

REVIEW AND HIGHLIGHTS  
OF NATURAL GAS  
DRILLING ACTIVITIES  
IN  
NORTHERN CALIFORNIA'S  
SACRAMENTO VALLEY  
DURING  
**2011**

Presented by Roland J. Bain, Consulting Petroleum Geologist

To the

SACRAMENTO PETROLEUM ASSOCIATION

March 21, 2012

Data Compiled and Organized by Mike Cummings, DOGGR,  
and Roland J. Bain

## HIGHLIGHTS OF NATURAL GAS DRILLING ACTIVITIES IN NORTHERN CALIFORNIA'S SACRAMENTO VALLEY

### 2011

The **60 holes drilled** in the search for gas in the Sacramento Valley during **2011** represent the lowest number of holes drilled since this reporting started in **1966**. The previous low were the **76 holes** drilled in **1995** (followed closely by the 77 in 2003). The 60 holes drilled in 2011 compared to the number in **2010 (109)**, illustrates the on-going slide in natural gas exploration in the Valley in recent years. Comparing the number of holes drilled in 2011 with that of 2007 underscores the problem even more dramatically — **60 versus 229**.

The continuing decline in drilling activities appears to be rooted, at least in part, in the current low and decreasing well-head prices. Whereas the difference in the annual average well-head price (PG&E formula) between **2011 and 2010 — \$4.06 versus \$4.32** — isn't too significant, the average price for the first three months of 2012 — **\$2.87** — versus the **\$4.00** for the same period in 2010, emphasizes the growing problem. All indications are that prices will continue to remain low.

On the drilling front, it should come as no surprise that Venoco, Inc. again dominated the field during 2011 — and the field was not a strong one. The following figures illustrate Venoco's continuing prominent role:

	<u>2011</u>	<u>2010</u>
<u>No. of holes drilled</u>	<u>60</u>	<u>109</u>
<u>No. of holes completed as gas wells</u>	<u>40</u>	<u>76</u>
<u>No. of holes drilled by Venoco</u>	<u>43(78% of total)</u>	<u>91(83% of total)</u>
<u>No. of holes completed by Venoco</u>	<u>30(75% of total)</u>	<u>66(80% of total)</u>

The other 8 Operators who drilled in the Valley during 2011 accounted for only 17 holes drilled with 10 of these completed as gas wells. Leading this group was Royale Energy with 6 holes drilled / and 1 completion (the status of 2 others is unknown); Vintage Production — 4 / 4; ABA Energy — 2 / 2; Bright Spot Oil & Gas — 1 / 1; Capitol Oil — 1 / 1; JCG Investors — 1 / --; Source Energy — 1 / 1; and Sullivan Drilling — 1 / ?. It's worth noting that companies often take positions in other Operator's projects with the result that numbers such as the forgoing may not be completely representative of a company's involvement in drilling activities.

Interestingly, drilling activities in the Valley's gas-storage fields increased in

2011. Three (3) Operators drilled 13 holes in 3 of the storage fields: Central Valley Gas Storage — 8 completed wells in the Princeton field; Lodi Gas Storage — 3 completed wells in the Lodi field; and Wild Goose Storage — 2 completed wells in the Wild Goose field. [Note: Holes drilled in gas-storage fields are not carried in number of holes drilled; those drilled for new supplies of gas]

The drilling contractors operating in the Sacramento Valley during 2011, included Ensign — 4 rigs drilled 44 holes; Paul Graham — 5 rigs drilled 27 holes; Helmerich & Payne — 1 rig drilled 1 hole; and WW drilled 1 hole / ? (presumably, WW is a water-well drilling company).

The focus of the drilling projects during 2011 was in the Grimes / Sutter Buttes area as well as at Willow-Beehive Bend. Of related interest is the fact that **66%** of the gas production from Valley wells was derived from Forbes sands. Until recent times, the large majority of local gas came from Domengine, Mokelumne River and Winters sands.

The Rio Vista field remained the top producing gas field in the Valley, although the **10.5 Bcf** of produced gas measured very slightly above the **10.2 Bcf** output from the Grimes gas field. Wells in the Willows-Beehive Bend field yielded 8.95 Bcf.

Venoco is still the top gas producer in the Valley, its 610 wells having produced 32 Bcf last year. Vintage's 252 wells produced 13.8 Bcf and 2.5 Bcf were realized from Royale's 48 wells. Three (3) of Venoco's wells in the Van Sickle Island field were among the top ten gas wells in 2011, the number one well — the Roaring River 20-4 well — having produced 1.9 Bcf for a daily average of 5,220 Mcf.

A definite sign of the times is the growing number of filings for permits to Rework wells. During 2011, there were 462 rework filings in comparison to 386 filings in 2010. Of the 462 filings 309 (67%) were by Venoco.

The decrease in drilling by Venoco during 2011 may signal its intent to de-emphasize its exploration efforts and its presence in the Sacramento Valley. In view of the portents for on-going low well-head prices, Venoco might not be the only Operator becoming discouraged with the current, negative economics.

2012 should be an interesting year, if not a pivotal one.

Roland J. Bain  
Sacramento, CA  
March 21, 2012

# SACRAMENTO VALLEY DRILLING ACTIVITIES — 2011

	<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>
NUMBER OF HOLES DRILLED	<b>60*</b>	109	94	191	229
HOLES COMPLETED AS GAS WELLS	<b>40**</b>	76	75	144	168
SUCCESS PERCENTAGE	<b>67%</b>	70%	80%	75%	73%
*Plus 13 Gas-storage wells    ** Status of four (4) holes unknown					
NUMBER OF OPERATORS	<b>9***</b>	9	14	28	28
*** Plus three (3) gas-storage Operators					
OPERATORS FINDING GAS	<b>7(78%)</b>	6(67%)	7(50%)	22(79%)	18(64%)
OPERATORS DRILLING 1 HOLE	<b>5(56%)</b>	4(44%)	8(57%)	12(43%)	11(39%)
OPERATORS DRILLING 2 HOLES	<b>1(11%)</b>	2(22%)	1( 7%)	6(21%)	3(11%)
OPERATORS DRILLING 3 HOLES	—	—	2(14%)	3(11%)	5(18%)
OPERATORS DRILLING 4 HOLES	<b>1(11%)</b>	1(11%)	1( 7%)	1( 4%)	9(32%)

<u>MOST ACTIVE OPERATORS</u> (5 or more holes)	<u>2(22%)</u>	<u>2(22%)</u>	<u>2(14%)</u>	<u>6(21%)</u>	<u>7(25%)</u>
	Number Drilled	Gas Wells	Status Unknown	2010 Drl'd / Cpl'd	
VENOCO, INC.	43	30	2	91 / 66	
ROYALE ENERGY	6	1	2	6 / 1	

[Venoco drilled 72% of all holes — accounted for 75% of all gas wells]

\*\*\*\*\*  
Number Holes Drilled Under Confidential Status

<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>	<u>2006</u>
9 (15%)	8 (7%)	8 (9%)	17 (9%)	37 (16%)	41 (20%)

\*\*\*\*\*  
Gas Storage Wells

Central Valley Gas Storage	<u>8 / 8</u>
[Princeton Gas Field]	
Lodi Gas Storage	<u>3 / 3</u>
[Lodi Gas & Kirby Hill Field]	
Wild Goose Storage	<u>2 / 2</u>
[Wild Goose Gas Field]	

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Information organized by Roland J. Bain, Consultant.  
 Data compiled by Mike Cummings, DOGGR.

Sources of information: DOGGR and Munger Oil Information Service.

