times are available next week:

Monday Sept. 14<sup>th</sup> in the afternoon

Wednesday Sept. 16<sup>th</sup> in the afternoon

Thursday Sept. 17<sup>th</sup> either morning or afternoon

We have video conferencing capabilities here if that would be available on your side. That ability is also available at our district office, but I am not available to check with them today on its availability on any of those dates. I bring these up since I think it might be useful to share more of our planning tool with you particularly with regard to the flexibility of adjusting the designated growth rate for different customer

classes. And, the impact that this has on the water demand and the necessary water supply to meet that demand. Apparently we could also share those files with you through the ATT Conferencing Center we use, but have not tried that feature in the so do not know how effective it is.

Thank you,

Tom

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**From:** Kim Loeb [<mailto:KLoeb@ci.visalia.ca.us>]

**Sent:** Wednesday, September 09, 2015 8:35 AM

**To:** Blanusa, Danilo

**Cc:** Salzano, Tom; Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell

**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Hi Tom & Danilo,

The City of Visalia Planning staff has reviewed this information and provides these comments:

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For the five years since 2010, the actual population growth rate has averaged 1.04% which is slightly more than 1,000 persons per year.

I think it would be prudent for the two planning staffs to have a conference call to discuss the forecasts. Please provide some dates and times that work for Cal Water staff and I will coordinate a call.

Regards,

Kim Loeb

Natural Resource Conservation Manager

City of Visalia

559.713.4530

[kloeb@ci.visalia.ca.us](mailto:kloeb@ci.visalia.ca.us)

[www.GoGreenVisalia.com](http://www.GoGreenVisalia.com)



[www.SaveOurH2O.org](http://www.SaveOurH2O.org)

---

**From:** Blanusa, Danilo [<mailto:dblanusa@calwater.com>]

**Sent:** Wednesday, August 19, 2015 9:53 AM

**To:** Kim Loeb

**Cc:** Salzano, Tom; Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.

**Subject:** Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Dear Mr. Loeb,

Pursuant to California Water Code, Division 6, Part 2.6, Sections 10610 through 10656, California Water Service is in the process of preparing the required 2015 update of our Urban Water Management Plans. These plans are required to be updated every five (5) years for each of our services areas (Districts). As you know our Visalia District provides water service to the City of Visalia.

The purpose of this communication is to solicit your assistance in reviewing and advising us with respect to one of the key elements of the plan, which is the development of a growth forecast for our district. This growth forecast is conducted based on growth in each customer service classification applicable to a particular district, which typically include:

- Single family residential
- Multi-family residential
- Commercial
- Industrial
- Government (City or County parks, median strips, landscaping and schools)
- Dedicated Irrigation (rare)
- Other (temporary construction meters)

The forecasted growth rates are combined with a demand per service factor applicable to each customer class to determine the future water demands for the district. These growth factors are adjustable and we want to review them with you so that we are consistent with anticipated growth that your planning efforts forecast. If adjustments are necessary we can do them now and avoid conflicts and confusion later in this process.

Some specific information regarding our approach to forecasting customer service growth is detailed as follows:

- **Residential** – Typically two residential customer service categories represent the vast majority of the service counts as well as subsequent water sales or demand in our districts. Cal Water considers both single family and multi-family residential services independently as individual classes, but combines them together in order to assess population growth and housing unit growth. While we use historical trends in the establishment for the growth rates for these two customer classes, we also analyze census data for population and housing factors and compare our forecast results for these two parameters with available data from City General Plans, as well as County Economic Forecast data and Regional government association forecasts as a reality or appropriateness check of our results.

- **Commercial & Industrial** – Historical trend is a key influence in this customer class, however where we have seen negative trends in recent years for these categories due to the economic downturn, we typically employ either a zero rate of growth or a small, reasonable positive rate of growth. We have also undertaken during the last ten years some reassessment of customer service classifications that has resulted in reallocation of some customer service accounts between various classes. This reallocation, which included commercial, industrial, multi-family residential and in some cases government services, has made the analysis of growth a bit more difficult.
- **Government** – Growth trends are generally parallel to that of the residential sector, so we verify that our rate of grow is not dramatically out-of-sequence with the overall community.
- **Other** – The use of temporary-assigned construction meters varies considerably from year to year, and can represent considerable water demand. In this case, we select a growth rate that is stable, yet reflects the overall growth of the community.

We have included with this communication a set of tables and graphs (see attachment) that illustrate the parameters that influence the growth forecast as currently set up for this district. These include:

- A. The historical and projected service data in both graph and table form
- B. The 2000 and 2010 Census data for the districts service area
- C. Housing projection chart comparing Cal Water’s forecast (always in red) with those from other organizations
- D. Population projection chart comparing Cal Water’s forecast (always in red) with those from other organizations
- E. Table of population and housing values along with multi-family residential unit density and persons per housing unit density that are employed in this forecast effort.

Please note that the 2015 data, which we need to include in our finished forecast, is not yet final, and some minor fluctuation of these values is possible.

Please examine these documents to determine if you concur with our forecasted housing and population numbers. It would be greatly appreciated if you could, by **September 11, 2015**, provide us with an indication of your support or in the case you do not agree with our forecast a reason why and the appropriate rate or growth pattern that we should employ. **If I do not hear back from you by the end of business (EOB) on the above date I will assume that you concur with our forecast.**

If you need a more detailed explanation of these numbers or want to review them with us please feel free to contact me at (408) 367-8340 or by email at [tsalzano@calwater.com](mailto:tsalzano@calwater.com).

Thank you for your assistance in this effort.

Respectfully,

*Thomas A. Salzano*

Thomas A. Salzano  
Water Resource Planning Supervisor

**Danilo Blanusa, P.E.**  
Senior Engineer  
**CALIFORNIA WATER SERVICE**  
**408-367-8387**





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## Blanusa, Danilo

---

**From:** Kim Loeb <KLoeb@ci.visalia.ca.us>  
**Sent:** Thursday, September 24, 2015 4:40 PM  
**To:** Salzano, Tom  
**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanusa, Danilo  
**Subject:** RE: Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**Categories:** Blue Category

Tom,

OK, I think this is on the right track. I see you found the numbers on the DWR flyer. I think the numbers here will be significantly higher and have been trying to find out if DWR has any regional projections, but so far, I haven't received anything from them. I believe DWR's differential from the 2009 MWELO is not a good baseline, because the loopholes in those regulations meant that most residential landscaping was not subject to the 2009 WELO. Nearly all residential landscaping will fall under the 2015 MWELO, which means development will go from 90% cool-season turf to 25% warm season turf, certainly more than a 20% reduction. I'll keep after DWR and let you know if I get anything more definitive.

Thanks,  
Kim

---

**From:** Salzano, Tom [mailto:TSalzano@calwater.com]  
**Sent:** Thursday, September 24, 2015 3:53 PM  
**To:** Kim Loeb  
**Cc:** Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.; Brandon Smith; Paul Scheibel; Josh McDonnell; Blanusa, Danilo  
**Subject:** Cal Water Urban Water Management Plan (UWMP) growth forecast for your review - Visalia District

Kim,  
I wanted to let you know that in response to your recommendation during our conference call last week we did some investigation into the Model Water Efficient Landscape Ordinance: 2015 Revision. With respect to how much water will be saved by the implementation of this landscape ordinance on new construction, the State is estimating that on the residential side the typical customer will use 20 percent less water per year than what is allowed by the 2009 ordinance and for commercial landscaping the savings will be 35 percent.

Armed with that information we conducted a calculation where we applied these percent savings to our calculated outdoor water use percents for each customer class. This enabled us to determine a reduction in the demand per service value that can be applied to all new services for each customer class based on the anticipated growth rates for that customer class. We combined this with the demand forecast for the existing services to get a revised total demand forecast. The net effect of this forecast process revision was a reduction in 2040 total demand of 3,331 AF. As would be expected majority of the saving is in the single family residential at 2,400 AF in 2040. Prior to this calculation we were forecasting a total demand for the Visalia District in 2040 of 63,482 AF and afterwards 61,151 AF.

I wanted to pass some numbers of interest in this calculation. We base our annual indoor water use for each customer class on 90% of the January sales times 12. Then, of course the difference between that and total sales gives us the estimated outdoor use. We used a ten year average covering the years 2004 to 2013. You had mentioned that outdoor use is 2/3 of the total demand but as you will see the actual percent is a bit less.

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**Sent:** Wednesday, August 19, 2015 9:53 AM  
**To:** Kim Loeb  
**Cc:** Salzano, Tom; Bolzowski, Michael R.; Keck, Jonathan; Bailey, Scott A.  
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Thank you for your assistance in this effort.

Respectfully,

*Thomas A. Salzano*

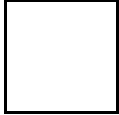
Thomas A. Salzano  
Water Resource Planning Supervisor

**Danilo Blanusa, P.E.**

Senior Engineer

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## **Appendix C: Correspondences**

- UWMP Public Draft Comments





May 27, 2016

Scott Wagner  
Dir Capital Planning & Water Resources  
California Water Service  
1720 North First Street  
San Jose, CA 95112

*Via email to [planninginfo@calwater.com](mailto:planninginfo@calwater.com)*

Re: 2015 Urban Water Management Plan, Visalia District – Public Draft (April 2016)

Dear Mr. Wagner:

The City of Visalia appreciates the opportunity to provide comments on the Public Draft 2015 Urban Water Management Plan (UWMP). The City has long taken an active role in regional water management and groundwater replenishment. It is very important for the UWMP to accurately describe these activities and projections for future water demands and supply reliability.

The Public Draft UWMP contains factually incorrect and obsolete information regarding City operations, plans, and activities. The City would have been happy to share this information had it been requested by Cal Water or if Cal Water had involved City staff in UWMP development. Additionally, we have concerns about some of the assumptions and methodology used. We do appreciate the opportunity to discuss many of these comments and concerns with Jonathan Keck and Michael Bolzowski this morning. Following are the City's comments by UWMP section.

## **2.2 Regional Planning**

Text states that "Cal Water is also a member of the Kaweah River Basin Integrated Regional Water Management Group established in 2007 to formulate an integrated regional water management plan for the Kaweah River Basin." While it is true that Cal Water has attended Kaweah River Basin IRWM meetings and serves on the recently formed Stakeholder Advisory Group, Cal Water is not a signatory to the Kaweah River Basin IRWM Memorandum of Understanding and therefore it is not factually correct to state that Cal Water is a "member" of the IRWM. This is why the City needed to be the sponsor of Cal Water's IRWM turf replacement incentive grant.

## **3.1 Service Area General Description**

Text states that "the District delivers up to 51 million gallons of water per day to just under 44,300 service connections." This is not consistent with Table 2-1 which indicates the Visalia District has 42,120 service connections.



### **3.4 Service Area Population and Demographics**

Text states that “going forward, service area population is projected to increase by 2.75 percent annually until the end of the 2040 planning horizon. This is based on City of Visalia growth projections.” However, the City’s General Plan projection is 2.6% average annual growth. The UWMP should be revised to reflect the City’s actual growth projection.

The following paragraph states “Between the 2000 and 2010 Censuses, the average number of persons per household changed slightly from 2.82 to 2.84. The projection of future population is based on the higher housing unit density. Projected service area population is given in Table 3-1.” This is inconsistent with statements that population growth is based on the City’s General Plan.

Figure 3-7 “Population Projection Comparison” shows a slower rate of growth based on the City’s General Plan. The “Cal Water Projection” is a faster rate of growth than any of the other forecasts including the City’s General Plan forecast, although text states that is the basis of Cal Water’s projection. This inconsistency needs to be addressed. All population growth should be based on the City’s General Plan growth rate of 2.6%.

#### **4.2.2 Projected Potable and Raw Water Use**

Figure 4-3 “Historical and Projected Services” needs additional explanation for why the new projection is so much greater than the Master Plan or 2010 UWMP projections. Text in section 3.4 indicates population grew at an average annual rate of 2.75% between 2000 and 2010, before slowing between 2010 and 2015. Text further states that projected future growth is based on the City’s General Plan projection of 2.7%, however as discussed under Section 3.4, the City’s General Plan projection is 2.6%, not 2.7%. Further, the slope of the projection on Figure 4-3 is much greater between 2015 and 2040 than between 2000 and 2010. This is either an error which needs to be corrected, or the greater rate of growth must be justified and not attributed to the City’s growth projection.

Text states that “projected water uses in Table 4-2 and Figure 4-4 are *predicated on unrestricted demands* under normal weather condition” (emphasis added). However, this does not take into account, or even acknowledge, the City’s water conservation ordinance which significantly restricts landscape irrigation, which accounts for about two-thirds of annual water demand in Visalia. Therefore, it is not appropriate to base the analysis on “unrestricted demands.”

The UWMP further states “demands are assumed to partially rebound by 2020 from 2015 levels on the assumption that the State Water Resources Control Board’s mandatory water use reductions end by October 2016...” Examination of Figure 4-4 indicates the assumption is that demand will rebound to slightly higher than 2014 per capita water use. This assumption is unrealistic and overly conservative. Water-use changes implemented during the drought including landscape conversion and the adoption of the new State Model Water Efficient Landscape Ordinance into the California Building Code will significantly reduce future demand growth.

#### **4.4 Estimating Future Water Savings**

Text references an older obsolete version of the State Model Water Efficient Landscape Ordinance (AB 1881), not the much more restrictive version which was approved by the California Water Commission on July 15, 2015, and adopted into the California Building Code effective December 1, 2015.

