Understanding the Dept. of Water Resources Groundwater Sustainability Scoring

Bill Johnson, General Manager

FRV CSD

FALL RIVER VALLEY COMMUNITY SERVICES DISTRICT

Fall River Ground Water Basin Summary

CASGEM BASIN SUMMARY

Basin: FALL RIVER VALLEY
Sub_Basin: N/A
Basin Number: 5-5
Date: 5/30/2014

Hydrologic Region: Sacramento River
North Region Office (NRO)
Basin Area: 54803 acres (85.6 miles)
2010 Population: 1629

DATA COMPONENT RANKING VALUE TABLE

Data Component		Ranking Range (x)	Units	Ranking Value	Confidence Adjustment	Average of Components	Adjusted Ranking Values
1. Population		$7 \le x < 250$	persons/sq-mi	1			1
2. Population Growth		$x < 0$	percent	0			0
3. Public Supply Wells		$0 < x < 0.1$	wells/sq-mi	1			1
4. Total Wells		$5 \le x < 10$	wells/sq-mi	3	2.25		2.25
5. Irrigated Acreage		$x \ge 350$	acres/sq-mi	5			5
6. GW Reliance	GW Use	$0.25 \le x < 0.5$	acre-foot/acre	3		2.5	2.5
	% of Total Supply	$20 \le x < 40$	percent	2			
7. Impacts		--	--	1			1
8. Other Information**		--	--	0			0
Overall Basin Ranking Score		**$5.75 \le x < 15.42$**	--				**12.8**

Overall Basin Priority: Low

How is Population Considered?

Table 3. Data Component Ranking Ranges for CASGEM Groundwater Basin Ranking

Ranking	Ranking Value	Data Components and Ranking Ranges						
		Population		PSW Density	Total Well Density	Irrigated Acreage	Groundwater Reliance	
		Density	Projected Growth				GW Use	% of Total Supply [1]
		per sq.-mi	%	per sq.-mi	per sq. mi	ac/sq.-mi	ac-ft/acre	%
Very Low	0	x < 7	x < 0	x = 0	x = 0	x < 1	x < 0.03	x < 0.1
Low	1	7 ≥ x < 250	0 ≤ x < 6	0 > x < 0.1	0 > x < 2	1 ≥ x < 25	0.03 ≥ x < 0.1	0.1 ≥ x < 20
Moderately Low	2	250 ≥ x < 1000	6 ≥ x < 15	0.1 ≥ x < 0.25	2 ≥ x < 5	25 ≥ x < 100	0.1 ≥ x < 0.25	20 ≥ x < 40
Medium	3	1000 ≥ x < 2500	15 ≥ x < 25	0.25 ≥ x < 0.5	5 ≥ x < 10	100 ≥ x < 200	0.25 ≥ x < 0.5	40 ≥ x < 60
Moderately High	4	2500 ≥ x < 4000	25 ≥ x < 40	0.5 ≥ x < 1.0	10 ≥ x < 20	200 ≥ x < 350	0.5 ≥ x < 0.75	60 ≥ x < 80
High	5	x ≥ 4000	x ≥ 40%	x ≥ 1.0	x ≥ 20	x ≥ 350	x ≥ 0.75	x ≥ 80%

Note:
Population growth is percent growth from 2010 to 2030.
[1] Percent of total water supply (groundwater and surface water) that is provided by groundwater.
x = component data value

How is Population Growth Considered?

Table 5. Data Component Ranking Ranges for Population Growth

Data Component Ranking	Ranking Value	Population Growth (% population growth)	Total Number of Basins in Rank	Cumulative Percent of Total Population Growth incorporated by the Ranking interval [1]
Very Low	0	$x < 0$	336	100%
Low	1	$0 \geq x < 6$	55	97%
Moderately Low	2	$6 \geq x < 15$	36	75%
Medium	3	$15 \geq x < 25$	28	42%
Moderately High	4	$25 \geq x < 40$	29	22%
High	5	$x \geq 40\%$	31	9%

Notes:
Population growth is estimated growth between 2010 and 2030, based on current growth trends
Population growth of less than 100% equals negative growth projection
x Population growth percentage less 100 (Example: Population growth of 105%, x=5%)
1 Cumulative percentage of the projected population residing in the basins for each ranking group

How are Public Wells Considered?

Table 6. Data Component Ranking Ranges for Public Supply Well Density

Data Component Ranking	Ranking Value	Well Density (wells per sq. mile)	Total Number of Basins in Rank	Cumulative Percent of Total PSWs Incorporated by the Ranking Interval [1]
Very Low	0	x = 0	221	100%
Low	1	0 > x < 0.1	82	99%
Moderately Low	2	0.1 ≥ x < 0.25	53	92%
Medium	3	0.25 ≥ x < 0.5	46	73%
Moderately High	4	0.5 ≥ x < 1.0	63	51%
High	5	x ≥ 1.0	50	19%

Notes:

x PSW per square mile value

1 Shows the cumulative percentage of the PSW within the basins in each ranking group

How is Well Density Considered?