ACTIVITY BY OPERATOR — 2011

<u>OPERATOR</u>	<u>HOLES DRILLED</u>	<u>GAS WELLS</u>	<u>No. Aban.</u>	<u>STATUS UNKNOWN</u>	<u>2010 RECORD</u>
<u>ABA ENERGY CORP.</u>	2	2			1 / —
<u>BRIGHT DOT OIL &amp; GAS</u>	1	1			—
<u>CAPITOL OIL CORP.</u>	1	1			—
<u>JCG INVESTORS #1</u>	1		1		—
<u>ROYAL ENERGY</u>	6	1	3	2	6 / 4
<u>SOURCE ENERGY CORP.</u>	1	1			2 / —
<u>SULLIVAN DRILLING</u>	1			1	—
<u>VENOCO, INC.</u>	43	30	11	2	91/ 66
<u>VINTAGE PROD. CALIF.</u>	4	4			—
*****					
<u>VENOCO</u>	43	30	11	2	91/ 66
<u>ROYALE</u>	6	1	3	2	6 / 4
<u>VINTAGE</u>	4	4			—
<u>ABA</u>	2	2			1 / —
<u>BRIGHT DOT</u>	1	1			—
<u>CAPITOL</u>	1	1			—
<u>JCG INVESTORS</u>	1		1		—
<u>SOURCE</u>	1	1			2 / —
<u>SULLIVAN</u>	1			1*	—

\* Reportedly converted to water well.

\*\*\*\*\*

NUMBER OF HOLES DIRECTIONALLY DRILLED (Percent of Total)

<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>
<b>35(58%)**</b>	93(85%)	64(68%)	95(50%)	96(42%)

NUMBER OF DIRECTIONAL HOLES BY VENOCO

<b>28(80%)</b>	84(77%)	53(83%)	60(63%)	46(48%)
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\*\* Twelve (12) directional holes were drilled in gas-storage fields.

# 2011

## RANGES IN TOTAL DEPTHS

	NO. HOLES IN DEPTH RANGE				NO. GAS WELLS (% OF CPLNS)		PERCENT OF HOLES IN DEPTH RANGE			
	<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2011</u>	<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	
LESS THAN 2999 FT.	<b>10</b>	3	2	3	<b>9 (16%)</b>	<b>14%</b>	3%	21%	2%	
3000 — 3999 “	<b>5</b>	3	5	2	<b>5 (9%)</b>	<b>7%</b>	3%	5%	1%	
4000 — 4999 “	<b>4</b>	2	2	8	<b>1 (2%)</b>	<b>5%</b>	2%	2%	4%	
5000 — 5999 “	<b>9</b>	16	7	26	<b>6 (11%)</b>	<b>12%</b>	14%	7%	14%	
6000 — 6999 “	<b>14</b>	45	46	47	<b>11 (19%)</b>	<b>19%</b>	40%	49%	25%	
7000 — 7999 “	<b>14</b>	21	17	81	<b>11 (19%)</b>	<b>19%</b>	19%	8%	42%	
8000 — 8999 “	<b>10</b>	17	18	19	<b>9 (16%)</b>	<b>14%</b>	15%	19%	10%	
9000 — 9999 “	<b>4</b>	2	0	9	<b>2 (4%)</b>	<b>5%</b>	2%	0	5%	
10,000 — 10,999 “	<b>3</b>	1	0	2	<b>3 (5%)</b>	<b>4%</b>	1%	0	1%	
> 11,000 “	<b>0</b>	2	2	3	<b>0</b>	--	2%	2%	2%	

Total Footage = **457,513 ft.**    2010 = 763,935 ft.    2009 = 674,732 ft.    2008 = 1,367,864

## AVE. TOTAL DEPTHS

<u>2011</u>	<u>2010</u>	<u>2009</u>	<u>2008</u>	<u>2007</u>	<u>2006</u>	<u>2005</u>
<b>6,267'</b>	6,821'	6,815'	7,048'	7,106'	6871'	6509'

ACTIVITY BY DRILLING CONTRACTORS — 2011

	<u>HOLES DRILLED</u>	<u>GAS WELLS *</u>	<u>DAYS</u>	<u>FOOTAGE</u>	<u>2010 HOLES / FOOTAGE</u>
<u>ENSIGN</u>					
RIG 503	19	14	217	Confid'l	26 / 173,137
514	1	1	10	6,553	24 / 157,019
561	3	3	66	27,242	----
582	21	13 + 2?	323	Confid'l	13 / 110,138
	<b><u>44</u></b>			<b><u>33,795 +</u></b>	<b><u>63 / 440,294</u></b>
<u>PAUL GRAHAM</u>					
RIG 2	1	1	14	5,650	1 / 5,500
4	3	1	38	Confid'l	4 / Confid'l
5	2	2	36	19,041	1 / 10,659
6	6	2 + 2?	105	41,809	1 / Confid'l
7	15	12	203	49,272	10 / 56,365
	<b><u>27</u></b>			<b><u>115,772 +</u></b>	<b><u>17 / 27,524</u></b>
<u>HELMERICH &amp; PAYNE</u>					
RIG 442	1	1	14	6,870	
<u>WW (Sullivan Drilling?)</u>					
RIG ?	1	?			

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<u>ENSIGN</u>	<u>PAUL GRAHAM</u>	<u>HELMERICH &amp; PAYNE</u>	<u>WW</u>
<u>Venoco 41</u>	<u>ABA Energy 2</u>	<u>Vintage 1</u>	<u>Sullivan 1</u>
<u>Vintage 3</u>	<u>Bright Spot Oil &amp; Gas 1</u>		
<u>44</u>	<u>Capitol Oil 1</u>		
	<u>Central Valley Storage 8</u>		
	<u>JCG Energy Investors 1</u>		
	<u>Lodi Gas Storage 3</u>		
	<u>Royale Energy 6</u>		
	<u>Source Energy 1</u>		
	<u>Venoco 2</u>		
	<u>Wild Goose Gas Stor. 2</u>		
	<b><u>27</u></b>		

\* Non-gas-storage wells, only.