These changes will significantly reduce water used for landscape irrigation in new construction and rehabilitated landscapes. Turf is essentially eliminated at all new commercial properties and limited to no more than 25% of new residential landscape areas.

However, text states “the estimates of future water savings in Table 4-6 do not include potential landscape water savings from implementation of AB 1881 or CalGreen because estimating these savings required data that was not available to the District at the time this plan was prepared...” While the City understands that the California Department of Water Resources has not published studies of anticipated water-use reductions, it does not seem reasonable to provide no adjustment to future water use when such water use is subject to fundamental significant changes.

#### **5.8 2015 Compliance Daily per Capita Water Use**

Text notes the significant decrease in per capita water use in the Visalia District:

However, the Drought Emergency Regulation does not explain all of the decline in per capita water use, which has been trending downward since 2004 when it reached its zenith of 260 gallons per person per day. By 2014 this had fallen by 25 percent, to 195 GPCD. Between 2014 and the end of 2015, per capita water use had fallen an additional 18 percent, to 160 GPCD.

Likely much of the decreasing water use is attributable to the City’s water conservation ordinance which restricts landscape irrigation and waste of water. The City has increased enforcement of the ordinance significantly in recent years, as well as increased water conservation outreach and education efforts. Further, the City has actively promoted conversion of landscape, especially turf, to low-water use landscapes.

As discussed under Section 4.4, these behavioral, institutional, and physical changes will limit the rate of water-use growth in the future. We note that the Visalia District achieved greater than the SB X7-7 2020 Target of 198 GPCD in 2014, *before* State Emergency Drought Regulations were enacted.

#### **6 System Supplies**

The chapter introduction indicates that Cal Water’s 2012 Integrated Water Supply Plan estimates that “existing and planned City recharge programs are estimated to contribute about 15,000 AFY of new supply.” This overstates the amount of available water to the City’s recharge programs. The 2013 Agreement for Exchange of Water Supplies between Tulare Irrigation District (TID) and the City provides for an annual average of 5,500 to 6,500 AF per year of water delivered to the City by TID (a copy of the exchange agreement is attached). The City will continue to look for other opportunities to obtain water

for recharge, including purchases on the spot market as it has in the past in non-drought years, but a more reasonable annual average would be roughly half, or 7,500 AF per year.

### **6.2.2 Groundwater Management**

Text references a numerical groundwater model that was developed for the City and the Kaweah Delta Water Conservation District that encompasses the Visalia Urban Development Boundary. Text further states that the model will be utilized for a number of planning purposes. This is not factually correct as this model is obsolete and not in use.

### **6.2.3 Overdraft Conditions**

Table 6-A presents "Preliminary Sustainable Pumping Estimates." While these "preliminary" estimates may be useful for planning purposes, they are subject to potentially considerable adjustment following development of the Groundwater Sustainability Plan required under the Sustainable Groundwater Management Act (SGMA). Further, the City continues to have concerns about the validity of these estimates given the large amount of uncertainty in the hydrogeologic parameters and problems with the numerical groundwater model which was used in their development. As we commented when these estimates were originally developed, we believe it would be more appropriate to present sustainable pumping estimates as a range commensurate with the underlying uncertainty. Presenting significant figures to 10 AF implies a much greater accuracy than the method of analysis and data support.

### **6.4 Stormwater**

While there may be "no plans to capture stormwater for [direct] beneficial use in the Visalia District," the City has been aggressively improving and upgrading its infrastructure to capture and recharge stormwater in the City.

### **6.5 Wastewater and Recycled Water**

Text states "currently, no wastewater is recycled for direct reuse in the District." While this is correct, the City's Water Conservation Plant Upgrade Project will begin producing Title 22 Recycled Water in 2017 for exchange with TID for the benefit of Visalia's water resources.

#### **6.5.1 Recycled Water Coordination**

Text references an "expansion of the Water Conservation Plant." The City is not expanding the Plant, rather it is a complete upgrade to provide tertiary treatment and produce Title 22 recycled water.

#### **6.5.2 Wastewater Collection, Treatment, and Disposal**

Text states "currently, the treated effluent is discharged into Mill Creek for use in agricultural irrigation of cotton and silage crops." This is incorrect, the City discontinued discharges into Mill Creek as of September 2014. Currently, discharges are routed to the City's Basin 4 retention pond. This will be discontinued in 2017 once the plant upgrade is completed and recycled water deliveries begin to TID and City properties.

Text states “the WCP received an average of 13 MGD from residential, commercial, and industrial customers in the City of Visalia and from other parts of unincorporated Tulare County.” Actual WCP average influent in 2015 was 10.7 MGP, down from 11.5 MGD in 2013.

Table 6-2 “Retail: Wastewater Collected Within Service Area in 2015” indicates the City collected an “estimated” 14,353 AF in 2015. The actual amount collected in 2015 was 11,956 AF.

### **6.5.3 Recycled Water System**

As discussed above, facilities were completed in September 2014 which distributes treated wastewater to Basin 4 and all discharges to Mill Creek have been eliminated.

Text indicates the City “is also intending to enter into exchange agreements with one or more irrigation districts and companies...The quantity of water involved in the exchange is uncertain at this time.” In fact, the City and TID executed an Agreement for Exchange of Water Supplies in March 2013 (copy attached). The Agreement specifies that the City will deliver 11,000 to 13,000 AF of recycled water to TID, and in exchange, TID will provide an annual average of 5,500 to 6,500 AF of its Central Valley Project allocation to the City for its groundwater recharge program. Additionally, recycled water will be delivered to the City’s Valley Oaks Golf Course and Plaza Park for landscape irrigation.

### **6.5.4 Recycled Water Beneficial Uses**

As discussed previously, no treated effluent has been discharged to Mill Creek since September 2014. This section erroneously states that treated effluent is delivered by the City to Basin 4 for recharge. Treated effluent is delivered to Basin 4 for retention, any percolation is incidental.

### **6.7 Exchanges of Transfers**

The October 2008 agreement between Cal Water, Hills Valley Irrigation District, Arvin-Edison Water Storage District, and the Cities of Bakersfield and Visalia was actually an eight-year agreement, which expires this year. Only 2,708 AF of the planned 10,000 AF were made available to the City to purchase for groundwater recharge under this agreement.

### **6.8 Future Water Projects**

This section (and elsewhere in the UWMP) references information and analysis contained in an Integrated Water Supply Plan (IWSP) that is part of Cal Water’s 2012 Water Supply and Facility Master Plan (WSFMP). While these Cal Water confidential plans were provided to the City under a non-disclosure agreement, we question referencing them in a public document such as the UWMP if Cal Water intends for them to remain confidential.

We have a number of concerns with Table 6-B “Comparison of Supply and Demand, AFY:”

- The “Estimated Supply Contributed from Existing City of Visalia Recharge Programs” is 3,800 AFY based on 95% of 4,000 AF. While 4,000 AF is a reasonable estimate of the amount of water the City would purchase for recharge in normal to wet years, it is not a reasonable annual average estimate. That is because the City only purchases water when it is available on the spot market

at a reasonable cost. Such water is not available in drier than normal years. The last time water was available was in 2011. A more reasonable annual average would be half that amount or 2,000 AFY to account for dry years.

- The “Estimated Supply Contributed by Planned City of Visalia Exchange and Recycled Water Programs” is overestimated as well. The table indicates 10,900 AFY in 2015 to 14,900 AFY in 2030 and beyond. The Exchange Agreement between the City and TID calls for TID to deliver an annual average of between 5,500 and 6,500 AF per year to the City for groundwater recharge. While the City won’t begin delivery of recycled water to TID until mid-2017, the agreement allows pre-payment by TID. However, due to the drought, the first water was delivered by TID in April 2016 and consisted of 486 AF. At this time, the City does not anticipate any further deliveries from TID until 2017, depending upon weather and water conditions.
- The “Estimated Supply Contribution from Land Use Conversion” does not take into account loss of surface water and net increase in consumptive use of groundwater. Further, the footnote references Section 5.2.5 and Appendix F for more information on this calculation. There is no Section 5.2.5 in the UWMP and Appendix F does not contain this analysis. The table shows a “supply contribution” of 2,500 to 3,800 AFY in 2015 to 11,400 to 15,900 AFY in 2040 from farmland contribution. However, a technical memorandum prepared for the City by Provost & Pritchard Engineering Group estimated a net increase in groundwater use of 0.19 AF per acre on conversion from farmland to urban use (see attached). This is principally due to the loss of deep percolation from applied surface-water irrigation.

## **6.9 Summary of Existing and Planned Sources of Water**

Tables 6-8 “Retail: Water Supplies – Actual (AF)” and 6-9 “Retail:” Water Supplies – Projected (AF)” should be modified based on comments regarding Section 6.8.

## **6.10 Climate Change Impacts to Supply**

This section references a document prepared by Cal Water in January 2016 entitled “Potential Climate Change Impacts on the Water Supplies of California Water Service.” The City requests a copy of this document.

## **7.2 Reliability by Type of Year**

Table 7-1 “Retail: Bases of Water Year Data” needs explanation of the source of “Volume available.” For example, the table indicates that in an average year (based on 1945) 57,303 AF of water are available, however, in a single dry year (based on 2013) there is 59,166 AF of water available. This is counterintuitive.

The amount of groundwater available in storage in the unconfined aquifer serving Visalia is largely dependent upon groundwater levels. Cal Water’s data show an average depth to water of 7 feet below ground surface (bgs) in 1948 (the earliest data available), dropping to 112 feet bgs in 2013. When last

measured in April 2016, depth to water was 135 feet bgs and is anticipated to continue decreasing through the summer and fall.

The UWMP should include an explanation of how the “volume available” was estimated.

### **8.1 States of Action**

Table 8-1 “Retail: Stages of WSCP” lists the “Percent Supply Reduction” triggering Stages 1 through 4 of Cal Water’s Water Shortage Contingency Plan (WSCP). These percent supply reductions are up to 10%, up to 20%, up to 35%, and greater than 35%. However, the UWMP/WSCP does not provide any information on how these supply reductions would be measured. Based on Table 7-1, discussed previously, it does not appear that Cal Water anticipates any supply reduction after three dry years. It would be useful for the UWMP/WSCP to describe how the supply reduction would be determined.

### **8.7 Resolution or Ordinance**

This section correctly indicates that Cal Water does not have authority to adopt resolutions or ordinances, however, no mention is made of the City’s water conservation ordinance.

### **8.9 Minimum Supply Next Three Years**

This section includes the following statement:

Since District near-term supplies over a multi-year dry period are projected to be at least sufficient to serve demands, it is likely that current supply sources could produce more water. Cal Water does not have sufficient information to estimate how much more.

If Cal Water does not have sufficient information to estimate the volume of water supplies, then it remains unclear how it would determine when there is potential for a water supply shortage requiring implementation of its Water Shortage Contingency Plan, as discussed under Section 8.1.

### **Appendix F**

On the graph of “Historical & Projected Services,” why does the projection from 2015 through 2040 have such a high growth rate – much higher than the boom years of 2000 through 2010?

On the “Historical & Projected Demand (VIS)” graph, why does the curve for average demand with SBx7-7 (AVG w/SBx7-7) show much greater growth rate after 2020 than the curve for average growth without these conservation programs (AVG)?

The chart showing “Historical and Projected Distribution of Demand by Source” shows demand with conservation increasing about 42% from approximately 24,000 AF to 34,000 AF in 2016. This would not appear to make sense, as the total savings under the Emergency Drought Regulations was only 26%, so even a complete rebound wouldn’t increase demand anywhere close to this projection. Please explain the rationale for this projection.

Why is the rate of projected indoor water usage so much higher than the historical rate of growth on the “Estimated Indoor Water Usage” graph?

**Closing**

Again, the City appreciates the opportunity to provide comments on the Public Draft UWMP. We look forward to further discussions with Cal Water staff to help achieve our mutual goal of publishing an accurate and useful Urban Water Management Plan.

Best regards,



Kimball R. Loeb  
Natural Resource Conservation Manager

**Attachments**

Sept. 9, 2004, Technical Memorandum from Provost & Pritchard Engineering Group  
Mar. 18, 2013, Agreement for Exchange of Water Supplies

Cc: City of Visalia Council  
Mike Olmos, City Manager  
Leslie Caviglia, Assistant City Manager  
Adam Ennis, Public Works Director  
Jim Smith, Cal Water Visalia District Manager  
Richard Moss, Provost & Pritchard Engineering Group





WATER  
WASTEWATER  
STREETS & ROADS  
STORM DRAINAGE  
LAND DEVELOPMENT  
IRRIGATION DISTRICTS  
AGRICULTURE  
ENERGY SERVICES

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To: Michael Olmos, Daniel M. Dooley, City of Visalia  
From: Richard M. Moss and Laurence Kimura  
Subject: City of Visalia Groundwater Impact Fee  
Date: September 9, 2004

### **Overview and Background**

Provost & Pritchard Engineers (P&P) has been asked to assist the City staff in preparing an analysis of the conditions affecting the overdraft of groundwater resources beneath the City of Visalia as they relate to the impacts caused by urban and industrial development of agricultural lands typically surrounding the City. City Counsel Dan Dooley outlined potential concepts to further the City's goals in this regard in a memorandum to the City Council on July 9, 2004 (attached). In particular, P&P has been asked to provide an analytical basis for the establishment of a fee to be paid by developers in mitigation of the impacts to groundwater that the City then becomes responsible for implementing. We have attempted herein to lay out a rational basis for such a fee.

