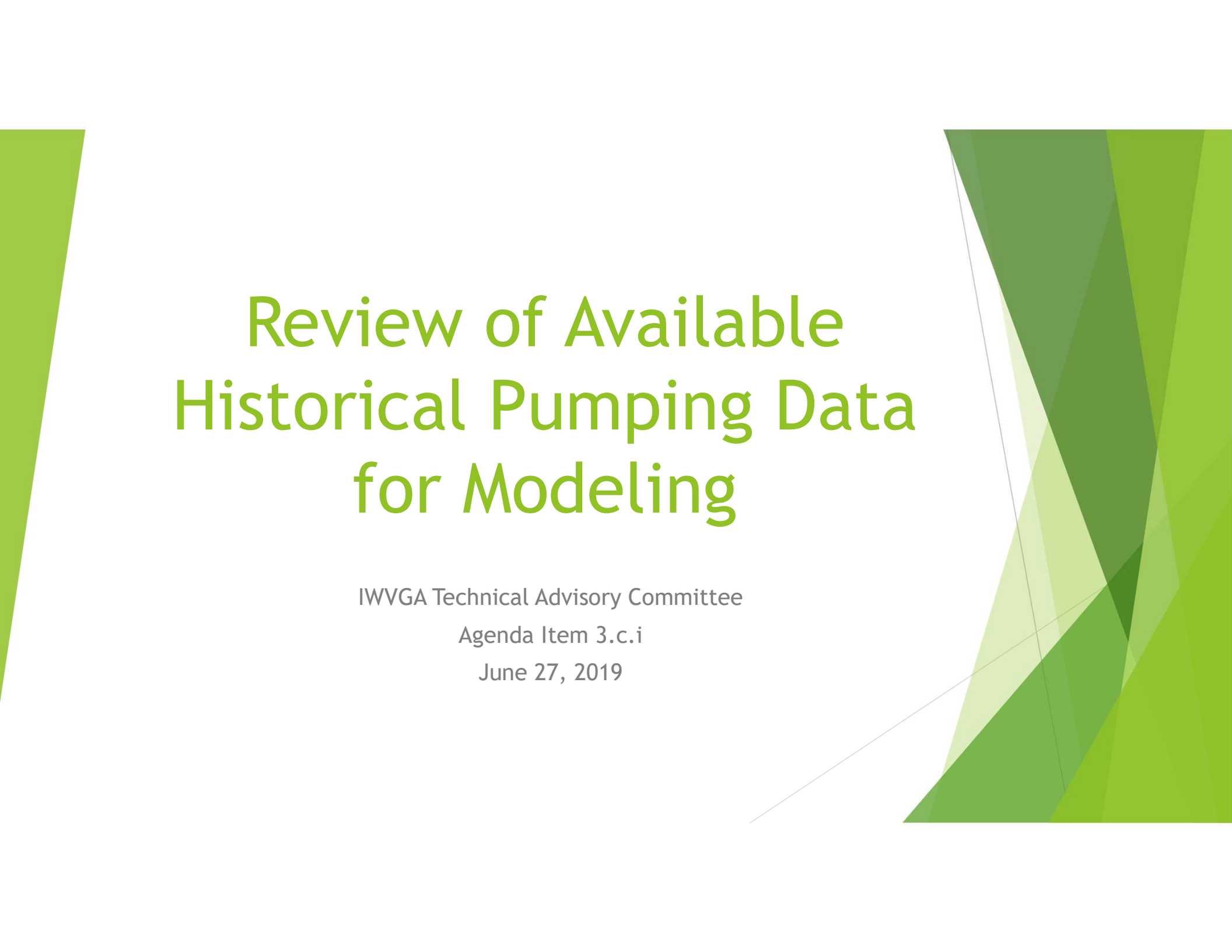




Review of Available Historical Pumping Data for Modeling

IWVGA Technical Advisory Committee

Agenda Item 3.c.i

June 27, 2019

Purpose

- ▶ Review available data and its use for modeling scenarios for the GSP
 - ▶ Assumptions made in the previous modeling scenarios were based on available historical pumping records.
 - ▶ During last TAC meeting, comments indicated that additional data may be available.
- ▶ Identify any errors in the assumptions made for previous modeling scenarios
 - ▶ E.g. Small ag. allocations and starting operation dates
- ▶ **Goal: Use the best available data for modeling**
 - ▶ Data may be used to determine actual allocations

Assumptions for Allocations for Modeling

- ▶ Base Allocations based on 5-year pumping history
 - ▶ Starting Allocation is equal to the lowest historical annual pumping from 2010 - 2014
 - ▶ Used in last three modeling scenarios presented at June 6 TAC meeting
 - ▶ Zero allocation if pumping is not continuous from 2010 to 2014

Historical Pumping Data

- ▶ Current data sources
 - ▶ Reported production data from the Indian Wells Valley Cooperative Groundwater Management Group
 - ▶ Data collection effort for the Baseline model scenario
 - ▶ Outreach to pumpers
 - ▶ Well registration forms
 - ▶ Miscellaneous letters, statements, and reports
 - ▶ E.g. Indian Wells Valleys Farmers Group letter, dated March 4, 2014