2011

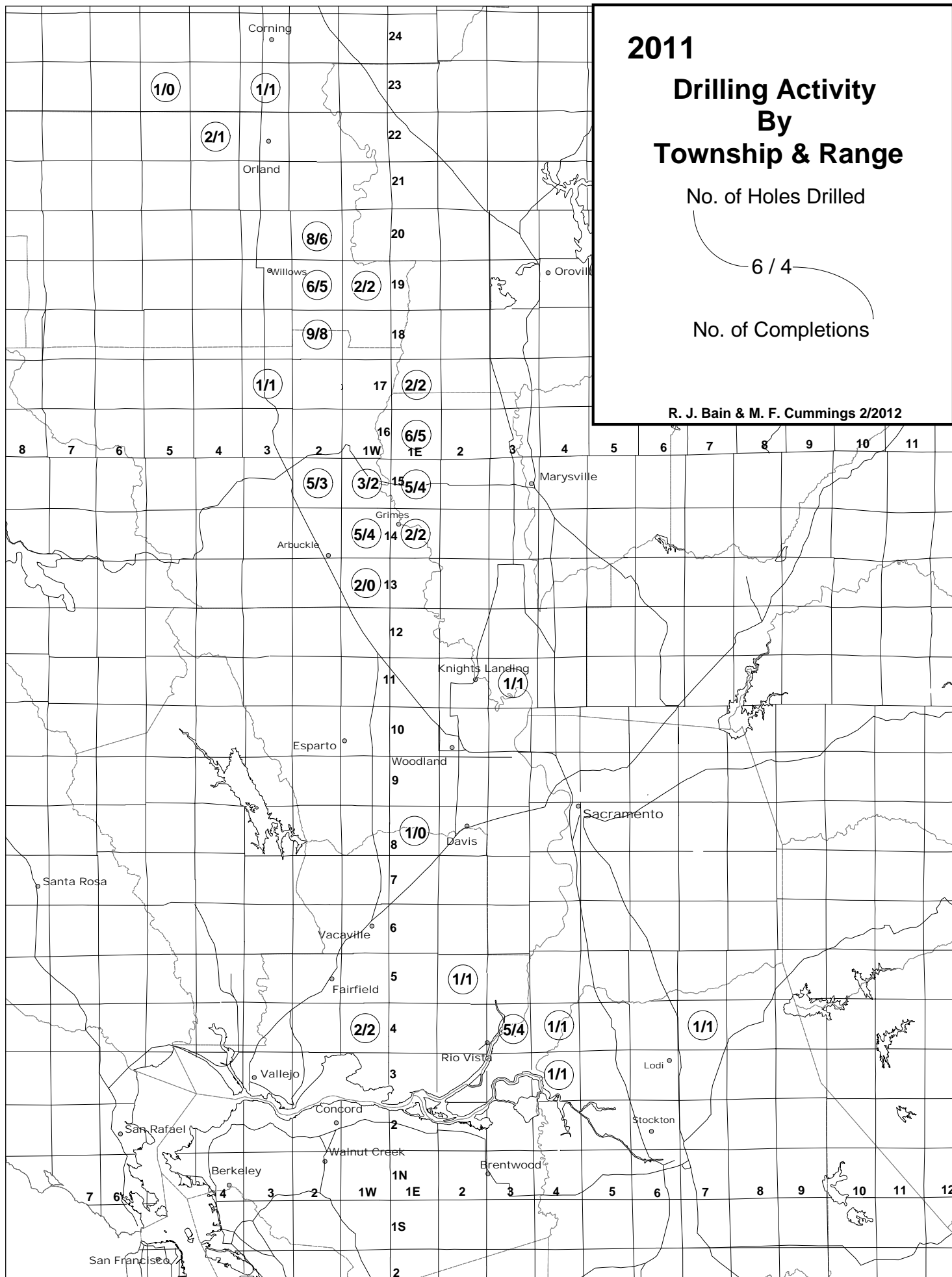
# Drilling Activity By Township & Range

No. of Holes Drilled

6 / 4

No. of Completions

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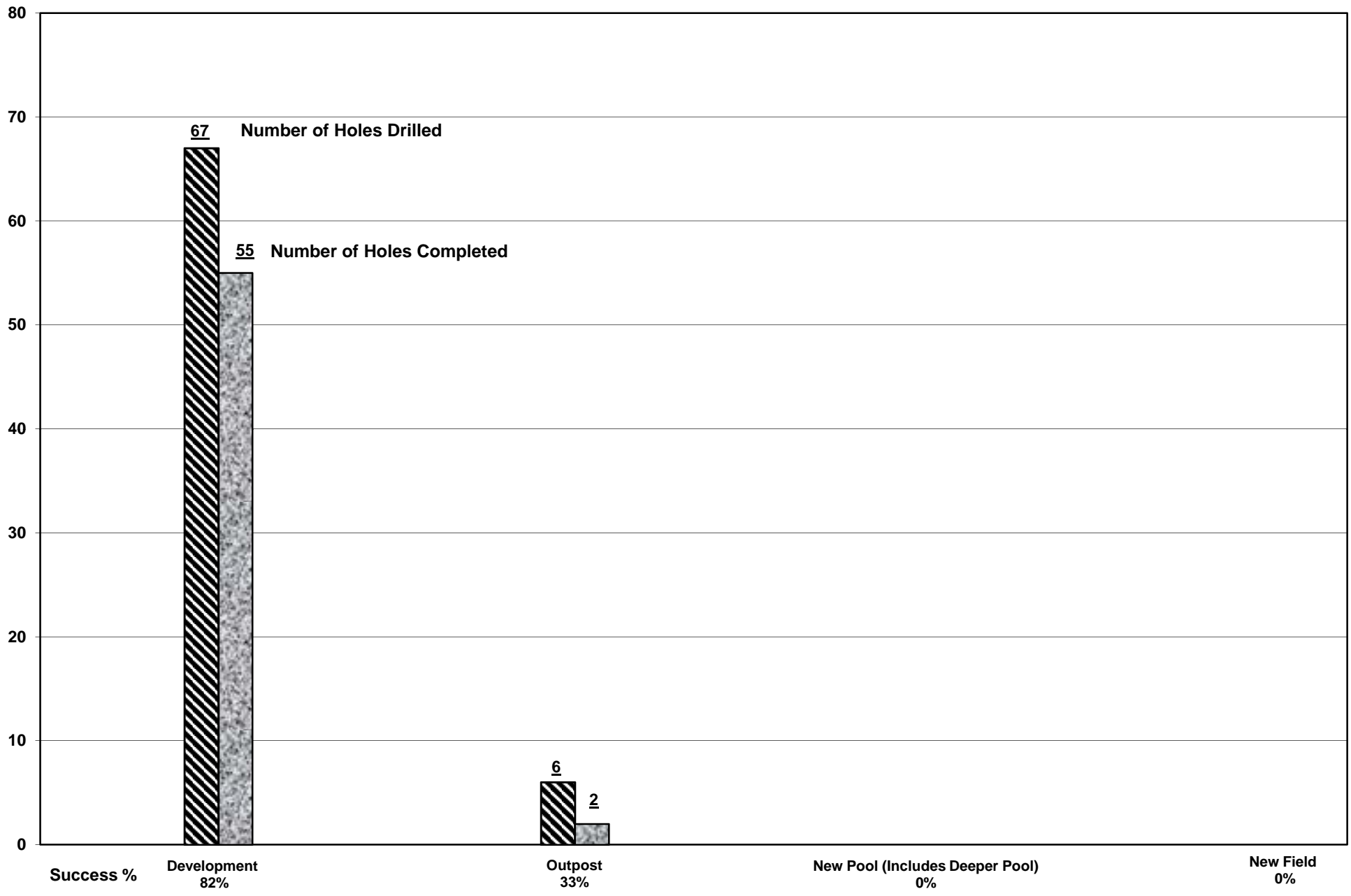




## GAS PRODUCTION BY COUNTY — 2011

<u>County</u>	<u>No. of Wells</u>	<u>Gas Bcf</u>	<u>Ave. Annual Production</u>	<u>Ave. Daily Production</u>	<u>Est'd Gross Annual Income</u>
SUTTER	440	13.155	29,898	139	\$53,409,653
COLUSA	363	11.835	32,604	173	\$48,050,774
GLENN	338	9.949	29,436	117	\$40,393,943
SACRAMENTO	210	8.348	39,755	230	\$33,894,764
SOLANO	261	6.967	26,693	198	\$28,285,951
SAN JOAQUIN	148	3.193	21,575	193	\$12,964,266
TEHAMA	164	2.393	14,590	59	\$9,714,764
CONTRA COSTA	45	1.053	23,391	127	\$4,273,507
HUMBOLDT	55	0.642	11,669	68	\$2,605,704
YOLO	88	0.38	4,323	63	\$1,544,448
BUTTE	11	0.038	3,479	13	\$155,392
SAN MATEO	23	0.005	203	1	\$18,928
YUBA	1	0.002	1,688	7	\$6,853

# Success Record Based on DOGGR Classification of Wells --- 2011



**2011****MONTHLY WELL-HEAD PRICES  
FOR SACRAMENTO VALLEY GAS WELLS**

(PG&amp;E FORMULA)

<u>MONTH</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2111</u>	<u>2012</u>
JAN	\$6.10	\$9.70	\$6.20	\$6.86	\$5.77	\$4.90	\$4.03	<b>\$3.18</b>
FEB	5.91	7.05	6.91	7.73	4.55	5.47	4.11	<b>2.81</b>
MAR	5.83	6.53	7.31	8.73	3.98	4.90	3.85	<b>2.61</b>
APR	6.89	6.03	6.83	9.05	3.78	4.22	4.30	
MAY	6.83	6.16	7.18	10.54	3.02	4.28	4.23	
JUN	5.78	5.20	7.24	11.01	3.20	4.05	4.33	
JUL	6.38	5.44	6.62	12.25	3.22	4.41	4.37	
AUG	6.27	6.52	5.60	8.42	3.41	4.20	4.31	
SEP	8.57	6.52	5.14	7.47	2.73	3.40	3.96	
OCT	10.48	4.02	5.90	6.21	3.86	3.85	3.92	
NOV	10.97	7.01	7.06	5.83	5.07	3.72	3.63	
DEC	9.74	7.30	7.40	6.18	4.89	4.40	3.64	