Dan Dooley's memorandum fairly and succinctly outlines the need for mitigation of groundwater impacts as they relate to the City's land use decisions. It further describes the responsibility of cities and urban water suppliers to assure a long-term sustainable water supply to meet current and future needs of their constituents and the known limitations of groundwater in the region (and as Visalia's only source of supply). His memo however, focuses primarily on the impacts to the groundwater associated with the loss of surface water supplies when conversion from agriculture to urban/industrial land use occurs and water is subsequently sourced only from groundwater. A more thorough review of the impacts to the groundwater balance associated with land use changes reveals impacts to groundwater from additional factors that also need to be considered and mitigated. We will attempt herein to describe and quantify all of these impacts and ways to mitigate the impacts. It is important to remember that a high quality, sustainable supply of groundwater will likely always be the cheapest source of water to meet the City's water needs and thus extraordinary steps need to be taken to protect this resource.

## **Land Use and Water Balance**

In an attempt to let “a picture tell a thousand words” Figure 1 tries to pictorially describe the generalized components to the water balance for an agricultural setting and an urban/industrial setting including the inflows and outflows to the surface and to groundwater. Virtually all of these water balance factors will change with a changed land use, especially a change as significant as a change from an agricultural land use to an urban/industrial land use.

At the risk of further generalization, with a change from agricultural land use to urban/industrial land use, the *Evapotranspiration* and *Consumption* of water will decrease; *Usable Precipitation* also decreases as a result of hardened surfaces and increased storm water runoff; *Direct Recharge* decreases as a result of piping or lining canals and ditches; *Deep Percolation* decreases as a result of less surface area being irrigated and less water being applied; in a San Joaquin Valley setting with good quality and quantities of groundwater, *Surface Water* use is typically eliminated as urban/industrial areas use groundwater almost exclusively; significant quantities of *Wastewater* are generated and exported outside of the city proper; even though *Pumped Groundwater* becomes the only source of water for the urban/industrial area, it may or may not show an increase in use over the previously agricultural area depending largely upon the relative volumes of *Surface Water* and *Pumped Groundwater* used in the agricultural setting. Changes to *Inflow* and *Outflow* to a groundwater basin occur very slowly, as the rate of water movement in the subsurface is extremely slow. Changes in land use can affect the movement of water into and out of a groundwater basin, but the slow movement of groundwater dampens the effect of these changes and renders the changes difficult to quantify without a great deal of modeling and analysis.

## **Impacts to Groundwater with Changes in Land Use**

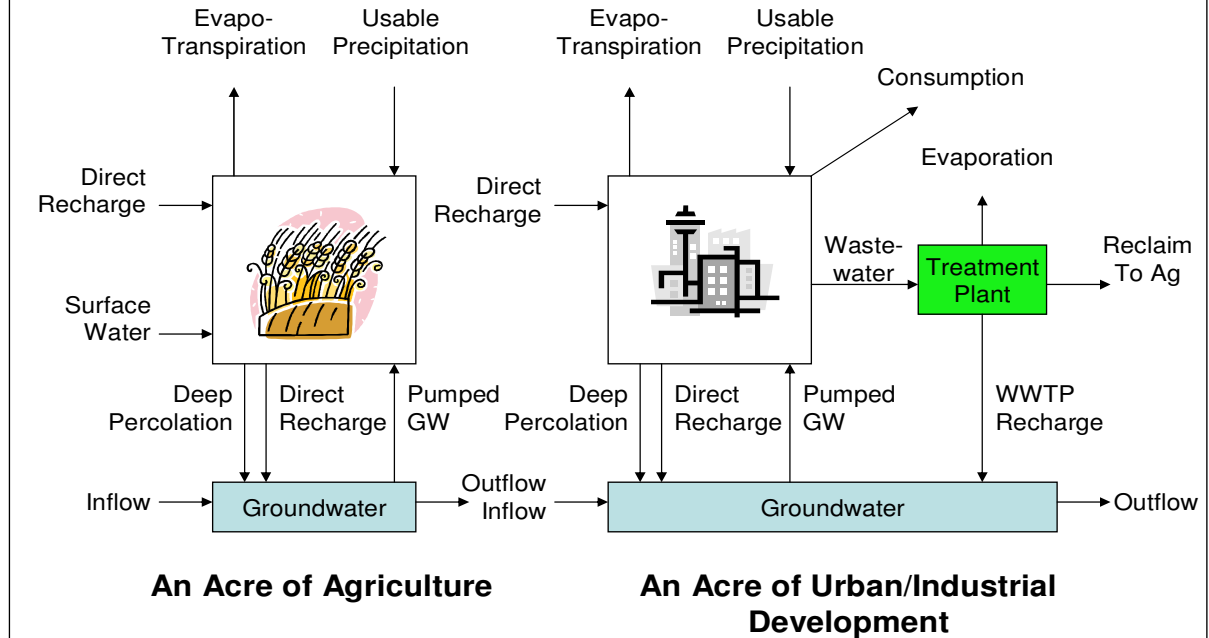
In analyzing the effect of land use change on groundwater, we primarily need to concern ourselves with those factors that add or subtract from the groundwater recognizing that the other water balance factors are interrelated with those just affecting groundwater<sup>1</sup>. Thus, if we can directly quantify the factors of *Deep Percolation*, *Direct Recharge*, *Pumped Groundwater*, subsurface *Inflow and Outflow* and *Wastewater Treatment Plant Recharge* as conditions exist in the agricultural setting and alternatively in the urban/industrial setting, we can gauge the impacts to groundwater associated with the change in land use.

Table 1 and Table 2 are compilations of data and calculations regarding each of the water balance factors affecting groundwater in an agricultural setting (Table 1) and an urban setting (Table 2). The majority of this data was obtained from the recent report prepared for the Kaweah Delta Water Conservation District entitled the “Water Resources Investigation of the Kaweah Delta Water Conservation District,” prepared by

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<sup>1</sup> You will note that changed *Surface Water* availability is not a factor to be used in directly determining groundwater impact. The loss of *Surface Water* availability results in increased use of *Pumped Groundwater* to the extent that overall demands for water are nearly the same before and after the land use change (and the other factors do not change). Similarly, the reduction in *Evapotranspiration* and water *Consumption* associated with urban and industrial land use (over that of an agricultural setting) will result in less *Pumped Groundwater* being used (again, if the other factors remain the same).

**Figure 1. Agricultural to Urban/Industrial Land Use Conversion Impacts on Water Balance and Groundwater**



- **Evapotranspiration** is the water to evaporate or transpire from the land surface as part of growing a crop or from urban landscaping;
- **Usable precipitation** is the water available from rainfall which falls on the land that becomes usable for meeting water needs of the land immediately, or subsequently if stored to a recoverable water source (typically groundwater);
- **Direct Recharge** is the water applied for the purpose of recharging the groundwater reservoir or which recharges naturally in the delivery of water to the land;
- **Surface Water** is water brought to the land via surface delivery (not otherwise available from local groundwater);
- **Deep Percolation** is water applied and rainfall in excess of crop or landscape needs which serves to recharge groundwater;
- **Pumped Groundwater** is water pumped from the groundwater;
- **Wastewater** is water sent to the wastewater treatment plant for treatment and disposal. In the City of Visalia's case, this water is percolated to groundwater down-gradient and outside of the City (**WWTP Recharge**), delivered for agricultural reuse (**Reclaim to Ag**) or evaporated from ponds (**Evaporation**);
- **Inflow/Outflow** is water flowing subsurface into and out of the groundwater reservoir.

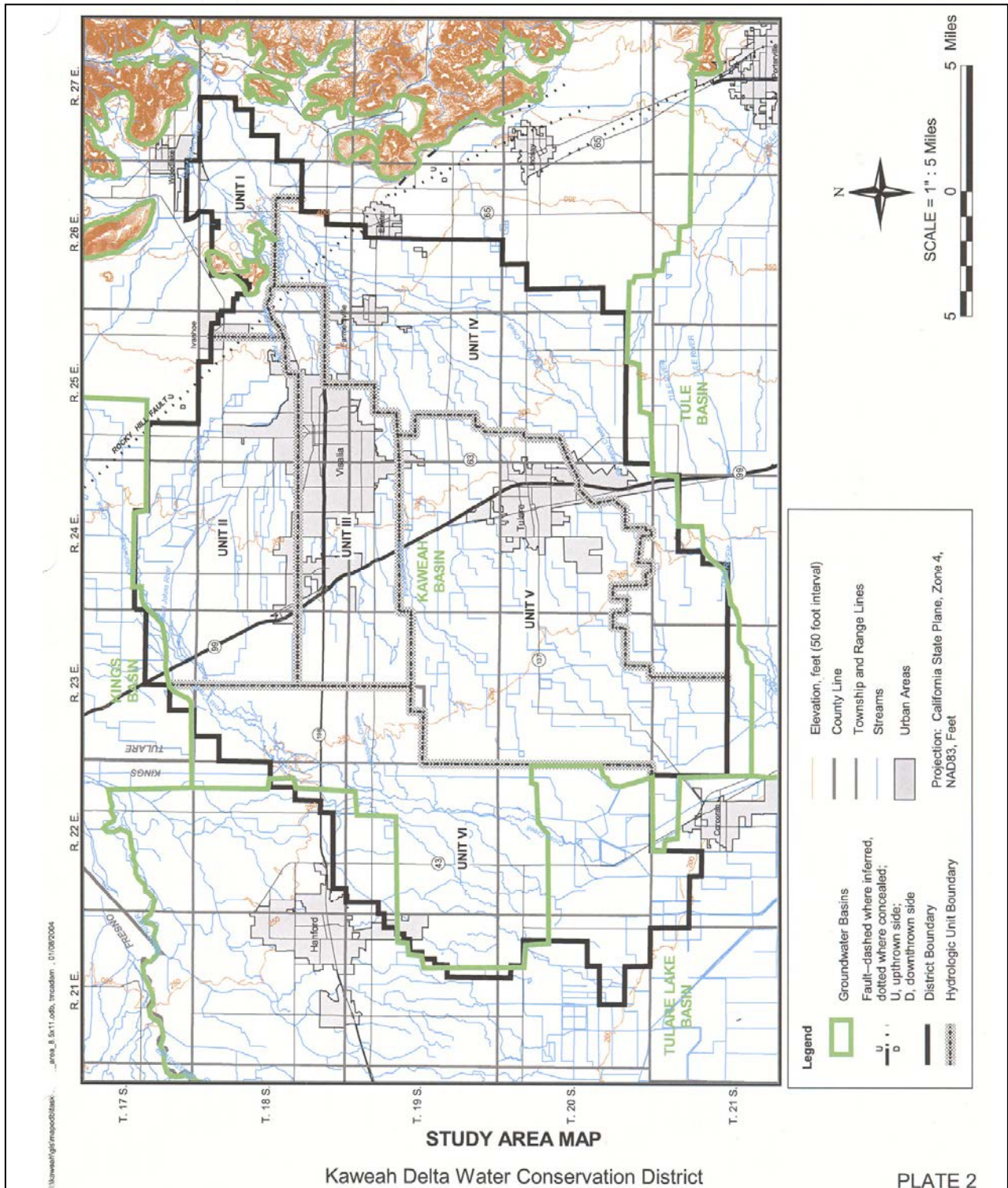
Fugro West, Inc. and dated December of 2003 (Fugro West Report). This is the most recent attempt to quantify the water balance and the factors affecting regional water balance. The Kaweah Delta Water Conservation District service area was divided into six hydrologic units and the water balance factors analyzed for each of the units. Figure 2 is taken from the Fugro West Report and shows the boundaries of the six Hydrologic Units. Hydrologic Unit III encompasses the majority of the City of Visalia and its sphere-of-influence. While it was not a perfect fit, the information for Hydrologic Unit III was used as being representative of the water balance in the City of Visalia and its surrounding farmland. The origins of all of the data used in this evaluation are footnoted in the Tables 1 and 2.

*Groundwater Pumping* – The relative volumes of groundwater pumped by an agricultural acre of land and an urban/industrial acre are significant water balance factors in determining the net impact to groundwater created by this land use change. It is estimated that an acre of land in agricultural crops pumps on the average 2.57 acre-feet per acre per year in Hydrologic Unit III. Urban and industrial water use is estimated to pump an average across the City of Visalia of approximately 1.88 acre-feet per acre per year. This is actually a net reduction in groundwater use, a positive impact, resulting from the change in land use. There was no effort made to differentiate between different kinds of development, i.e. heavy or light residential, industrial, etc. However, there may be reason to differentiate given the amount of water used by the different urban/industrial land uses are significant.

*Deep Percolation* – There are two sub-components to *Deep Percolation* to groundwater that are estimated herein: (i) percolation resulting from the application of irrigation water in excess of crop or landscaping needs, resulting in water movement through the soil profile beyond the root zone to accrual in the groundwater, and (ii) percolation of rainfall that falls on the land and, as well, moves beyond being available for plants or landscaping use to accrual in the groundwater. The average *Deep Percolation* flow to groundwater for the agricultural land use setting is estimated to be 1.26 acre-feet per acre per year in Hydrologic Unit III. The average *Deep Percolation* flow to groundwater for the urban/industrial land use setting in Hydrologic Unit III is estimated to be 0.28 acre-feet per acre. Thus, there is estimated to be a net negative impact to groundwater associated with the agricultural to urban/industrial land use change as it relates to the effective recharging of the groundwater associated with *Deep Percolation* of irrigation water and precipitation.