Table 7. Data Component Ranking Ranges for Total Well Density

Data Component Ranking	Ranking Value [3]	Well Density (wells per sq. mile)	Total Number of Basins in Rank	Cumulative Percent of Total Wells Incorporated by the Ranking Interval [1]
Very Low	0	x = 0	99	100%
Low	1	0 ≥ x < 2	149	99%
Moderately Low	2	2 ≥ x < 5	52	98%
Medium	3	5 ≥ x < 10	66	92%
Moderately High	4	10 ≥ x < 20	66	79%
High	5	x ≥ 20	83	49%

Notes:

x Wells per square mile value

[1] Cumulative percentage of the wells within the basins in each ranking group

[2] A data weighting of 75 percent was subsequently applied to the ranking values above prior to combining with the other seven data components to create the overall groundwater basin prioritization results

How are Irrigated Acres in the Basin Considered?

Data Component Ranking	Ranking Value	Density of Irrigated Acres (acres per sq. mile)	Total Number of Basins in Rank	Cumulative Percent of Irrigated Acreage Incorporated by the Ranking Interval [1]
Very Low	0	x < 1	209	100%
Low	1	1 ≥ x < 25	71	100%
Moderately Low	2	25 ≥ x < 100	68	99%
Medium	3	100 ≥ x < 200	60	97%
Moderately High	4	200 ≥ x < 350	57	90%
High	5	x ≥ 350	50	69%

Notes:
Irrigated acres includes groundwater basin areas irrigated with surface water or groundwater or both
x Irrigates Acres per square mile value
[1] Cumulative percentage of the irrigated acreage within the basins in each ranking group

How is Ground Water "reliance" Considered?

Table 9. Data Component Ranking Ranges for Groundwater Reliance, as it relates to Groundwater Use in acre-feet per acre

Data Component Ranking	Ranking Value	Groundwater Use Volume [ac-ft per acre]	Total Number of Basins in Rank	Cumulative Percent of Groundwater Use incorporated by the Ranking Interval [1]
Very Low	0	$x < 0.03$	269	100%
Low	1	$0.03 \geq x < 0.1$	51	100%
Moderately Low	2	$0.1 \geq x < 0.25$	71	98%
Medium	3	$0.25 \geq x < 0.5$	44	91%
Moderately High	4	$0.5 \geq x < 0.75$	30	84%
High	5	$x \geq 0.75$	50	55%

Notes:

x Groundwater Use Acre Feet per acre value

[1] Cumulative percentage of the groundwater use volume within the basins in each ranking group

How is Ground Water sustainability Determined?

Table 10. Data Component Ranking Ranges for Groundwater Reliance, as it relates to Percent of Total Water Supply Met by Groundwater

Data Component Ranking	Ranking Value	Total Supply Met by Groundwater [2] (%)	Total Number of Basins in Rank	Cumulative Percent of Groundwater Use [1] Incorporated by the Ranking Interval
Very Low	0	x < 0.1	143	100%
Low	1	0.1 ≥ x < 20	101	100%
Moderately Low	2	20 ≥ x < 40	45	93%
Medium	3	40 ≥ x < 60	54	61%
Moderately High	4	60 ≥ x < 80	37	25%
High	5	x ≥ 80	135	17%

Notes:

x Basin groundwater use as a percent of Total Water Supply used within the basin

[1] Cumulative percentage of the groundwater use by the basins in each of the ranking groups (ranking group total groundwater use / total groundwater use of the 515 basins * 100)

[2] Total Supply = Groundwater + Surface Water used in Agriculture and Urban within the basin, Percent = Groundwater / Total Supply used in the basin * 100

Questions?

How does the Fall River Ground Water Basin Compare?

	Fall River-Low	Redding-Anderson-Med.	Redding-Enterprise-Med.
Population	1	2	2
Population Growth	0	2	3
Public Supply Wells	1	4	4
Total Wells	2.25	3.75	3.75
Irrigated Acreage	5	2	2
Ground Water Use/% Supply	3/2=2.5 Adj	4/3=3.5 Adj	2/1=1.5 Adj
Impacts	1*	0	0
Other Information	0	0	1**
Overall Basin Ranking	12.8	17.3	17.3

*Locally high nitrates. Variable GW level trends with some regions showing declines. Strong SW-GW interaction and GW dependent fisheries. Ecosystem dependent basin (springs, fisheries)

**Strong SW-GW interaction and endangered Sac River salmon runs

How is Ground Water sustainability Determined?

Very Low Ranking	Low Ranking	Medium Ranking	High Ranking
Range <5.75	5.75≥ Range ≤13.42	13.43≥ Range <21.08	Range ≤21.08