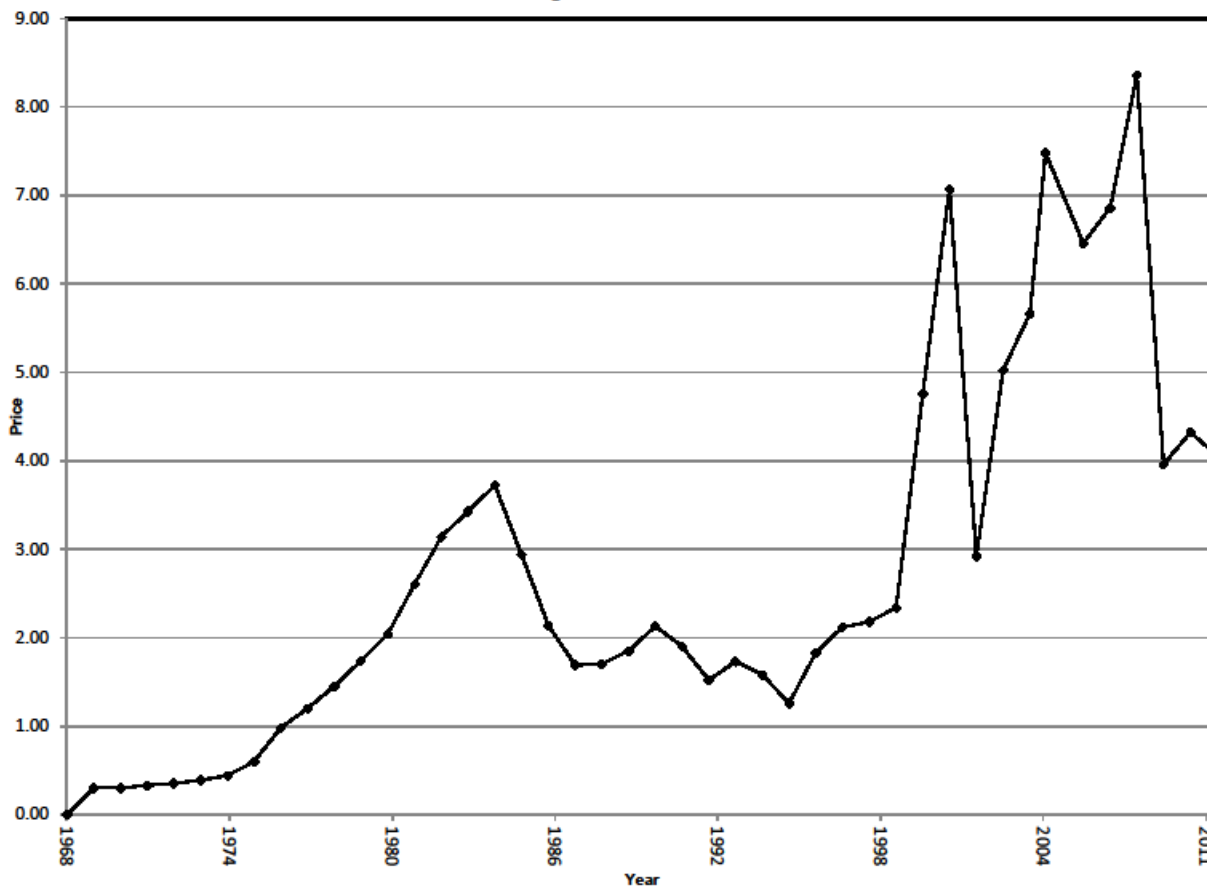
Record Price = \$14.32; January, 2001

<u>AVE. ANNUAL PRICES</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2111</u>	<u>2012</u>
	\$7.48	\$6.46	\$6.62	\$8.36	\$3.96	\$4.32		<b>\$4.06</b>

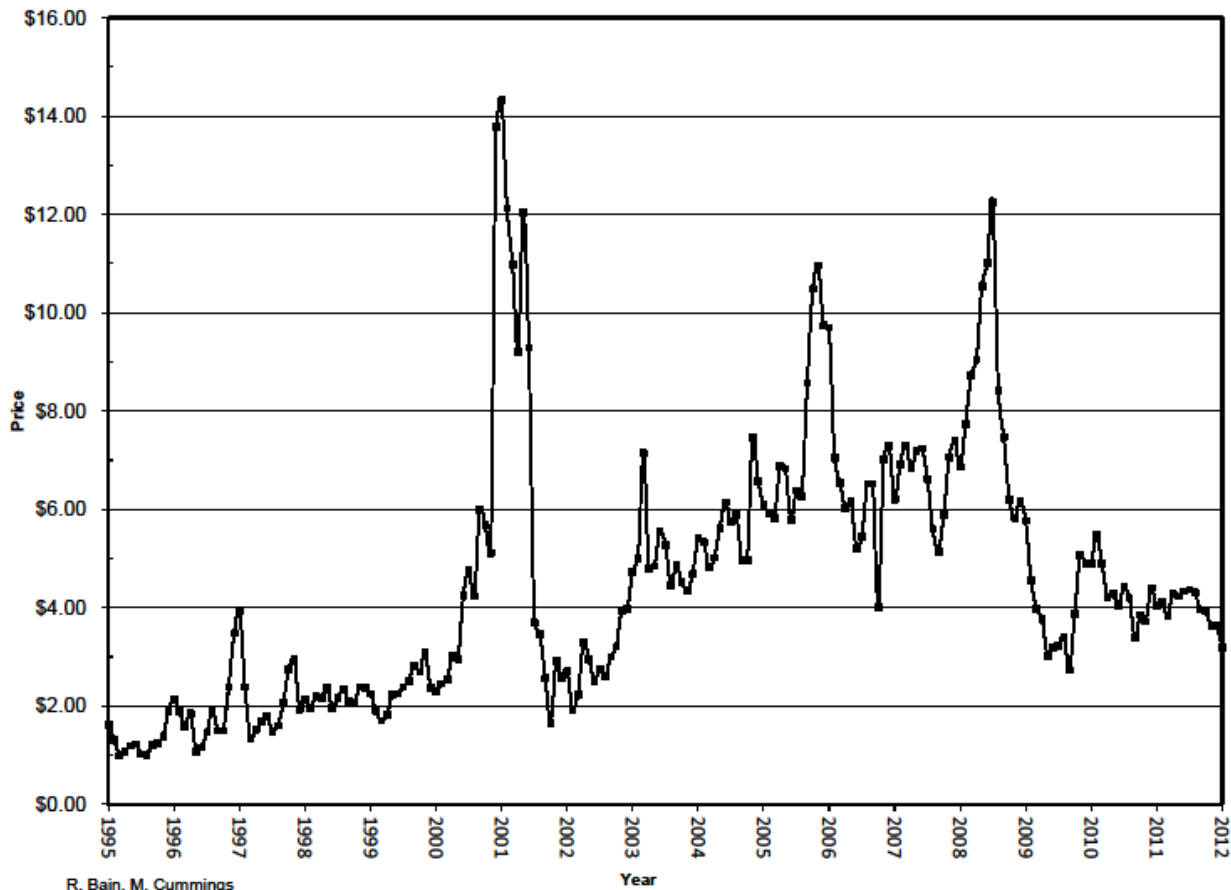
<u>AVE. PRICE FIRST 2 MONTHS</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2111</u>	<u>2012</u>
	\$6.01	\$8.38	\$6.56	\$5.16	\$5.19	\$5.19	\$4.07	<b>\$3.00</b>