IWV Ground Water Production Estimates 1975 - Present

Year	Meadow- brook Farms (e)	Simmons Ranch (f)	China Lake Acres	City of R/C	SVM	IWVWD	Inyokern CSD	NAWS (c)	Neal Ranch	Private Wells	Quist Farms	Orchards (d)	R/C Heights	S. Leroy (a/b)	Annual Totals
1975	1516		400		2781	2983	300	5000	2000				1000		15980
1976	1494		400		2911	3099	300	5000	2000				1000	1600	17804
1977	2702		400		3315	3063	300	5000	2000				1000	1600	19380
1978	3216		400		3081	3357	300	5000	2000				1000	1600	19954
1979	3257		400		3081	3402	300	5154	2000	2100			1000	1600	22294
1980	7515		400		2887	3319	300	4995	2041	2100			1000	1600	26157
1981	10036		400		3065	4223	300	4604	2002	2100			1000	1600	29530
1982	10324		400		2887	3963	300	4450	1478	2100			1000	1600	28502
1983	10087		400		2476	4316	300	4402	1752	2400			1000	1600	28733
1984	10312		400		2307	4940	300	4694	1568	2400			1000	1600	29521
1985	10100		400		2397	4981	300	4002	2450	2500			1000	1600	29730
1986	5389		400		2557	5901	300	4430	2353	2500			1000	1600	26430
1987	4141		Purchased by IWVWD		2560	7426	300	4422	1447	2500			Purchased by IWVWD	Ranch Closed	22796
1988	5255				2560	7889	173	3980	1195	2500					23552
1989	7064				2320	8725	175	4205	Purchased by IWVWD	2650		500			25639
1990	6187				2505	8600	170	3667		2650		525			24304
1991	6737				2406	7700	150	3364		2650		525			23532
1992	7104				2528	7650	141	3351		2650		550			23974
1993	7701				2607	7800	150	3411		2650		575			24894
1994	7504				2607	8300	146	3684		2650		575			25466
1995	7427				2710	8100	125	3848		2650		595			25455
1996	7807				2620	8504	134	3367		2650		600			25682
1997	7800				2522	8534	139	2983		2650		625			25253
1998	7800				2527	7719	102	3018		2700		640			24506
1999	7800				2537	8242	104	2541		2700		690			24614
2000	7800				2701	8148	111	2690		2800		725			24975
2001	8150				2732	8392	97	2840		2800		750			25761
2002	8460			445	2564	8865	115.6	3138		2800	750	750			27887.6
2003	9420			616	2561	9098	126	3325		2800	750	775			29471
2004	9370			413	2470	8992	118.4	2331		2800	750	800		950	28994.4
2005	9580			366	2504	8545	135	2288		2800	750	825		1025	28818
2006	9460			385	2591.2	8864.4	135	2440		2800	750	840		1050	29315.6
2007	9270			420	2530.4	9198.5	90.7	2533		2800	750	840		1000	29432.6
2008	8957			392	2520.7	8564.8	118	2119		2800	750	900		1200	28321.5
2009	9536			400	2534.5	8398.2	118	1883		2800	750	925		1125	28469.7
2010	9437			339	2586.6	7570	118	1710		2800	750	925		1050	27285.6
2011	9827			370	2457.5	7364.25	118	1734		2800	750	925		1050	27395.75
2012	9876			348	2743	7633.45	117.927	1710		2800	750	1062		800	27840.377
2013	9354	918		423	2706	7531.69	117.68	1538		1100	750	2846			27284.37
2014	7524	1,087		392	2679	7318.7	108	1618		1100	750	4087			26663.7
2015	6517	1,003		427	2518	7050	90.532	1442		1100	750	4387			25284.532
2016	6387	918		373	2377	6411.8	102.335	1595		1100	750	4300			24314.135
2017					2,629	6506.6		1450							
Total	315200	3926	4800	6109	113159	297188.4	7546.174	141156	26286	93250	11250	33062	12000	26850	1081196.9
Avg.	7505	982	400	407	2632	6911	180	3283	1878	2454	750	1181	1000	1343	25743

(a) Spike Leroy ranch started back up in 2004 with approx. 150 acres of alfalfa x 7
(b) 2012 number is an estimate/converted to pistachio 2013
(c) Navy began aggressive water conservation program in 2007

(d) 2013 number based on March 4, 2014 letter to BOS.
2014/2015/2016 data includes 3,700 and 4,000 AF from Mojave Pistachio
"based off the UC Davis Pistachio Cost Study plus dust mitigation."
(e) 2005 Brown Road Farming changed to Meadowbrook Farms
(f) Simmons Alfalfa Ranch added March 2014