*Direct Recharge* – *Direct Recharge* within Hydrologic Unit III occurs from three primary sources, (i) recharge associated with the flow of water in the Kaweah and St. John's Rivers, (ii) recharge from ditches and natural waterway losses associated with the delivery of surface water for irrigation, and (iii) surface water that is placed into recharge basins. The primary change in *Direct Recharge* seen when agricultural lands are converted to urban/industrial land uses occurs when ditches and natural waterways are piped or concrete lined. It has been estimated that 20 percent of the ditches and waterways are being covered over or eliminated as a results of urbanization and thus we have estimated the volume of *Direct Recharge* associated with ditches and natural waterways for Hydrologic Unit III to be reduced by 20 percent on an acre-foot per acre basis. Direct recharge in an agricultural setting is estimated to be 0.28 acre-feet per

Figure 2. Fugro West Report Hydrologic Units



acre. Direct recharge in an urban/industrial setting is estimated to be 80 percent of the agricultural setting amount or 0.22 acre-feet per acre. Direct recharge associated with surface water placed into recharge basins and flow in the Kaweah and St. John's Rivers is assumed to remain unchanged with the conversion of agricultural lands to urban/industrial uses. Thus, there is estimated to be a net negative impact to groundwater associated with the agricultural to urban/industrial land use change as it relates to the effective recharging of the groundwater associated with *Direct Recharge* of surface water.

Net Balance - The net balance or net impact to groundwater associated with agricultural land use in Hydrologic Unit III is estimated to be a negative impact of 1.03 acre-feet per acre per year (Table 1). The net negative impact to groundwater with the urban/industrial uses in the City of Visalia is estimated to be 1.22 acre-feet per acre (Table 2). Thus, there is a net increase in the negative impacts to groundwater of 0.19 acre-feet per acre associated with the change in land use of agricultural use to urban/industrial use. It should be noted that the recharge associated with flows to groundwater from the wastewater treatment plant are considered to be exported outside of the City and thus do not accrue to benefit the groundwater beneath the City. In fact, the water build-up or "mound" created by the intentional and constant percolation at the wastewater treatment plant will likely become a problem resulting in additional acreage being purchased for disposal of wastewater.

### **Mitigation of Groundwater Impacts and Calculation of a Groundwater Impact Fee**

There are a number of ways to mitigate the impact to the groundwater associated with a land use change from agriculture to urban/industrial within the City of Visalia. It is believed that the least expensive and easiest implemented mitigation would be to develop additional *Direct Recharge* capability within the City. This would include purchasing rights to surface water available on the Kaweah or St. Johns Rivers system and to have that surface water delivered to recharge basins constructed within the City or immediately up-gradient from the City. Alternatives, which have not been analyzed as part of this study, would include the purposeful reduction in urban water demand by the use of water conservation and/or water reclamation practices, including low flow plumbing fixtures, waste water treatment/reuse for urban landscaping and/or new standards for reduced water use on urban landscaping.

Table 3 is a spreadsheet analysis of the initial capital costs and subsequent annual costs associated with the *Direct Recharge* alternative for mitigation of groundwater impacts. Preliminary estimates have been made as to the cost of purchasing surface water rights and the construction of recharge basins. Additionally the annual costs associated with the delivery of the surface water and the operation and maintenance of the basins has been estimated. The recharge basins need to be located to minimize construction costs for water delivery, over lands that are conducive to recharge, and over lands that will serve to optimize the recharge value to the groundwater immediately underneath the City of Visalia. Depending upon location, there is also a potential for these basins to provide storm water layoff benefits so that the City could continue use local ditches and waterways to dispose of storm water. However, new recharge basins probably do not significantly reduce the need for new storm water detention or retention basins within the city. Similarly, the better locations for the recharge basins may or may

not work for conjunctively using them to provide recreational or open-space benefits. That is not to say that such multipurpose benefits should not be pursued, but that it may not necessarily reduce the cost of developing the additional recharge capability needed to mitigate the impacts to the groundwater of development.

An input into the spreadsheet is the amount of water to be recharged annually. This is the resultant of the net increase in negative impact to groundwater associated with the agriculture to urban/industrial land use change (as calculated previously, 0.19 acre-feet per acre developed) added to a pro rata share of the existing and persistent long-term overdraft in and around Visalia. The Fugro West Report estimates overdraft in Hydrologic Unit III using the Specific Yield Method of analysis as 3,100 acre-feet over 35,457 total acres or 0.09 acre-feet per acre. Thus, the total volume to be replaced annually is estimated to be 0.28 acre-feet per developed acre. This water impact volume drives how many sinking basin acres will be needed, how much surface water needs to be purchased and ultimately the total groundwater impact fee.

With all of the estimates and assumptions imbedded in the spreadsheet analysis, we estimate a groundwater impact fee of approximately \$1,589 per developed acre is needed.

Alternatively, you may wish to consider spreading and collecting just the annual cost components of water purchase and recharge basin operations over the actual volumes of water pumped to serve the new developments. Using the estimate of average annual volume of groundwater pumped of 1.88 acre-feet per acre this would equate to a charge of \$5.28 per acre-foot of groundwater pumped. This would also serve to reduce the initial groundwater impact fee to \$1,391 per developed acre.

### **Summary**

An analysis and a methodology to calculate and mitigate the impact to groundwater associated with the change in land use from agriculture to urban/industrial uses have been proposed. Undoubtedly, as with any such analysis, refinements could be made to it to be more exacting. However, there is no question that there is a long-term groundwater overdraft in and around the City of Visalia as evidenced by the lowering levels to groundwater as monitored and recorded monthly by the California Water Service Company. Collection and dedication of monies to offset the negative impacts of agriculture to urban/industrial land use change and the pro rata share of the existing groundwater overdraft is a very good step in addressing this issue.

**Table 1. City of Visalia Groundwater Impact Fee - Water Basis  
Estimate of Agricultural Impacts to Groundwater**

Data/Assumptions:

Hydrologic Unit III = 35,457 acres (Fugro 2003 Table 1)  
 Ag acres = 21,493 acres (Fugro 2003 Table 55)  
 Percolation of Irrigation Water = 18,202 acre-feet (Fugro 2003 Table 55)  
 Percolation of Rainfall = 8,779 acre-feet (Fugro 2003 Table 55)  
 Irrigated Ag GW pumping = 55,300 acre-feet (Fugro 2003 Table 73)  
 Conveyance Losses = 6,705 acre-feet (Fugro 2003 Table 22)

Calculations:

GW pumping =  $55,300/21,493 = 2.57$  acre-feet/acre  
 Deep Percolation  
     Percolation of Irrigation Water =  $18,202/21,493 = 0.85$  acre-feet/acre  
     Percolation of Rainfall =  $8,779/21,493 = 0.41$  acre-feet/acre  
 Direct Recharge  
     Conveyance Losses =  $9,862/35,457 = 0.28$  acre-feet/acre

Net Balance:

Withdrawal Ag GW Pumping	-2.57	acre-feet/acre
Input Deep Percolation		
Percolation of Irrigation Water	0.85	acre-feet/acre
Percolation of Rainfall	0.41	acre-feet /acre
Input Direct Recharge		
Conveyance Losses	0.28	acre-feet/acre
<b>Net Balance</b>	<b>-1.03</b>	<b>acre-feet/acre</b>

References:

Fugro, Water Resources Investigation of the Kaweah Delta Water Conservation District,  
 Final Report, December 2003



**Table 2. City of Visalia Groundwater Impact Fee - Water Basis  
Estimate of Urban/Industrial Impacts to Groundwater**

Data/Assumptions

- Hydrologic Unit III = 35,457 acres (Fugro 2003 Table 1)
- Urban acres = 14,106 acres (Boyle 2003)
- Average Day Flow = 16,488.64 gpm (Boyle 2003)
- Landscape/Turf area = 35% of developed area (CH2M Hill 1992)
- Landscape Deep Percolation = 15% of applied water (CH2M Hill 1992)
- Urban Precipitation Deep Percolation = 20% of infiltration, Infiltration = 60% of precipitation (CH2M Hill 1992)
- Landscape/Turf Irrigation Return = 10% of applied water, 4.5 AF per year applied (CH2M Hill 1992)
- Average Rainfall = 10.9 inches (Fugro 2003 Table 73)
- Conveyance Losses = 9,862 acre-feet (Fugro 2003 Table 22)
- Assume 20% of open channels are piped, therefore 20% loss of conveyance seepage (Keller communication/review of recent experience)
- Assume runoff on urban area is pumped and disposed outside of City

Calculations

- GW pumping =  $((16,489/449) * (1.983 * 365)) / 14,106 = 1.88$  acre-feet/acre
- Deep Percolation
  - Landscape Deep Percolation =  $((14,106 * 0.35) * 4.5 * 0.15) / 14,106 = 0.24$  acre-feet/acre
  - Landscape Rainfall Deep Percolation =  $(10.9/12) * 0.6 * 0.2 * 14,106 * 0.35 / 14,106 = 0.04$  acre-feet/acre
- Direct Recharge
  - Landscape Irrigation Return =  $14,106 * 0.35 * 4.5 * 0.1 / 14,106 = 0.16$  acre-feet/acre
  - Conveyance Losses = 80% of Ag rate =  $0.80 * 9,862 / 35,457 = 0.22$  acre-feet/acre

Net Balance

Withdrawal Urban GW Pumping	-1.88	acre-feet/acre
Input Deep Percolation		
Percolation of Landscape	0.24	acre-feet/acre
Percolation of Rainfall	0.04	acre-feet/acre
Input Direct Recharge		
Landscape Irrigation Return	0.16	acre-feet/acre
Conveyance Losses	0.22	acre-feet/acre
<b>Net Balance</b>	<b>-1.22</b>	<b>acre-feet/acre</b>

References:

- Boyle, Draft Final Report - Water Supply and Facilities Master Plan Executive Summary, 2003
- CH2M Hill, Fresno/Clovis Metro Water Resources Management Plan, Phase I Report, Jan 1992
- Fugro, Water Resources Investigation of the Kaweah Delta Water Conservation District, Final Report, December 2003

**Table 3. City of Visalia Groundwater Impact Fee - Cost Basis  
Purchase and Direct Recharge of Groundwater**

Indicates Input Variables    
  Indicates Calculated Values

<u>Analysis Control Variables</u>		
Average Number of Days Kaweah River Water is Available	145	days per year
Groundwater Recharge Rate	0.25	af per basin acre per day
Volume of Water to be Recharged Annually	0.28	af per acre developed per year
Basin Land Use Efficiency	85	percent
Conveyance Losses to City Boundary	33	percent
<u>Recharge Facility Requirements</u>		
Net Acreage of Recharge Facilities	0.0077	acres per acre developed
Gross Acreage for Recharge Facilities	0.0091	acres per acre developed
<u>Recharge Water Volume Requirements</u>		
Headgate Entitlement Required	0.3724	af per acre developed per year
<u>Cost Control Variables</u>		
<u>Capital Costs</u>		
Land Cost	\$65,000	per acre
Surface Water Entitlement Capital Cost	\$1,500	per acre-foot
Recharge Basin Construction Cost	\$20,000	per basin acre
Turnout Facility Cost	\$5,000	per basin acre
Construction Related Engineering, Legal, & Contingencies	25	percent
<u>Annual Costs</u>		
Recharge Basin Annual Maintenance Costs		
Maintenance	\$200	per basin acre per year
Operation	\$10	per acre-foot
Surface Water Delivery Annual Costs	\$15	per acre-foot
Volume of Groundwater Pumped Annually for Urban Use	1.88	af per acre
Term of Annual Cost Recovery	20	years
<u>Capital Cost Components</u>		
Recharge Facilities Land Purchase Cost	\$591	per acre developed
Surface Water Entitlement Purchase Cost	\$559	per acre developed
Recharge Facilities Construction Cost	\$241	per acre developed
<b>Total Water Purchase and Recharge Facilities Capital Costs</b>	<b>\$1,391</b>	<b>per acre developed</b>
<u>Annual Cost Components</u>		
Recharge Facilities Operation and Maintenance	\$4.34	per acre developed per year
Surface Water Delivery Costs	\$5.59	per acre developed per year
Total Annual Costs	\$9.93	per acre developed per year
Total Annual Costs Spread Over Groundwater Pumped	\$5.28	per acre-foot pumped per year
<b>Present Value of Annual Cost Components</b>	<b>\$199</b>	<b>per acre developed</b>
(Assumes inflation of Annual Cost Components is equal to the City's internal discount rate)		
<b>Impact Fee Total</b>	<b>\$1,589</b>	<b>per acre developed</b>

## AGREEMENT FOR EXCHANGE OF WATER SUPPLIES

THIS AGREEMENT is made and effective as of March 18, 2013 (the “**Effective Date**”) by and between the Tulare Irrigation District, a California irrigation district (“**TID**”) and the City of Visalia, a municipal corporation (the “**City**”). TID and the City are individually referred to in this Agreement as a “Party,” and are collectively referred to as the “Parties.” This Agreement is made with reference to the following facts:

A. The City owns and operates a wastewater treatment facility located at 7579 Avenue 288, Visalia, California (the “**Plant**”) that the City intends to update and modify after the Effective Date. After that updating and modification, the Plant will produce a reliable source of recycled water treated to meet unrestricted water reuse standards under Title 22 of the California Code of Regulations (the “**Recycled Water**”). The City desires to exchange a portion of the Recycled Water for water supplies controlled by TID that can be utilized to recharge the groundwater basin underlying the City for the benefit of its citizens.

B. TID can put Recycled Water to reasonable and beneficial use for the benefit of its landowners and is willing to exchange it for certain water supplies controlled by TID on the terms of this Agreement.