<u>AVE. PRICE FIRST 3 MONTHS</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2111</u>	<u>2012</u>
						\$5.09	\$4.00	<b>\$2.87</b>

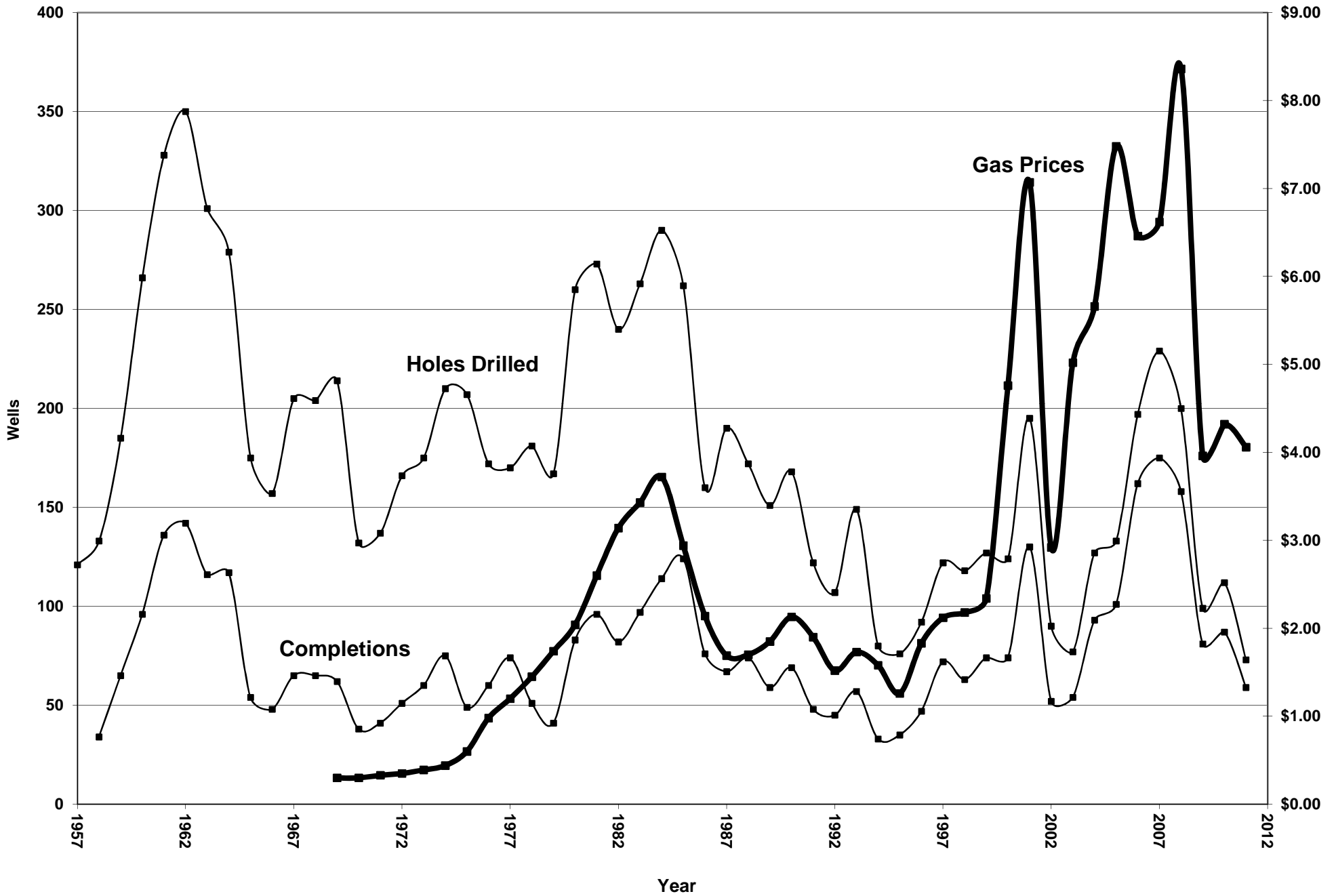
2011  
Average Annual Gas Price



2011  
Monthly Wellhead Prices For Sacramento Valley Gas Wells  
(PG&E Fair Market Gas Price)



2011  
**Impact of Price on Drilling Activity  
 Sacramento Valley**



## TOP TEN GAS PRODUCERS — 2011

<u>Operator</u>	<u>No. of Wells</u>	<u>Gas Production</u>
Venoco, Inc	610	31,935,047 Mcf
Vintage Prod, Calif.	252	13,830,171
Royale Energy	48	2,456,026
Towne Exploration Corp.	37	1,319,036
ABA Energy Corp.	38	1,191,188
Lario Oil & Gas Co.	14	Conf.
Donald C. Slawson Expl.	19	707,825
Signal Hill Petroleum	3	383,898
Capitol Oil Corp.	6	363,916
Orchard Petroleum	1	257,991

## TOP TEN GAS WELLS

<u>Field</u>	<u>Operator</u>	<u>Well</u>	<u>Days</u>	<u>Production</u>	<u>Ave. Mcf/Day</u>
Van Sickle Isl.	Venoco, Inc.	Roaring River 20-4	365	1,905,263 Mcf	5,220
Rio Vista	Vintage Prod'n	Wilcox 19	365	1,765,322	4,836
Grimes	Venoco, Inc.	Strain Ranch 35-1	352	1,102,345	3,132
<u>Confidential</u>					
Rio Vista	Vintage Prod'n	Welch 13	365	834,147	2,285
Grimes	Venoco, Inc.	Unit 31 - 10	365	824,402	2,259
Van Sickle Isl.	Venoco, Inc.	Roaring River 20-3	365	781,473	2,141
	Royale Energy	Goddard 7-1	364	705,520	1,938
<u>Confidential</u>					
French Camp	Vintage Prod'n	Ratto 1-35	365	510,774	1,399

## TOP PRODUCING GAS FIELDS — 2011

	<u>2011- MCF</u>	<u>CUMULATIVE MCF</u>
RIO VISTA	10,487,081	3,681,033,067
GRIMES	10,155,888	710,936,776
WILLOWS-BEEHIVE BEND	8,950,774	473,307,447
SUTTER BUTTES	5,345,648	217,395,936
VAN SICKKLE ISLAND	2,812,235	36,114,455
SYCAMORE	2,353,988	68,875,385
GRIMES, WEST	1,620,277	85,098,143
FRENCH CAMP	1,528,744	43,466,596
MALTON-BLACK BUTTE	1,106,557	154,007,686
RICE CREEK	1,130,573	58,119,131
LINDSEY SLOUGH	1,074,580	332,886,303

## FORBES SANDS' PRODUCTION FROM TOP 2011 GAS FIELDS

GRIMES	10,155,888
WILLOWS-BEEHIVE BEND	8,950,774
SUTTER BUTTES	5,345,648
SYCAMORE	2,353,988
GRIMES, WEST	1,620,277
MALTON-BLACK BUTTES	1,106,557
RICE CREEK	1,130,573

PERCENTAGE OF 2011 FIELDS PRODUCING FROM FORBES SANDS = 64%

PERCENTAGE OF 2011 GAS PRODUCTION FROM FORBES SANDS = 66%

Current Sacramento Valley  
Gas Producers (55)