Indian Wells Valley
Cooperative
Groundwater
Management Group

Baseline Pumping

FUTURE BASELINE (No Action) PUMPING 2020-2070

Owner	Estimated # of Wells	Est. Recent Pumping	Est 2016 Pumping	Estimated Baseline Pumping (AFY)		
				2020	2040	2070
Meadowbrook Dairy	10	9,640 ²	6,387 ²	12,303	12,303	12,303
Mohave Pistachio	8	3,655 ¹	3,040 ¹	6,054	5,891	6,891
Large Ag Subtotal	18			18,357	19,194	19,194
Simmons Farm	1	982 ²	918 ²	931	931	931
Quist Farms	7	750 ²	516 ⁴	674	585	685
Sierra Shadows	3	missing	missing	765	765	765
Amberglow	1	missing	missing	62	62	62
Terese Farms	2	missing	missing	310	410	410
Hickle	2	missing	missing	85	85	85
Blubaugh	1	missing	missing	1	1	1
Bellino	1	missing	missing	50	50	50
McGee	2	missing	missing	400	400	400
Other Small Ag	unk	732 ³	1,260 ³	0	0	0
Small Ag Subtotal	20			3,278	3,389	3,389
Kern County	1	missing	missing	18	18	18
City of Ridgecrest	5	388 ²	373 ²	407	407	407
Other Irrig, Dust Subtotal	6			425	425	425
IWVWD	11	7,704 ²	6,412 ¹	6,518	7,346	8,791
Inyokern CSD (265)	2	110 ²	102 ²	191	191	191
Mutuals (491)	38	comb /	comb /	354	354	354
DOM (832)	832	2,120 ²	1,100 ²	832	832	832
MUN, DOM Subtotal	883			7,894	8,723	10,167
Searles Valley Minerals	5	2,576 ²	2,377 ²	2,907	2,907	2,907
Navy	6	1,633 ¹	1,595 ¹	2,041	2,041	2,041
TOTAL	938	<i>cannot calculate due to missing data</i>		34,902	36,679	38,123

[historical data source](#)

¹ data received from pumper

² data from IWVCGWMG 1975-2017 pumping table; most recent years up to ten if available

³ data from IWVCGWMG 1975-2017 pumping table, difference of 'Orchards' and Mohave Pistachios

⁴ 2017 estimated pumping available from pumper

Baseline Model Scenario

- Other Small Ag:
- Scott Shacklett
 - Ernest Bell?
 - Michelle Richter?
 - Possible Others?

- ♦ The planted acres and water use were inaccurately quoted in the report. The following is the current and planned acreages and their water demands. Currently there are 1850 planted acres (in various stages from new plantings to mature trees) by the following growers which last year (2013) used approximately 2979 AF of water. When all acreage planned to be planted by these growers is completed there will be 2270 acres with an estimated water usage of approximately 9833 AF/y once all trees reach maturity.

Grower	NET PLANTED ACRES <i>acres Today</i>		WATER USAGE	
	<u>Current Acres</u>	<u>Buildout Acres</u>	<u>2013</u>	<u>At Maturity</u>
♦ Sierra Shadows Ranch-Conaway	168 ac	258 ac	373 AF/y	1032 AF/y
♦ Amber Glow Ranch - Pat Davis	12 ac	12 ac	48 AF/y	48 AF/y
♦ Art Hickie	17 ac	17 ac	85 AF/y	85 AF/y
♦ Max Hovaten	80 ac	100 ac	480 AF/y	600 AF/y
♦ Simmons Alfalfa Ranch-Simmons	133 ac	133 ac	918 AF/y	918 AF/y
♦ Mojave Pistachio*-Stiefvater	1300 ac	1600 ac	325 AF/y	6400 AF/y
♦ Quist Farms-Pat Quist	140 ac	150 ac	750 AF/y	750 AF/y
<i>Total</i>	<i>1850 ac</i>	<i>2270 ac</i>	<i>2979 AF/y</i>	<i>9833 AF/y</i>
<i>Meadow Brook Farms</i>	<i>890 ac</i>	<i>1600 ac</i>	<i>7120</i>	<i>7170</i>
	<i>total 3160</i>		<i>9899</i>	<i>16953</i>

*Mojave Pistachio has done a conversion of use on 120 acres of alfalfa (with a water use of 1000 AF/y) to pistachio; this conversion was not addressed in the report. See Mojave Pistachio Statement date Feb. 12, 2014 in your Board package.

Indian Wells Valley
Farmer's Group
Letter, dated
March 4, 2014

Historical Pumping Data (cont.)

- ▶ Assumptions were made in each modeling scenario to serve as placeholders where data was incomplete or unavailable.
 - ▶ Small ag, mutuals, etc.
- ▶ The assumptions could impact the modeling results
- ▶ The Water Resources Manager requests that any additional available pumping information be provided by July 10, 2019.

Next Steps

- ▶ Collaborative data gathering effort to improve modeling scenarios
 - ▶ Additional farms not currently identified
 - ▶ All available production data from 2005 - present day
 - ▶ Metered/measure pumping
 - ▶ Estimated pumping
 - ▶ If the above aren't available the following may be helpful:
 - ▶ Well power records
 - ▶ Historical aerial photos
 - ▶ Description and start date of activities benefitting from produced groundwater
 - ▶ Any additional producer information