C. The City (as the lead agency) has evaluated this Agreement and the exchange and other actions contemplated hereby as required by the California Environmental Quality Act in an environmental impact report dated January 2013. On February 19, 2013 the City adopted certain findings and certified that environmental impact statement covering, among other things, this Agreement and the exchange and other actions contemplated hereby. TID, as a responsible agency, concurred with the City’s findings on March 12, 2013.

THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

1. Definition. For purposes of this Agreement, “**Available Recycled Water**” shall mean that portion of the Recycled Water in excess of the City’s use of Recycled Water that is delivered to TID by the City under this Agreement. The City’s anticipated uses of Recycled Water include, without limitation, (i) irrigation of municipally-owned golf courses, parks and greenbelts, (ii) irrigation of crops grown on land owned by the City and (iii) domestic, commercial, municipal or industrial uses served by recycled water facilities (sometimes referred to as “twin plumbing” or “purple pipe” systems) installed by or at the direction of the City before or after the Effective Date. Subject to Section 3(c) of this Agreement, at all times the City shall retain the exclusive right to determine, in its sole and absolute discretion, how much Recycled Water it will use, the purposes for which such Recycled Water will be used, and the amount of Recycled Water that will become Available Recycled Water under this Agreement.

2. Construction of Pipeline and Related Facilities.

(a) Promptly after the execution of this Agreement by both Parties, the City shall construct, or cause to be constructed, the pipeline (including any appurtenant SCADA flow

monitoring equipment) with a stated capacity sufficient to deliver no less than the monthly and annual minimum amounts stated in Section 3(c) of this Agreement as depicted on the attached Exhibit A (the “**Pipeline**”) and the interconnection between the Pipeline and TID’s Evans Ditch at the delivery point on Evans Ditch indicated on Exhibit A (the “**Recycled Water Delivery Point**”). The Parties acknowledge that the City will rely on the unrestricted availability of not less than \$2,800,000 in grant funding to construct the Pipeline and the related facilities at the Recycled Water Delivery Point. In the event substantially all of such unrestricted grant funding is not available to the City for purposes of constructing the Pipeline and such related facilities by September 30, 2013, the City may terminate this Agreement without liability. The design and installation of the interconnection to Evans Ditch at the Recycled Water Delivery Point shall be subject to TID’s engineering standards and specifications and prior approval, which approval shall not be unreasonably withheld. The Pipeline and related facilities at the Recycled Water Delivery Point shall at all times be owned, operated and maintained in good condition by the City at its expense.

(b) The City shall ensure that at all times a functioning and accurate measurement device is installed, maintained and operating downstream from the Plant but upstream from the Recycled Water Delivery Point for purposes of measuring Available Recycled Water delivered to TID by the City. Such measurement shall be performed and equipment maintained consistent with applicable regulatory standards for new agricultural water measurement devices as described in the applicable sections of the California Code of Regulations, as that code exists or as it may hereafter be amended. TID shall have the right to verify measurements performed by the City. The City shall be responsible for all repair, maintenance and replacement costs of the measuring device.

### 3. Delivery of Available Recycled Water to TID.

(a) The City shall deliver to TID, and TID shall accept, all of the Available Recycled Water (regardless of volume), subject to the limits identified in Section 3(c) of this Agreement, commencing on the first day of the calendar month after the last of the following to occur: (i) the installation of the Pipeline and other facilities described in Section 2 of this Agreement has been completed, (ii) the completion of the upgrades and modifications to the Plant described in Recital A above that allow the Plant to produce tertiary treated water, (iii) the City’s receipt of all permits and approvals required in order for the Plant as upgraded and modified to operate to produce tertiary treated water and deliver Available Recycled Water to TID as provided in this Agreement and (iv) the completion of any pilot testing of the upgraded and modified Plant.

(b) The Available Recycled Water shall be deemed delivered to TID when it is placed by the City into Evans Ditch at the Recycled Water Delivery Point or at any other location upon which the City and TID mutually agree in writing. TID shall bear all losses to the Available Recycled Water incurred downstream of the Recycled Water Delivery Point or any other mutually agreeable point of delivery.

(c) Unless otherwise agreed by the Parties in writing, the Available Recycled Water shall be not less than 800 acre feet per calendar month, and not less than 11,000 acre feet

or more than 13,000 acre feet per calendar year; provided, that the annual minimum delivery shall be prorated in the first and last calendar years during which deliveries of Available Recycled Water are made under this Agreement based on the number of calendar months during which such deliveries are made in the relevant calendar year. TID shall accept all Available Recycled Water as and when it is delivered by the City within the limits of TID's in-District conveyance facilities then existing capacity. However, not later than December 15 of each year, the City shall provide TID with a monthly schedule for the following calendar year reflecting the City's good faith estimate of the volume and flow of the Available Recycled Water to be delivered by the City each month during such calendar year.

(d) The City acknowledges that TID intends to use all Available Recycled Water for irrigation of crops and incidental percolation. TID understands the Available Recycled Water may be subject to restrictions on use. At all times, TID shall only use Available Recycled Water in accordance with all applicable legal and regulatory requirements. Subject to Section 16 of this Agreement, the City shall be responsible for ensuring that the Available Recycled Water has been treated (at the City's sole expense) to meet all applicable standards for Recycled Water then imposed on the City; provided, that TID shall reasonably cooperate with the City with respect thereto. Notwithstanding any other provision of this Agreement, (i) TID shall have no obligation to accept any Available Recycled Water that does not meet the required standards for irrigation of crops and incidental percolation and (ii) TID shall not permit the discharge of any Available Recycled Water into "waters of the United States" as such term is defined in the Clean Water Act (33 U.S.C. §1251 et seq).

#### 4. Delivery of Exchange Water to the City.

(a) For every two acre feet of Available Recycled Water delivered by the City to TID, TID shall be obligated to return one acre foot of water to the City pursuant to this Section 4 (the "**Exchange Water**"). Exchange Water is to be water that would not otherwise enhance the groundwater resources relied upon by the City. The Exchange Water may be (i) water available to TID under its repayment contract with the United States providing for water deliveries from the Friant Division of the Central Valley Project, (ii) water acquired by TID from the Friant Division of the Central Valley Project pursuant to Section 215 of the Reclamation Reform Act of 1982, (iii) other water made available to TID by virtue of it being a contractor in the Friant Division of the Central Valley Project, including without limitation so-called "Uncontrolled Season" water and water made available by transfer from other Friant Division contractors, (iv) water available to TID via the "Recovered Water Account" established pursuant to the Stipulation of Settlement filed with the United States District Court for the Eastern District of California on September 13, 2006 in *Natural Resources Defense Council, et al. v. Rodgers, et al.* and the associated implementing legislation and (v) any other sources mutually acceptable to TID and the City.

(b) The Exchange Water shall be deemed delivered to the City when it is placed by TID into a channel or recharge facility approved in advance by the City (the "**Exchange Water Delivery Points**"); provided, that any Exchange Water that passes through and leaves the City's then existing municipal boundaries in Packwood Creek, Cameron Creek or any other TID controlled channel shall not be deemed to be Exchange Water. The Exchange

Water Delivery Points shall initially be as set forth on the attached Exhibit B, and may be modified from time to time by mutual written consent of the Parties. TID shall reasonably cooperate with the City in identifying and approving additional Exchange Water Delivery Points as determined in Section 4(d) of this Agreement. TID shall bear all losses to the Exchange Water incurred upstream of the Exchange Water Delivery Points, and the City shall bear all losses to the Exchange Water incurred downstream of the Exchange Water Delivery Points.

(c) TID shall ensure that at all times functioning and accurate measurement devices are installed, maintained and operating at all then-approved Exchange Water Delivery Points for purposes of measuring all Exchange Water delivered to the City by TID. Such measurement shall be performed and equipment maintained consistent with applicable regulatory standards for new agricultural water measurement devices as described in the applicable sections of the California Code of Regulations, as that code exists or as it may hereafter be amended. The City shall have the right to verify measurements performed by TID. TID shall be responsible for all repair, maintenance and replacement costs on the measuring devices.

(d) From time to time the City may, in its sole and absolute discretion but at its sole expense, construct, or cause to be constructed, new turnouts (the **"Turnouts"**) from TID's Main Canal into the St. Johns River, the Tulare Irrigation Company Canal and/or the Lower Kaweah River (Mill Creek), or such other new turnout(s) otherwise mutually agreed upon by the Parties, each of which shall, upon such construction, be an Exchange Water Delivery Point. The turnout from TID's Main Canal into Cameron Creek in existence as of the Effective Date, and any replacement thereof, may also be an Exchange Water Delivery Point. TID shall utilize its best efforts to acquire and provide to the City any new rights of way, permits, licenses or other rights necessary in order to construct the Turnouts. Upon completion all new Turnouts shall become the property of TID. The City shall reimburse TID for all the costs of such rights of way, permits, licenses or other rights acquired by TID. TID shall thereafter operate and maintain the Turnouts in good condition at its expense. The design and installation of the Turnouts shall be subject to TID's engineering standards and specifications and prior approval, which approval shall not be unreasonably withheld. Notwithstanding the foregoing, TID shall not charge any fee to, or require any reimbursement from, City for its use of TID turnouts and associated TID rights of way, permits, licenses or other rights which TID owns on the Effective Date or which TID thereafter acquires for reasons other than to facilitate the construction of new Turnouts pursuant to this Agreement.

(e) It is the City's intent that Exchange Water shall be utilized to enhance groundwater conditions within and adjacent to the City's then existing municipal boundaries for the benefit of its citizens. In order to achieve that goal, the City shall establish a hierarchy of preferred Exchange Water Delivery Points. To the extent reasonably practicable, Exchange Water shall be delivered by TID to each Exchange Water Delivery Point in accordance with that hierarchy and Section 12 of this Agreement. The initial hierarchy for Exchange Water Delivery Points shall be as set forth on the attached Exhibit B. Such hierarchy may be modified annually by the City upon written notice to TID.

(f) Subject to Section 12 of this Agreement, Exchange Water may be delivered to the City by TID at any time; provided that (i) TID shall provide not less than five (5)

days written notice before any such deliveries specifying the rates, amounts and Exchange Water Delivery Point(s) for such deliveries and (ii) the aggregate volume of Exchange Water delivered shall not exceed 1,400 acre feet in any one calendar week or 5,000 acre feet in any one calendar month without written approval from the City, which may be reasonably withheld.

Notwithstanding the foregoing, the City may decline any deliveries of Exchange Water at any time when (i) there is a declared flood release on the Kaweah River to the extent such deliveries would displace water that otherwise would be in channels proposed for delivery as losses supporting delivery to interests outside of City (including without limitation water being conveyed to TID), (ii) the City determines in its sole and absolute discretion that it requires the channels or basins proposed for such deliveries for storm water or floodwater management, (iii) physical or regulatory circumstances render it impractical or unlawful to accept such Exchange Water, or (iv) the City purchases from the United States Bureau of Reclamation water originating from the Friant Division of the Central Valley Project pursuant to Section 215 of the Reclamation Reform Act of 1982.

5. Record Keeping and Reporting. Each Party shall maintain complete and accurate records of all water delivered by such Party to the other Party under this Agreement. By the 15<sup>th</sup> day of each calendar month, each Party shall provide the other Party with a report of the amount of water delivered during the immediately preceding calendar month indicating the point(s) of delivery of such water. Immediately after the reports due January 15 of each year have been provided, the Parties shall meet and jointly prepare an annual report reflecting water deliveries under this Agreement during the immediately preceding calendar year, which report shall be completed and approved by both Parties no later than March 31 following the year for which such report is prepared. Such report shall include those matters as the Parties mutually agree, such as a summary of any anticipated changes in operations by the Parties that could affect their performance under this Agreement, a reconciliation of the Exchange Account that includes the amount, if any, of Mandatory Return Amount (all as defined below), an analysis of the efficacy of the implementation of this Agreement during the applicable calendar year, any update of Exhibit B, and a summary of any changes in the implementation of this Agreement upon which the Parties agree.

6. Exchange Account.

(a) The Parties shall jointly maintain an “**Exchange Account**” reflecting a running balance and the net amount of Exchange Water due to the City under this Agreement. The Exchange Account shall be increased one-half acre foot for each acre foot of Available Recycled Water delivered to TID and decreased by one acre foot for each acre foot of Exchange Water delivered to the City. The Positive Balance, if any, in the Exchange Account at any time will be the amount of Exchange Water then owed by TID to the City. Subject to the limitations established by this Agreement, TID shall be permitted to deliver, in its sole and absolute discretion, Exchange Water regardless of whether or not there is a Positive Balance in the Exchange Account. The delivery of Exchange Water will reduce or eliminate a Positive Balance in the Exchange Account, and/or create or increase a Negative Balance (that is, a credit against future deliveries by the City of Available Recycled Water).