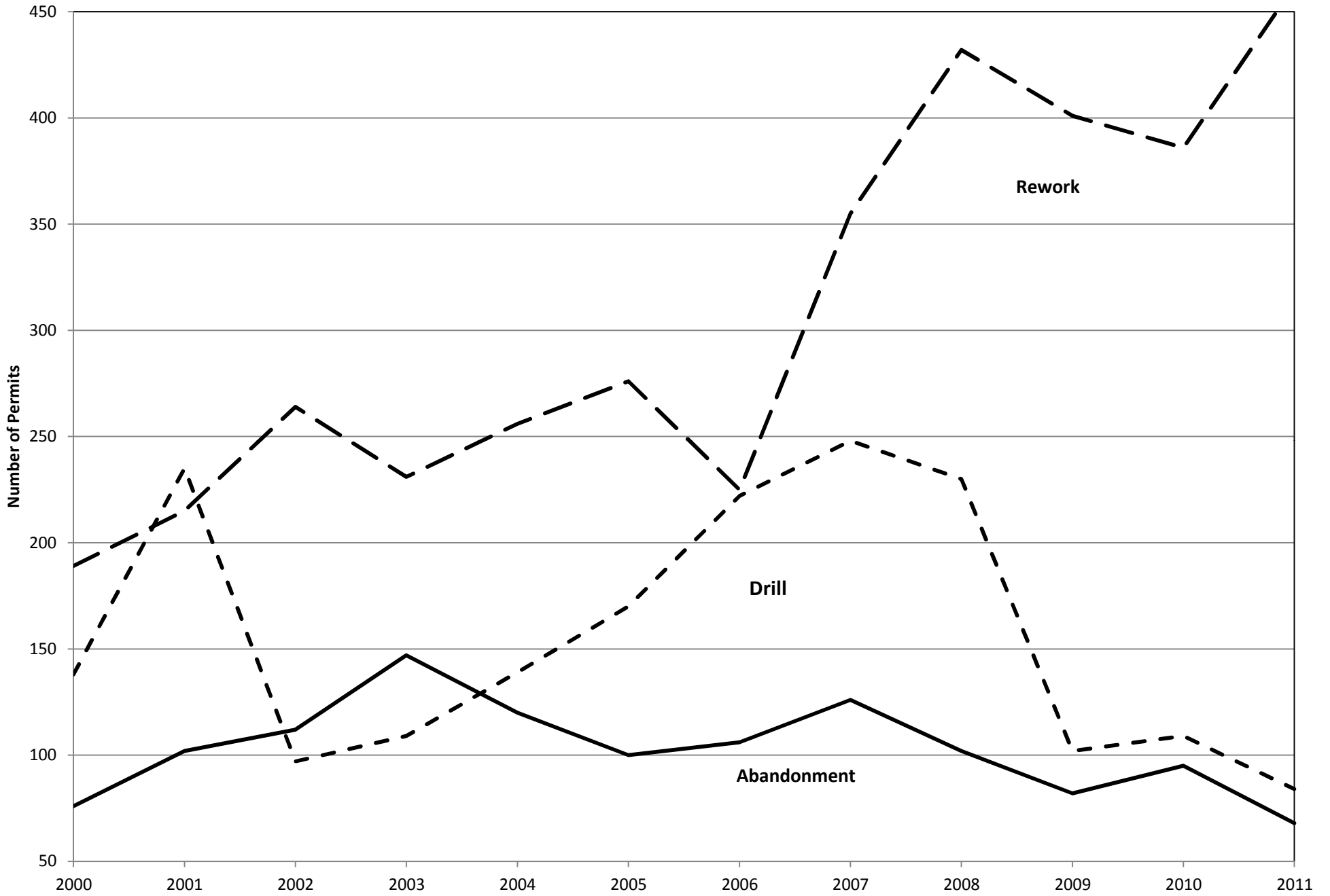
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Royale Energy	48	2,456,026
Towne Exploration	37	1,319,036
ABA Energy	38	1,191,188
Foothill Energy	41	890,629
Lario Oil & Gas Co.	14	Confid'l
Donald C. Slawson Expl.	19	707,825
Pioneer Exploration	47	409,049
The Termo Company	21	387,281
Signal Hill Production	3	383,898
Capitol Oil Corp.	6	363,916
Concordia Resources	9	358,088
Atlantic Oil Co.	21	295,530
Maranatha Petroleum, Inc.	22	268,488
Petersen Production Co.	9	273,200
Orchard Petroleum	1	257,991
RMS Monte Christo	7	137,209
Anacapa Oil Corp.	7	93,916
Western Metals Corp.	2	86,038
Sunset Exploration	5	83,597
Romara Energy, Inc.	2	79,354
Tri-Valey Oil & Gas Co.	6	64,162
Armstrong Petroleum Corp.	3	62,326
Robert A. Cohan	2	61,882
Petrogulf Corp.	3	61,182
Gibson Exploration	2	61,121
Sacramento Valley	1	37,138
Todd Jamison Ballantyne	2	36,106
Drilling Explor. & Oper'g, Inc.	4	34,344
Enerfin Resources	1	33,322
Northwest Petroleum, Inc.	2	26,909
AA Production Services, Inc.	2	23,838
Kaiser-Francis Oil Co.	1	21,863
Longbow, LLC	1	21,406
Paul Graham Drilling & Service	2	18,137
Princeton Natural Gas	3	14,287
KC Resources, Inc.	1	12,524
Aristata Exploration, Inc.	1	8,554
Delta Sierra Oil & Gas	1	8,386
California Hydrocarbons Corp.	1	6,882
Navitas Oil & Gas	1	4,029
Kelpetro Operating Co.	1	3,532
William H. Fisk	1	2,808
Sacramento Energy, Inc.	1	2,614
Dos Rios, Inc.	1	2,456
Summit Exploration Calif.	2	1,876
Gasch & Associates	1	1,688
Nana Oil & Gas, Inc.	1	1,395
Source Energy Corp.	1	1,329
Crain Orchards, Inc.	1	1,211



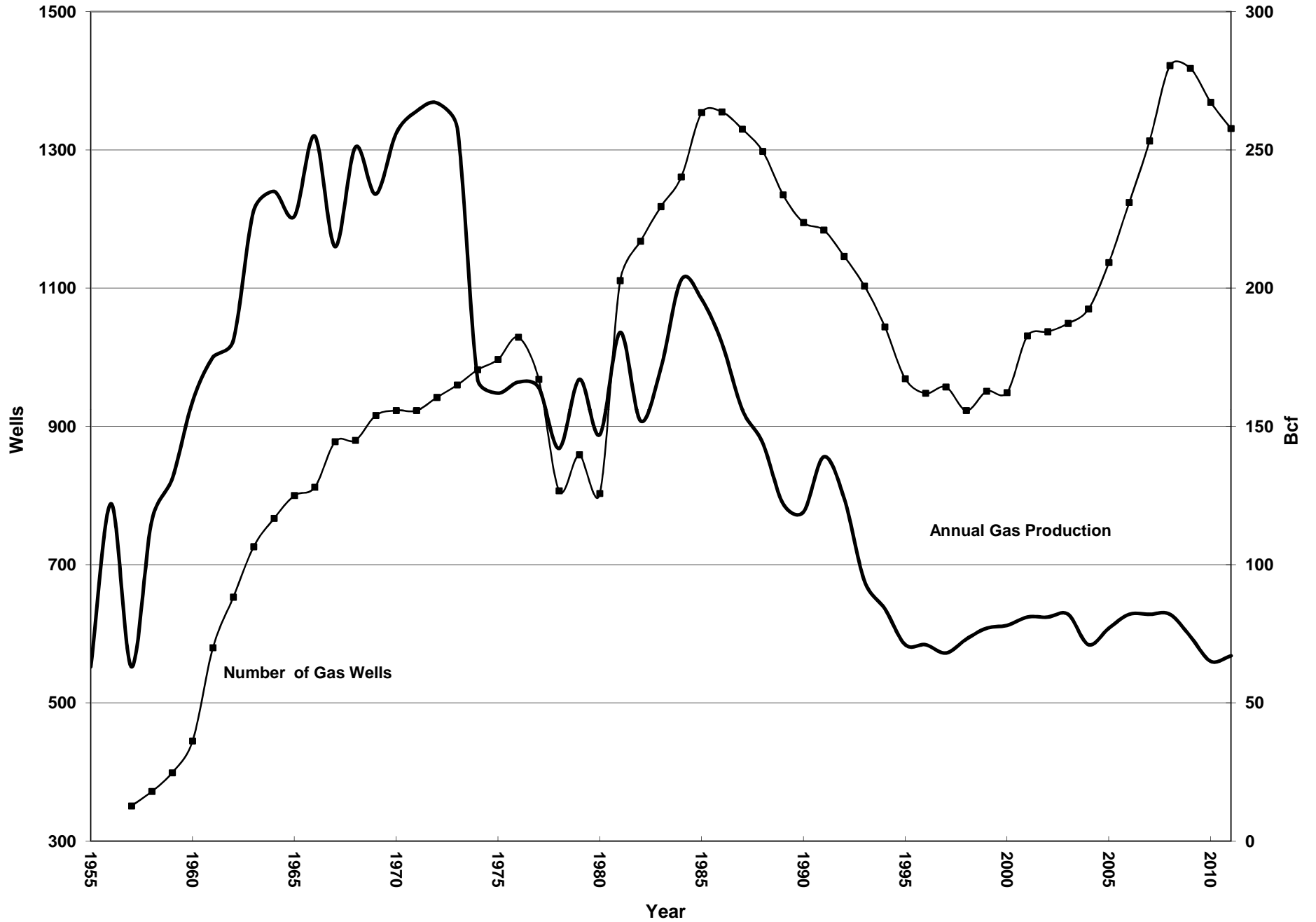
**FILINGS FOR VARIOUS PERMITS BY OPERATOR**

Operator	Abandonment	Drill	Rework	Supplementary
ABA Energy Corp.	7	2	5	1
Alanmar Energy	1			
Atlantic Oil Co.			1	
Bright Dot Oil and Gas, LLC		2		1
Capitol Oil Corp.	1	1	3	1
Central Valley Gas Storage, LLC		9	4	1
Cleary Petroleum Corporation	1			
Concordia Resources Inc.				1
Donald C. Slawson Expl.Co.,Inc.	4			
Drilling, Expl. & Oper. Co. Inc			1	
E & B Natural Resources Management Corp.	1			
Enerfin Resources NW Prod. CA LLC			4	
Energy Prod. & Sales Co.			1	
FMR Services, LLC	1			
Foothill Energy LLC	1		18	2
GO ENERGY, INC	1			
Innex California, Inc.			1	
Instrat, Inc.	1		1	
JCG Energy Investors #1, LLC		1	1	
Lario Oil & Gas Co.	11		4	
Lodi Gas Storage, LLC.		4	3	1
Longbow, LLC				1
Maranatha Petroleum Inc			8	
Navitas Oil & Gas LLC	1			
Northwest Petroleum Inc.	1			
Pacific Gas & Electric Co.			9	
Paul Graham Drilling & Ser. Co.	2		1	
Petersen Prod. Co. LLC			4	
Petrogulf Corp.	2			
Princeton Natural Gas, LLC			1	
Rheem California Land Co.			1	
Royale Energy Inc.		5	11	5
SACGASCO, LLC			1	
Signal Hill Petroleum, Inc.			2	
Source Energy Corp.	1	1		
Sullivan Drilling Inc.		1		
SUMMIT EXPLORATION (CA), LLC			3	1
Sunset Exploration Inc.	1			
The Nahabedian Exploration Group, LLC	4			
The Termo Co.			4	
Towne Exploration Co.	6		13	
Triple A Industries, Inc.			1	
Tri-Valley Oil & Gas Co.	2			
UMC Petroleum Corp.			1	
Venoco Inc.	7	49	309	55
Vern Jones Oil & Gas Corp.	1			
Vintage Prod California LLC	8	7	46	23
Whiting Oil and Gas Corp.	2			
Wild Goose Storage LLC		2		