(b) Commencing on the tenth anniversary of the commencement of deliveries of Available Recycled Water to TID, and on each subsequent anniversary thereof while this Agreement is in effect, the Parties shall determine the extent to which a Positive Balance has existed in the Exchange Account for a period of ten consecutive years. For that purpose, the Positive Balances in the Exchange Account created by the delivery to TID of Available Recycled Water shall be deemed repaid by the first Exchange Water thereafter delivered to the City by TID (that is, using a “first in, first out” accounting method). To the extent a Positive Balance has existed in the Exchange Account for ten or more consecutive years on the calculation date, the amount of such Positive Balance shall be the “**Mandatory Return Amount**”; provided, that to the extent the City declined any deliveries of Exchange Water pursuant to clause (iv) of the last sentence of Section 4(f) of this Agreement (that is, because the City was able to purchase water originating from the Friant Division of the Central Valley Project pursuant to Section 215 of the Reclamation Reform Act of 1982) at any time during the ten consecutive year period used to determine the Mandatory Return Amount, except as otherwise provided in Section 7(c) of this Agreement, the Mandatory Return Amount shall be reduced by the amount so declined during that ten consecutive year period (the “**Declined Amount**”). Declined Amounts shall only be utilized to determine Mandatory Return Amounts and shall not result in any adjustment in the balance in the Exchange Account. Immediately following the date that the City provides TID written notice of its determination that a Mandatory Return Amount exists, TID shall deliver the Mandatory Return Amount from the first Friant Division Class 2 water that is made available to TID following such determination. Mandatory Return Amount deliveries shall be made regardless of impacts on TID or its water users, shall be subject to the delivery restrictions stated in Section 4(f) of this Agreement, and shall continue until a Mandatory Return Amount no longer exists. All water delivered as part of the Mandatory Return Amount shall be deemed Exchange Water and shall therefore reduce the Positive Balance in the Exchange Account. Examples of the calculation of the Mandatory Return Amount are set forth on the attached Exhibit C.

#### 7. Final Reconciliation of Exchange Account.

(a) As soon as reasonably practicable after the termination of the City’s obligation to deliver Available Recycled Water to TID for any reason, the balance in the Exchange Account shall be determined by the Parties. If the balance is zero, neither Party shall have any further obligation to deliver any water to the other Party under this Agreement, except for any obligations relating to Purchased Water under Section 8.

(b) If the balance in the Exchange Account determined pursuant to Section 7(a) is a Negative Balance, the City shall continue to deliver Available Recycled Water pursuant to Section 3 of this Agreement until the balance is zero; provided, that in lieu of any or all of such deliveries, the City may pay TID an amount equal to the rate per acre foot as stated in Section 8(d) and illustrated in Exhibit D for such Negative Balance. If the City elects to make such payment in lieu of delivering any or all of the otherwise required Available Recycled Water, it shall so notify TID in writing within thirty (30) days of the termination of this Agreement. Such notice shall commit the City to make the required payment on or before December 31 of the calendar year in which such notice is provided or within sixty (60) days of the receipt of the notice, whichever is later. After the delivery of such notice, the City shall have



no further obligation to deliver the Available Recycled Water for which it will instead make payment under this Section 7(b), but shall be obligated to timely make the required payment.

(c) If the balance in the Exchange Account determined pursuant to Section 7(a) is a Positive Balance, TID shall deliver sufficient Exchange Water to the City in accordance with Section 4(f) of this Agreement to bring the balance in the Exchange Account to zero within the Anniversary Period, as hereinafter defined; provided that such deliveries shall only be required in years in which, and only to the extent, Friant Division Class 2 water is available to TID. The "Anniversary Period" shall commence on the date the City's obligation to deliver Available Recycled Water to TID terminates for any reason and end on the fifth anniversary thereof; provided, that the Anniversary Period shall be extended by the Extension Period, as hereinafter defined. The "Extension Period" shall be equal to two years multiplied by the lowest whole number resulting from dividing (i) the aggregate amount of Exchange Water declined by the City pursuant to clause (iv) of the last sentence of Section 4(f) of this Agreement (that is, because the City was able to purchase water originating from the Friant Division of the Central Valley Project pursuant to Section 215 of the Reclamation Reform Act of 1982) at any time prior to the date the City's obligation to deliver Available Recycled Water to TID terminates for any reason, by (ii) 6,000 acre feet. Any Positive Balance remaining in the Exchange Account after the Anniversary Period shall be deemed a Mandatory Return Amount under Section 6(b) of this Agreement and shall thereafter be delivered by TID to the City in accordance with Section 6(b); provided, that the Mandatory Return Amount determined in accordance with this Section 7(c) shall not be adjusted by any Declined Amounts.

#### 8. City's Option to Purchase Water.

(a) For purposes of this Section 8, an "**Option Period**" shall be that portion of any calendar year (i) after which TID has delivered at least 22,000 acre feet of Exchange Water to the City in such calendar year or (ii) during which there is a Negative Balance in the Exchange Account of more than 60,000 acre-feet. If, during any Option Period, TID determines in its sole and absolute discretion that it has Friant Division Class 2 water available to it under its repayment contract with the United States that is surplus to TID's then-current in-district needs as determined by TID, TID shall immediately provide written notice to the City specifying the amount of such surplus water and offering such Friant Division Class 2 water for sale to the City in accordance with this Section 8. At any time during the then-current Option Period, the City may purchase any or all of the offered water, up to a maximum of 6,000 acre feet per calendar year, by providing written notice to TID specifying the amount it will purchase (the "**Notice of Exercise**"); provided, that at any time before receipt of a Notice of Exercise, TID may withdraw its offer to sell water to the City in accordance with this Section 8 if TID determines in its sole and absolute discretion that it no longer has Friant Division Class 2 water surplus to its then-current in-district needs, in which case the City shall have no further right to purchase any of the water specified in the withdrawn notice. Any water purchased by the City under this Section 8 shall be referred to herein as "**Purchased Water.**"

(b) All Purchased Water shall be delivered to the City during the applicable Option Period at one or more Exchange Water Delivery Points specified by the City in its Notice of Exercise on a schedule reasonably requested by the City in its Notice of Exercise and

approved by TID, which approval shall not be unreasonably withheld. All Purchased Water shall be measured using a measuring device described in Section 4(c) of this Agreement and shall be included in the reports provided by the Parties pursuant to Section 5 of this Agreement.

(c) Purchased Water shall not be Exchange Water for purposes of this Agreement. Accordingly, deliveries of Purchased Water shall not change the balance in the Exchange Account. During periods when Purchased Water is being delivered, the aggregate maximum volume of Exchange Water that can be delivered set forth in Section 4(f) of this Agreement shall be reduced by the aggregate volume of Purchased Water then being delivered.

(d) The purchase price per acre foot for Purchased Water shall be 75% of the sum of (i) the total amount TID must pay per acre foot to the United States for Class 2 from the Friant Division of the Central Valley Project delivered at the time the Purchased Water was delivered to the City, plus (ii) the total amount TID must pay per acre foot to the Friant Water Authority or any successor "Operating Non-Federal Entity" for water from the Friant Division of the Central Valley Project delivered at the time the Purchased Water was delivered to the City, plus (iii) the total amount TID must pay per acre foot to satisfy its capital repayment obligation provided in TID's repayment contract with the United States Bureau of Reclamation which has been agreed by the Parties to be \$13.31 per acre foot; provided, that such amount shall not be due for Purchased Water acquired by City after the Initial Term of this Agreement. An illustration of the calculation of the purchase price per acre foot for Purchased Water is set forth on the attached Exhibit D. TID shall provide the City with monthly invoices for Purchased Water delivered to the City setting forth the number of acre feet of Purchased Water delivered to the City during the immediately preceding calendar month, the manner in which the purchase price for such Purchased Water was calculated, and the total amount due for the Purchased Water reflected on such invoice. The amount due shall be payable by the City within 30 days of the receipt of such invoice.

(e) When the Parties pursue the Approvals (as defined in Section 11 of this Agreement), the Parties shall include in the Approvals pursued all Approvals required in order for Purchased Water to be delivered to the City under this Section 8.

(f) The Parties acknowledge that, from time to time, TID may become aware of water made available for sale by other Central Valley Project contractors, opportunities for water banking, and other water management programs in which the City may desire to participate. To the extent such water is not required by TID for its use as determined by TID in its sole and absolute discretion, TID will endeavor to inform the City of such available water, water banking or other water management programs and thereafter cooperate with the City to facilitate the City to the extent reasonably practicable.

(g) TID's obligations under this Section 8 shall continue until TID's obligation to deliver Exchange Water to the City under this Agreement has been fully satisfied.

9. Term and Termination.

(a) This Agreement shall be effective as of the Effective Date and, unless this Agreement is terminated earlier, shall continue for an Initial Term ending on the twentieth anniversary of the first delivery of Available Recycled Water by the City to TID via the Pipeline; provided, that unless either Party has provided the other with written notice of termination not less than 180 days before the end of the then-current term, after the Initial Term this Agreement shall be automatically renewed for successive terms of five (5) years each without further action by the Parties. Deliveries of Available Recycled Water shall continue until the termination of this Agreement, at which time the City shall have no further obligation to deliver Available Recycled Water to TID except as otherwise provided herein. TID may commence deliveries of Exchange Water to the City at any time after the Effective Date, subject to Section 4 above, and shall continue to have the obligation to deliver Exchange Water until all Exchange Water has been delivered as provided herein.

(b) Notwithstanding Section 9(a), at any time after the tenth anniversary of the first delivery of Available Recycled Water by the City to TID via the Pipeline, either Party may terminate this Agreement by five (5) years written notice to the other Party. Such notice shall include the terminating Party's reasons for termination. The Parties shall thereafter meet prior to the specified date for termination to discuss the terminating Party's reasons for termination. The terminating Party may, at any time prior to the specified date for termination, withdraw its notice of termination, in which case this Agreement shall continue in effect until it is otherwise terminated. If the notice of termination is not withdrawn, the City's obligation to deliver Available Recycled Water to TID shall terminate on the specified date of termination except as otherwise provided herein, and TID's obligation to deliver Exchange Water to the City shall also terminate on the specified date of termination except as otherwise provided herein.

10. No Payments. Except as expressly provided in this Agreement, including without limitation Section 8, no payments by either Party to the other shall be required under or in connection with this Agreement.

11. Regulatory Approvals. The Parties acknowledge that, in order to initiate implementation of this Agreement, certain regulatory approvals and consents (the "**Approvals**") may be required, including without limitation approvals from the United States Department of the Interior and the California Central Valley Regional Water Quality Control Board. The parties shall diligently and cooperatively pursue all Approvals and shall each dedicate at no charge to the other such staff as is reasonably necessary to obtain them. Any out of pocket expenses for obtaining the Approvals from the United States Department of the Interior, including compliance with the National Environmental Policy Act, shall be borne entirely by TID. All other out of pocket expenses for obtaining the Approvals, other than as stated in the immediately preceding sentence, including but not limited to, expenses for obtaining Approvals from the California Central Valley Regional Water Quality Control Board and any Approvals required for updating or modifying the Plant as contemplated in Recital A above shall be borne entirely by the City. Each Party shall execute such other documents as may be necessary in order to obtain the Approvals. In the event the United States Department of the Interior determines prior to the implementation of this Agreement that TID must pay Municipal &

Industrial rates for any water delivered to City under this Agreement, the Parties agree to negotiate in good faith terms and conditions mutually agreeable to the Parties to address such event; provided, however, if the Parties are unable to reach a mutual agreement, then the Parties hereby stipulate and agree that they have been unable to obtain the necessary Approvals to implement this Agreement and therefore this Agreement is null and void *ab initio*. Receipt of all Approvals is a condition precedent to the Parties' obligations hereunder.

12. Cooperation. The Parties acknowledge that the implementation of this Agreement and the actions contemplated hereby will require frequent interaction between them. The Parties shall at all times work cooperatively and in good faith to achieve the goals of this Agreement in a manner which, where practical, maximizes the benefits derived by each Party and minimizes the costs and burdens on each Party. Each Party shall act with diligence and shall make their respective staffs available to each other as needed to implement this Agreement. Each Party shall designate a facilities operations superintendent and a principal contact person for that Party, who may be changed from time to time, and such other appropriate staff members and consultants to facilitate operations and participate on such Party's behalf in activities undertaken pursuant to this Agreement. The facilities operations superintendent for each Party shall be responsible for coordinating operations between the Party's respective facilities. The principal contact person for each party shall be responsible for coordinating meetings and other activities under this Agreement with the principal contact person for the other Party. Meetings shall occur as the principal contacts determine are necessary, and each Party shall make its expertise and resources reasonably available for activities under this Agreement. Without limiting the breadth of the foregoing, the Parties shall work together to avoid or minimize any costs or restrictions arising as the result of the use by TID of Central Valley Project water as Exchange Water.

13. Indemnity. Each Party (the "**Indemnitor**") shall defend the other (the "**Indemnitee**") against any claim or suit for personal injury or death, including claims by employees for indemnification, or damage to real or personal property (and indemnify it for any resulting damage, loss, settlement costs, judgments or expenses, including legal fees), to the extent caused by (i) a breach by the Indemnitor of any covenant, representation or warranty under this Agreement or (ii) the negligence or misconduct of the Indemnitor or its agents in performing or attempting to perform any of its obligations under this Agreement. Each Party's obligations hereunder shall survive the expiration or earlier termination of this Agreement. The Parties shall provide each other with prompt notice of any such claims as described in Section 22 below.

14. No Transfer or Assignment. This Agreement shall not be assigned in whole or in part by either Party without the prior written consent of the other Party, which may be withheld in such other Party's sole and absolute discretion.

15. No Interference. Neither Party shall enter into any other agreement nor arrangement that would interfere with such Party's ability to fully perform its obligations under this Agreement, including without limitation any agreement or arrangement that would otherwise commit the water supplies to be delivered by such Party hereunder.

16. Force Majeure. The Parties' obligations under this Agreement shall be temporarily suspended in the event of an unexpected event beyond the reasonable control of the

Parties (such as drought, flood or mandatory flood control order, earthquake, other natural disaster, acts of God, war, an emergency resulting in the disruption of use of TID's water diversion, conveyance and distribution system, environmental constraints, or changes in law, regulatory restrictions or governmental mandates). Such suspension may continue, at the option of the affected Party, for as long as the unexpected event continues. Without limiting the foregoing in any way, any physical, regulatory or other circumstance affecting the Plant or TID's facilities that prevents the City or TID from performing hereunder, and/or that renders performance by the City or TID hereunder economically impractical as reasonably determined in good faith by the affected Party, shall be deemed to be an unexpected event beyond the reasonable control of the affected Party. The Parties shall cooperate to implement a cure to any such unexpected event if such cure can be implemented in an economically practical manner; provided that, notwithstanding any other provision of this Agreement, in the event of a physical, regulatory or other circumstance affecting the Plant that renders performance by the City hereunder economically impractical as determined by the City in its sole and absolute discretion, the City may permanently terminate deliveries of Available Recycled Water to TID hereunder. To the extent that any event described in this Section 16 prevents either Party from delivering or accepting water as required under this Agreement, such Party shall have no liability for any shortages or damages to the other Party.

17. Representations and Warranties. Each Party represents and warrants to the other that:

(a) The execution, delivery and performance of this Agreement: (i) does not conflict with or result in any breach of any of the terms, conditions or provisions of, or constitute (with or without notice or lapse of time, or both) a default under or a violation of (A) any agreement or other instrument, commitment or arrangement to which such Party is a party or by which any of its properties, assets or rights are bound or affected or (B) any decree, judgment, order, statute, rule or regulation applicable to such Party; and (ii) does not result in the imposition of any lien, restriction or other encumbrance on any property, asset or right held by such Party.

(b) To the best of such Party's knowledge, such Party is not in violation of, or (with or without notice or lapse of time or both) in default under, any term or provision of any agreement or other instrument, commitment or arrangement to which such Party is a party or by which any of the properties, assets or rights are bound or affected that would have a material adverse effect upon the actions and activities contemplated hereby. Such Party is aware of no reason why it cannot fully and timely perform under this Agreement.

(c) As of the date of this Agreement, such Party has no actual notice of any pending or threatened litigation, including any arbitration, audit, investigation or other proceeding of or before any court, arbitrator or governmental or regulatory authority that could affect such Party's ability to perform under this Agreement. Such Party is not a party to or subject to the provisions of any judgment, order, writ, injunction, decree or award of any court, arbitrator or governmental or regulatory official, body or authority that would interfere with such Party's obligations under this Agreement.

(d) All actions of such Party required in order to execute, deliver and fully perform this Agreement have been taken and remain, and shall remain, in effect.

18. Dispute Resolution. In the event of an alleged breach or any other dispute regarding the implementation, interpretation or enforcement of this Agreement (including without limitation operational disputes), the Party asserting the breach or dispute shall provide the other Party with written notice in accordance with Section 22, detailing such breach or dispute and the proposed resolution thereof. Within 30 days of the receipt of such written notice, the Party receiving such notice shall provide its written response. If such written response does not resolve the alleged breach or dispute, the Parties shall promptly meet in person and in good faith attempt to resolve the breach or dispute. If such meeting, or any further meetings to which the Parties agree, fail to resolve the breach or dispute, it shall be settled by arbitration governed by the provisions of California Code of Civil Procedure Section 1280 through 1294.2, as follows:

(a) A Party desiring arbitration shall give the other Party written notice containing a general description of the dispute and designating the name and address of its arbitrator. Within ten (10) business days after receiving that notice, the other Party shall give written notice either (i) agreeing to the arbitrator so designated, or (ii) designating its own arbitrator. If the Parties do not agree on one arbitrator, there shall be three: the two designated by the Parties as required above, and a third chosen by the two so designated. The arbitrators so designated shall choose the third arbitrator within thirty (30) business days after the designation of the second arbitrator. If the other Party fails to designate an arbitrator, the arbitrator designated by the Party desiring arbitration shall serve as sole arbitrator.

(b) The arbitrator(s) shall be either (i) retired judge(s) or (ii) attorney(s) with at least 15 years of experience in the field of water law. Hearings shall take place in Visalia, California, at a time and place selected by the arbitrators. A pre-arbitration hearing shall be held within 30 business days after the arbitrator (or third arbitrator) is selected. The arbitration hearing shall occur when ordered by the arbitrator(s) after reasonable opportunity for discovery and preparation by the Parties.

(c) The Parties hereby authorize the arbitrator(s) to order discovery proceedings, in the arbitrator's discretion, and on terms and conditions the arbitrator(s) may consider appropriate, including depositions, interrogatories, requests for admission, and orders for the examination of documents, persons, and things. Such orders shall be binding on the Parties. If any Party fails to comply with a discovery order authorized hereby, the arbitrator(s) may assume that the evidence that would have been produced by complying with the order would have been unfavorable to the Party that failed to comply with the order.

(d) The arbitrator(s) and Parties may give notice by mail, delivery service, fax, or other method of electronic transmission. The arbitrator(s) will not communicate with any Party on an issue in controversy except at a hearing or conference call with all Parties and their counsel after reasonable notice.

(e) Unless otherwise ordered by the arbitrator(s), the arbitrator's compensation shall be borne equally by the Parties. The arbitrator(s) shall award attorneys' fees and all other arbitration costs in accordance with Section 28 of this Agreement. If a Party fails to

appear at or participate in a hearing after due notice, the arbitrator(s) are authorized to make an award based on evidence produced by the other Party.

(f) If there is only one arbitrator, his or her decision or orders shall be binding and conclusive on the Parties, and if there are three arbitrators, the decision or orders concurred in by any two shall be binding and conclusive. A judgment confirming any award may be given by any superior court having jurisdiction, or that court may vacate, modify, or correct the award in accordance with the prevailing provision of the California Arbitration Act.

(g) The arbitrator(s) shall be empowered to order injunctive or other equitable relief.

19. Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the permitted successors and assigns of TID and the City.

20. Cure of Defaults. Neither Party shall be deemed to be in default of any provision of this Agreement unless the other Party has given written notice specifically stating the alleged default and the Party in default fails to cure the default within thirty (30) days of receipt of such written notice.

21. Construction of Agreement. The language in all parts of this Agreement shall be in all cases construed simply according to its fair meaning and not strictly for or against any of the Parties hereto. Section 1654 of the Civil Code shall have no application to interpretation of this Agreement. Headings at the beginning of Sections, paragraphs and subparagraphs of this Agreement are solely for the convenience of the Parties, are not a part of this Agreement and shall not be used in construing it. The preamble, recitals and all exhibits to this Agreement are part of this Agreement and are incorporated herein by this reference. When required by the context: whenever the singular number is used in this Agreement, the same shall include the plural, and the plural shall include the singular; and the masculine gender shall include the feminine and neuter genders and vice versa. Unless otherwise required by the context (or otherwise provided herein): the words "herein," "hereof" and "hereunder" and similar words shall refer to this Agreement generally and not merely to the provision in which such term is used; the words "including," "include" or "includes" shall be interpreted in a non-exclusive manner as though the words "but [is] not limited to" or "but without limiting the generality of the foregoing" immediately followed the same; the word "month" shall mean calendar month; and the term "business day" shall mean any day other than a Saturday, Sunday or legal holiday. If the day on which performance of any act or the occurrence of any event hereunder is due is not a business day, the time when such performance or occurrence shall be due shall be the first business day occurring after the day on which performance or occurrence would otherwise be due hereunder.

22. Notices and Reports. All notices under this Agreement shall be effective (i) when personally delivered to the City or TID, as the case may be, (ii) when sent by facsimile on a business day between the hours of 8 a.m. and 5 p.m. (with written confirmation of transmission) to the City or TID, as the case may be, at the numbers set forth below, or (iii) three business days after deposit in the United States mail, registered or certified, postage fully prepaid and addressed to the respective parties as follows:

if to the City: City of Visalia  
425 E. Oak Avenue, Suite 301  
Visalia, CA 93291  
Attn: City Manager  
Phone: (559) 713-4312  
Facsimile: (559) 713-4800  
E-mail: citymanager@ci.visalia.ca.us

with a copy to: City of Visalia  
336 N. Ben Maddox Way  
Visalia, CA 93292  
Attn: Public Works Director  
Phone: (559) 713-4340  
Facsimile: (559) 713-4818  
E-mail: aennis@ci.visalia.ca.us

if to TID: Tulare Irrigation District  
6826 Avenue 240  
Tulare, CA 93274  
Attn: General Manager  
Phone: (559) 686-3425  
Facsimile: (559) 686-3673  
E-mail: jph@tulareid.org

with a copy to: Tulare Irrigation District  
6826 Avenue 240  
Tulare, CA 93274  
Attn: District Engineer  
Phone: (559) 686-3425  
Facsimile: (559) 686-3673  
E-mail: akf@tulareid.org

or such other address or facsimile number as the parties may from time to time designate in writing. As a matter of convenience, however, communications between the City and TID shall, to the extent feasible, be conducted orally by telephone or in person, and/or through the parties' respective counsel, with such communications to be confirmed and made effective in writing as set forth above; provided, no such oral notice or communication shall be effective unless so confirmed in writing.

23. Survival of Indemnities. Whether or not expressly set forth above, the Parties' indemnity and similar obligations shall survive any termination of this Agreement.

24. Counterparts. This Agreement may be executed in any number of counterparts. Each such counterpart hereof shall be deemed to be an original instrument but all such counterparts together shall constitute but one agreement. Facsimile and electronic signatures shall be binding.



25. Time of the Essence. Time is expressly declared to be of the essence in this Agreement.

26. Authority. Each of the undersigned individuals, by his/her execution of this Agreement on behalf of TID and the City, as applicable, represents and warrants to the other that he/she has the legal power, right and actual authority to negotiate and execute this Agreement and bind their respective agencies, as applicable, to the obligations contained in the paragraphs herein.

27. Governing Law and Construction. This Agreement will be governed by and construed under the laws of the State of California without regard to conflicts of law principles, with venue for any action proper only in Tulare County.

28. Attorneys' Fees. In the event of any action (including without limitation an arbitration pursuant to Section 18) between the Parties seeking enforcement or interpretation of any of the provisions of this Agreement, the prevailing party in such action shall be awarded, in addition to damages, its reasonable costs and expenses, including without limitation actual out of pocket costs and attorneys' fees, all as ordered by the trier of fact. In the event a third party challenges this Agreement or any of the provisions hereof, whether judicially or otherwise, the Parties shall assist one another without cost in connection therewith by providing information and witnesses as reasonably requested. Any reasonable costs of defending any such challenge, including out-of-pocket costs and attorneys' fees, shall be borne by the Party incurring them.

29. Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof. All prior agreements with respect to that subject matter, whether verbal, written or implied, are hereby superseded in their entirety by this Agreement and are of no further force or effect. Amendments to this Agreement shall be effective only if in writing, and then only when signed by the authorized representatives of the respective parties.

30. Specific Performance. The parties acknowledge that water to be delivered by each of the Parties under this Agreement is unique and of substantial value to the other Party, and that the failure of either Party to perform under this Agreement may not be readily compensable in monetary damages. Therefore, in addition to any other remedies available to the Parties at law or in equity, in the event of a breach or threatened breach of this Agreement by a Party, the other Party shall be entitled to specific performance of this Agreement.

31. Severability. If any provision of this Agreement is determined by a court of competent jurisdiction to be void or unenforceable, that provision shall be deemed automatically reformed to be enforceable to the maximum extent legally permissible, and the balance of this Agreement shall be unaffected.

32. Further Action. The Parties agree to perform all further acts, and to execute, acknowledge, and deliver any documents that may be reasonably necessary, appropriate or desirable to carry out the purposes of this Agreement.

33. Third Party Beneficiaries. This Agreement does not create, and shall not be construed to create, any rights enforceable by any person or organization of any kind that is not a party to this Agreement.

34. Waiver. Any waiver of the provisions of this Agreement by the party entitled to the benefits thereof as to any instance must be in writing and shall in no event be deemed a waiver of the same provision with respect to any other instance or a waiver of any other provision of this Agreement.

IN WITNESS WHEREOF the Parties do hereby agree to the full performance of the terms set forth herein.

**TULARE IRRIGATION DISTRICT**

By: J. Paul Hendrix  
Its: General Manager

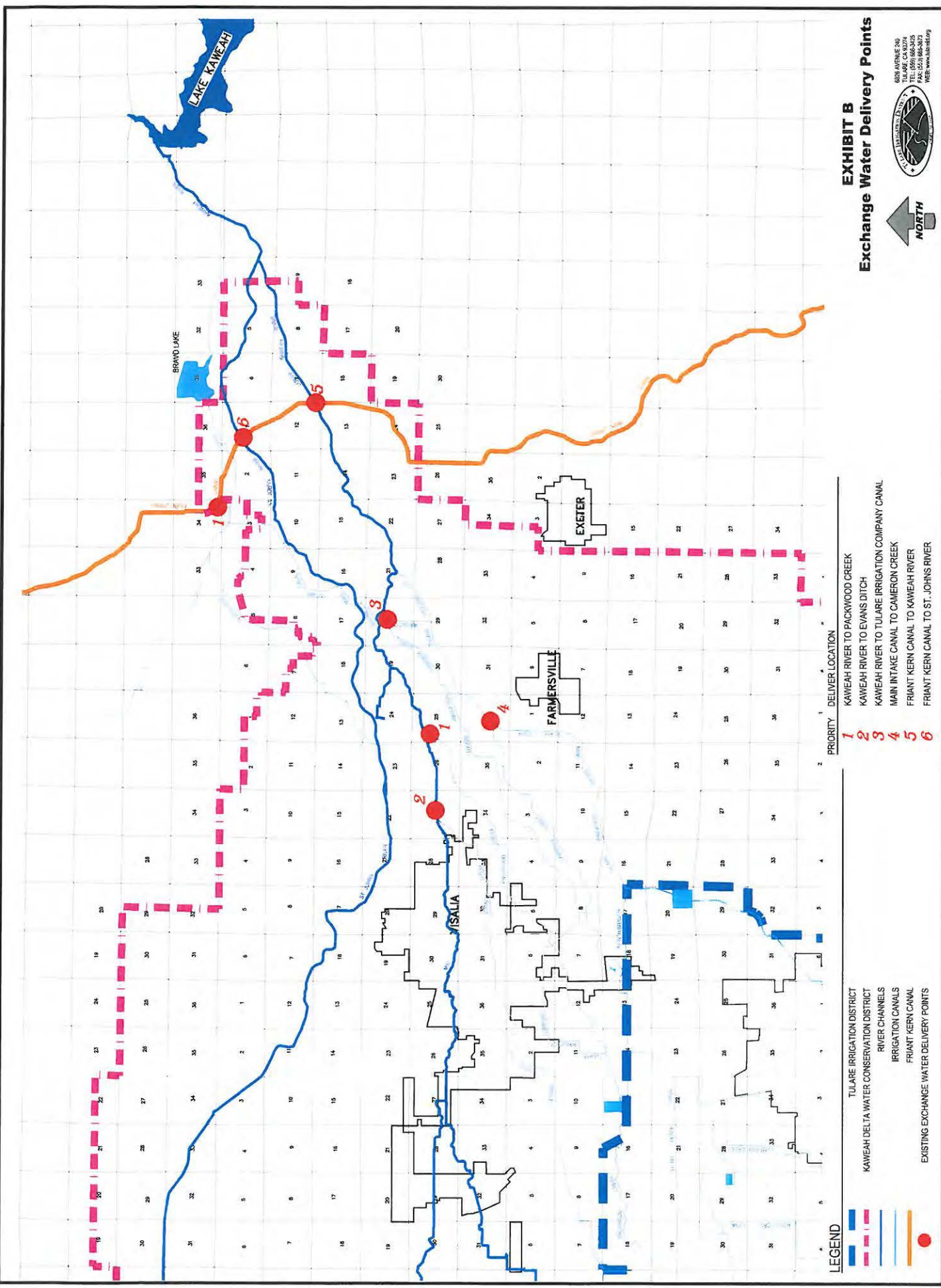
Dated: March 22, 2013

**CITY OF VISALIA**

By: [Signature]  
Its: City Manager

Dated: 4/2/13





**EXHIBIT B**  
**Exchange Water Delivery Points**

1500 N. W. Ave.  
 Visalia, CA 93276  
 TEL: (559) 686-5255  
 FAX: (559) 686-5873  
 Web: www.tid.org

**TULARE IRRIGATION DISTRICT**

**NORTH**

- PRIORITY DELIVER LOCATION**
- 1** KAWEAH RIVER TO PACKWOOD CREEK
  - 2** KAWEAH RIVER TO EVANS DITCH
  - 3** KAWEAH RIVER TO TULARE IRRIGATION COMPANY CANAL
  - 4** MAIN INTAKE CANAL TO CAMERON CREEK
  - 5** FRIANT KERN CANAL TO KAWEAH RIVER
  - 6** FRIANT KERN CANAL TO ST. JOHNS RIVER

- LEGEND**
- TULARE IRRIGATION DISTRICT
  - KAWEAH DELTA WATER CONSERVATION DISTRICT
  - RIVER CHANNELS
  - IRRIGATION CANALS
  - FRIANT KERN CANAL
  - EXISTING EXCHANGE WATER DELIVERY POINTS

## Exhibit C

### Example Calculations of Mandatory Return Amount

**Example 1:**

<u>Year</u>	<u>City to TID</u>	<u>TID to City</u>	<u>Exchange Account</u>	<u>Mandatory Return Amount</u>
(1)	(2)	(3)	(4)	(5)
1	11,000	0	5,500	N/A
2	11,000	0	11,000	N/A
3	11,000	2,000	14,500	N/A
4	11,000	0	20,000	N/A
5	11,000	0	25,500	N/A
6	11,000	0	31,000	N/A
7	11,000	0	36,500	N/A
8	11,000	0	42,000	N/A
9	11,000	0	47,500	N/A
10	11,000	0	53,000	N/A
11	11,000	0	58,500	3,500

**Example 2:**

<u>Year</u>	<u>City to TID</u>	<u>TID to City</u>	<u>Exchange Account</u>	<u>Mandatory Return Amount</u>
(1)	(2)	(3)	(4)	(5)
n	11,000	0	20,000	----
n+1	11,000	0	25,500	----
n+2	11,000	0	31,000	----
n+3	11,000	2,000	34,500	----
n+4	11,000	14,000	26,000	----
n+5	11,000	16,000	15,500	----
n+6	11,000	0	21,000	----
n+7	11,000	12,000	14,500	----
n+8	11,000	11,000	9,000	----
n+9	11,000	0	14,500	----
n+10	11,000	0	20,000	0

**Exhibit C**  
**Example Calculations of**  
**Mandatory Return Amount**

**Example 3:**

<u>Year</u>	<u>City to TID</u>	<u>TID to City</u>	<u>Exchange Account</u>	<u>Mandatory Return Amount</u>
(1)	(2)	(3)	(4)	(5)
n	11,000	0	20,000	----
n+1	11,000	0	25,500	----
n+2	11,000	0	31,000	----
n+3	11,000	2,000	34,500	----
n+4	11,000	4,000	36,000	----
n+5	11,000	5,000	36,500	----
n+6	11,000	0	42,000	----
n+7	11,000	0	47,500	----
n+8	11,000	0	53,000	----
n+9	11,000	0	58,500	----
<b>n+10</b>	<b>11,000</b>	<b>0</b>	<b>64,000</b>	<b>9,000</b>
n+11	11,000	0	69,500	14,500
n+12	11,000	0	75,000	20,000
n+13	11,000	0	80,500	23,500
n+14	11,000	0	86,000	27,000
n+15	11,000	0	91,500	31,500

**Example 4:**

<u>Year</u>	<u>City to TID</u>	<u>TID to City</u>	<u>Exchange Account</u>	<u>Mandatory Return Amount</u>	<u>Declined Amount (City Sec. 215)</u>
(1)	(2)	(3)	(4)	(5)	(6)
n	11,000	0	20,000	----	
n+1	11,000	0	25,500	----	
n+2	11,000	0	31,000	----	
n+3	11,000	2,000	34,500	----	
n+4	11,000	4,000	36,000	----	3,000
n+5	11,000	5,000	36,500	----	
n+6	11,000	0	42,000	----	
n+7	11,000	0	47,500	----	
n+8	11,000	0	53,000	----	
n+9	11,000	0	58,500	----	
<b>n+10</b>	<b>11,000</b>	<b>0</b>	<b>64,000</b>	<b>6,000</b>	
n+11	11,000	0	69,500	11,500	
n+12	11,000	0	75,000	17,000	
n+13	11,000	0	80,500	20,500	3,000
n+14	11,000	0	86,000	21,000	
n+15	11,000	0	91,500	28,500	

## Exhibit C

### Legend

#### Column Definitions:

Column 1 - Sequential year within the example calculation.

Column 2 - City of Visalia delivery to TID, assumed to be constant at 11,000 AF/yr.

Column 3 - TID payback delivery to City of Visalia.

Column 4 - Running Exchange Account (EC) balance as defined in Section 6(a) of agreement. Calculated to be the prior year's balance plus  $\frac{1}{2}$  column (2) minus column (3).

Column 5 - Mandatory Return Amount (MRA) as defined in Section 6(b) of agreement. For any 11<sup>th</sup> year in a sequence, calculated as follows:

If  $\sum(\text{Col}(3)_1 \dots \text{Col}(3)_{10}) \geq \text{Col}(4)_1$ ,  $\text{Col}(5)_{11} = 0$

If  $\sum(\text{Col}(3)_1 \dots \text{Col}(3)_{10}) < \text{Col}(4)_1$ ,  $\text{Col}(5)_{11} = \text{Col}(4)_1 - \sum(\text{Col}(3)_1 \dots \text{Col}(3)_{10})$

Column 6 - The Declined Amount as defined in Section 6(b) of agreement. Represents any purchase by the City of Sec. 215 water from USBR which resulted in a reduction of the TID payback delivery by a like amount in that year.

The MRA calculation is a determination of whether the sum of any 10 consecutive payback deliveries exceed the Exchange Account balance in year 1 of the sequence. If so, then the Exchange Account's "first in" value is deemed returned to the City within 10 years and is thus the "first out" within the 10-year sequence. If not, a Mandatory Return Amount is triggered and determined to be the Exchange Account balance as of year 1 less any payback deliveries within the 10-year sequence.

In the case of Sec. 215 water purchases by the City resulting in a Declined Amount, then the MRA is reduced by any such Declined Amounts which occurred during the 10-year period used to determine the MRA, and the MRA calculation is revised as follows:

If  $\sum(\text{Col}(3)_1 \dots \text{Col}(3)_{10}) \geq \text{Col}(4)_1$ ,  $\text{Col}(5)_{11} = 0$

If  $\sum(\text{Col}(3)_1 \dots \text{Col}(3)_{10}) < \text{Col}(4)_1$ ,  $\text{Col}(5)_{11} = \text{Col}(4)_1 - \sum(\text{Col}(3)_1 \dots \text{Col}(3)_{10}) - \sum(\text{Col}(6)_1 \dots \text{Col}(6)_{10})$

#### Example Calculations:

Example 1 represents the operation during the first 11 years of the exchange during which no Mandatory Return Amount is calculated until year 11. Since the payback deliveries to the City during the first 10 years were insufficient to fully offset the initial Exchange Account balance of 5,500 AF, a Mandatory Return Amount equal to the difference is the result.

Example 2 represents a 10-year sequence in the exchange during which payback deliveries to the City are sufficient to offset the Exchange Account balance in year  $n$  (assumed to be 20,000 AF), thus resulting in no Mandatory Return Amount in year  $n+10$ . While such mandatory returns may have occurred during any the prior 10 years, they are each dependent on Exchange Account values in years prior to year  $n$  and thus not shown.

Example 3 represents a 15-year sequence in the exchange during which payback deliveries to the City are insufficient to offset the Exchange Account balance in year  $n$ . The Mandatory Return Amount in year  $n+10$  of 9,000 AF is determined as the Exchange Account value in year  $n$  less the sum of the non-zero payback deliveries in years  $n+3$  through  $n+5$ . The example is carried out through year  $n+15$  to illustrate the increase in the Mandatory Return Amount over time should the occurrence of no payback deliveries persist.

Example 4 represents the 15-year sequence used in Example 3, and during which the City purchased Sec. 215 water in years  $n+4$  and  $n+13$ , resulting in a Declined Amount in that year. The Mandatory Return Amount is reduced in each of the years  $n+10$  through  $n+15$  by an amount equal to the sum of the Declined Amounts during the prior 10 years.



**Exhibit D**

**Calculation of City of Visalia Purchase Price  
per Section 8(d)**

**Cost Component 8(d)(i)**

USBR 2012 Class 2 Unit Rate: **\$23.02** <sup>(1)</sup>

**Cost Component 8(d)(ii)**

Friant Water Authority O&M:

FWA O&M: **\$800,000** <sup>(2)</sup>

Total TID Friant Diversions: **65,000** acre-feet <sup>(3)</sup>

Unit Rate: **\$12.31**

**Cost Component 8(d)(iii)**

USBR Capital:

Capital Rate Calculations per Settlement Legislation:			NPV Calcs.	
			Yr	Pmt.
			2011	\$ 616,061.86
			2012	\$ 616,061.86
			2013	\$ 616,061.86
			2014	\$ 616,061.86
			2015	\$ 616,061.86
			2016	\$ 616,061.86
			2017	\$ 616,061.86
			2018	\$ 616,061.86
			2019	\$ 616,061.86
			2020	\$ 616,061.86
			2021	\$ 616,061.86
			2022	\$ 616,061.86
			2023	\$ 616,061.86
			2024	\$ 616,061.86
			2025	\$ 616,061.86
			2026	\$ 616,061.86
			2027	\$ 616,061.86
			2028	\$ 616,061.86
			2029	\$ 616,061.86
			2030	\$ 616,061.86
20-Yr CMT:		3.4%		
Discount Rate:		1.7%		
Capital Pay-Off Amt.:		\$10,371,321		
Loan Costs:		\$0 <sup>(4)</sup>		
TID Bank Loan				
Interest Rate:		3.85%		
Term, yrs:		20		
Annual Pmt		\$753,038		
Class 2 Portion:		\$359,377		
Avg. Class 2 Supply:		27,000		
Capital Unit Rate:		<b>\$13.31</b>		

**Class 2 Unit Cost:**

USBR Class 2 **\$23.02**

O&M **\$12.31**

Capital **\$13.31**

**Total \$48.64**

**City of Visalia Unit Cost (X 75%): \$36.48**

- (1) Per USBR annual rate books; includes enviro. restoration and Friant surcharges.
- (2) Typical O&M as billed by FWA; includes Friant-Kern Canal and SL&DMWA costs.
- (3) Example only; act. amount in year of City purchase to apply.
- (4) Actual loan acquisition costs of \$110,200 are excluded.
- (5) Average per Steiner analyses of Friant diversions post-Settlement.