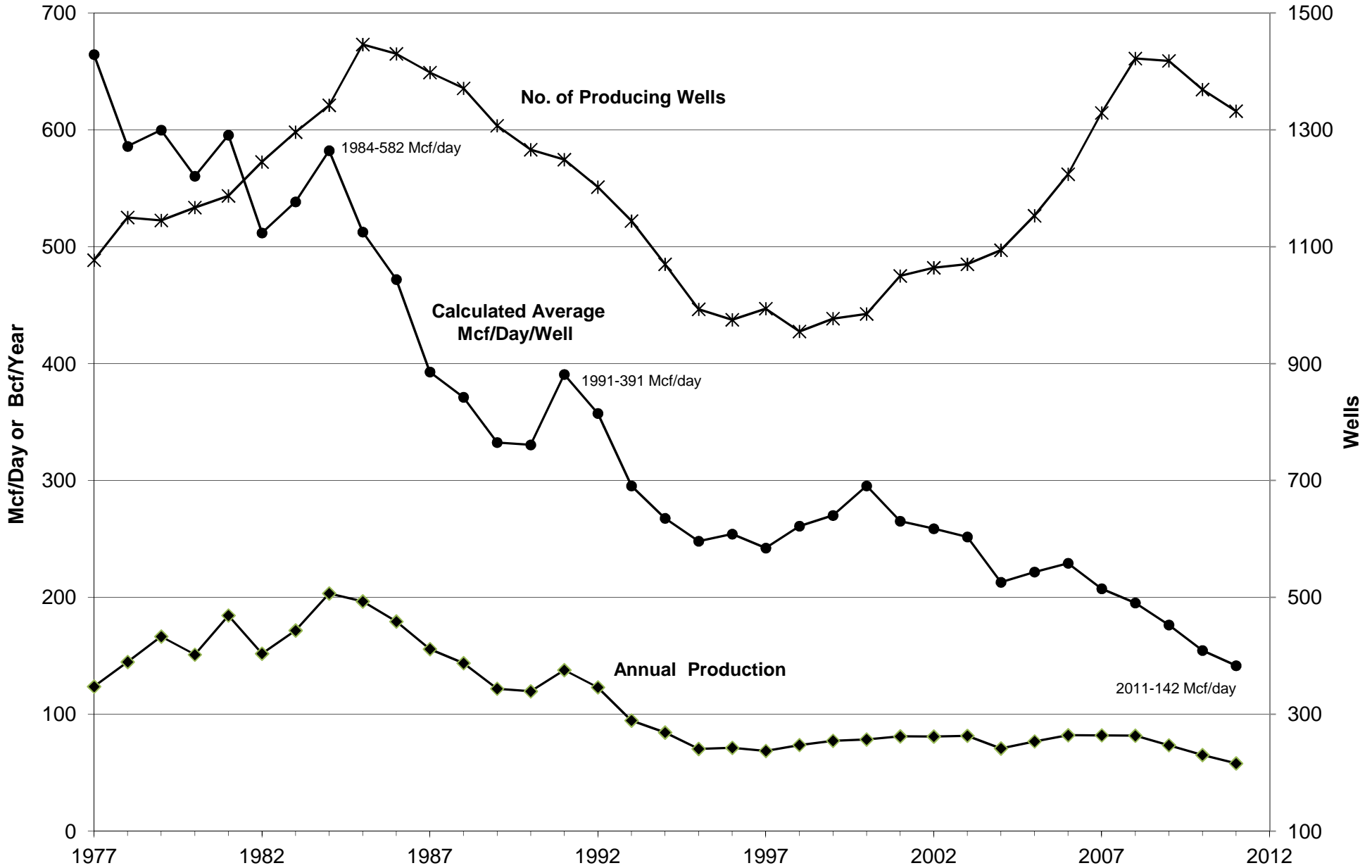
2011  
**Permits Issued by Type**



# Number of Gas Wells & Annual Gas Production

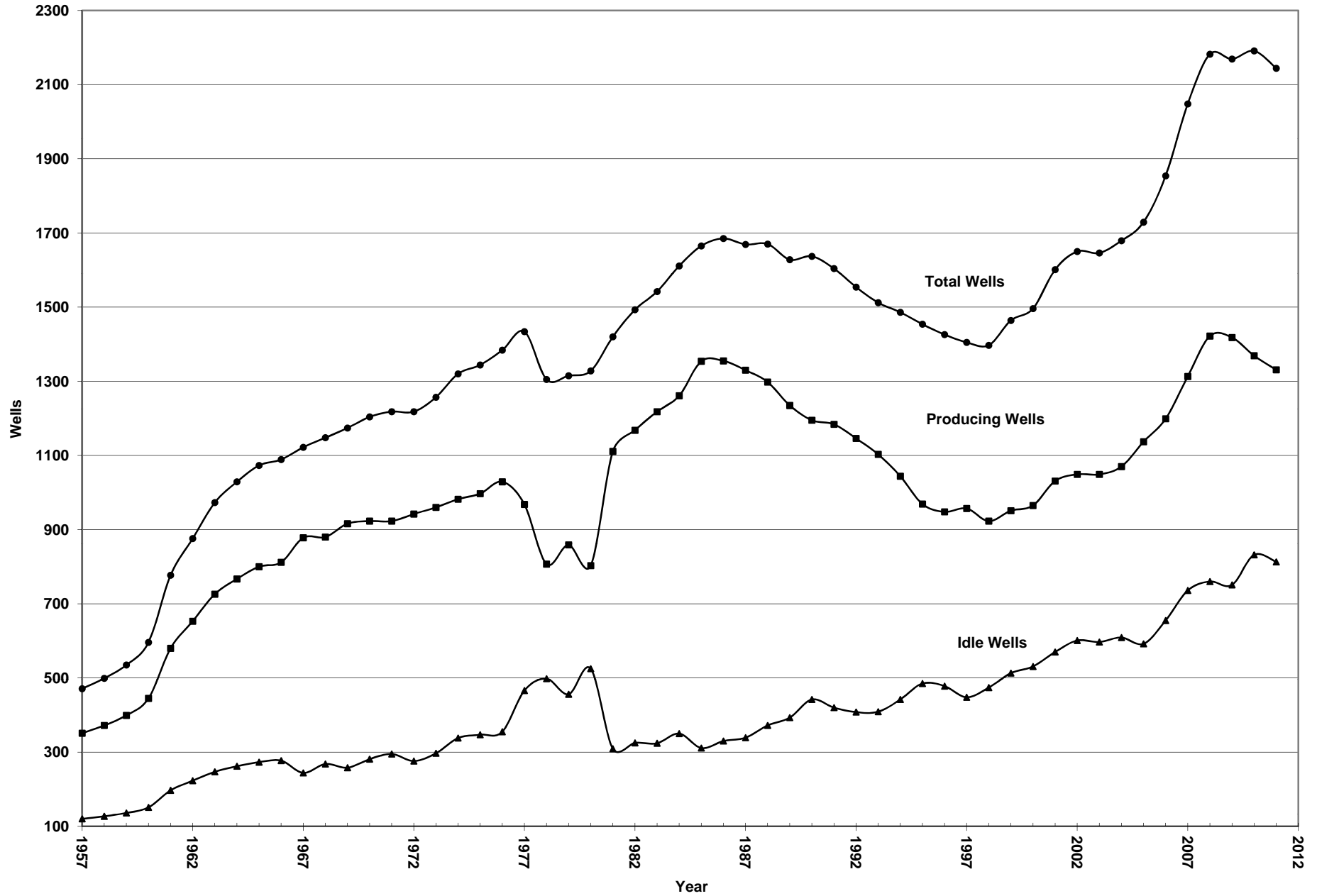


# District 6 - Average Annual Mcf/Day

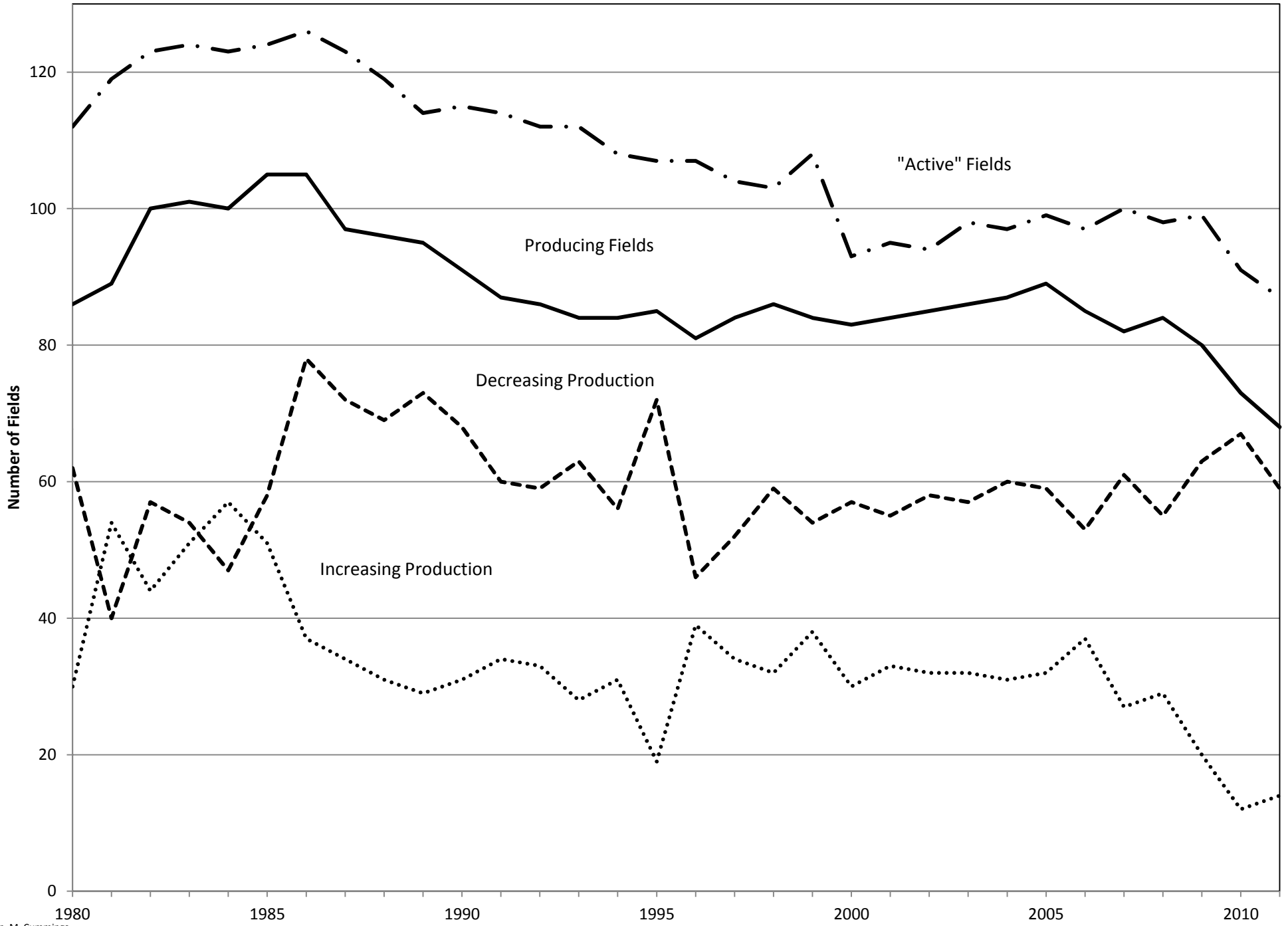


2011

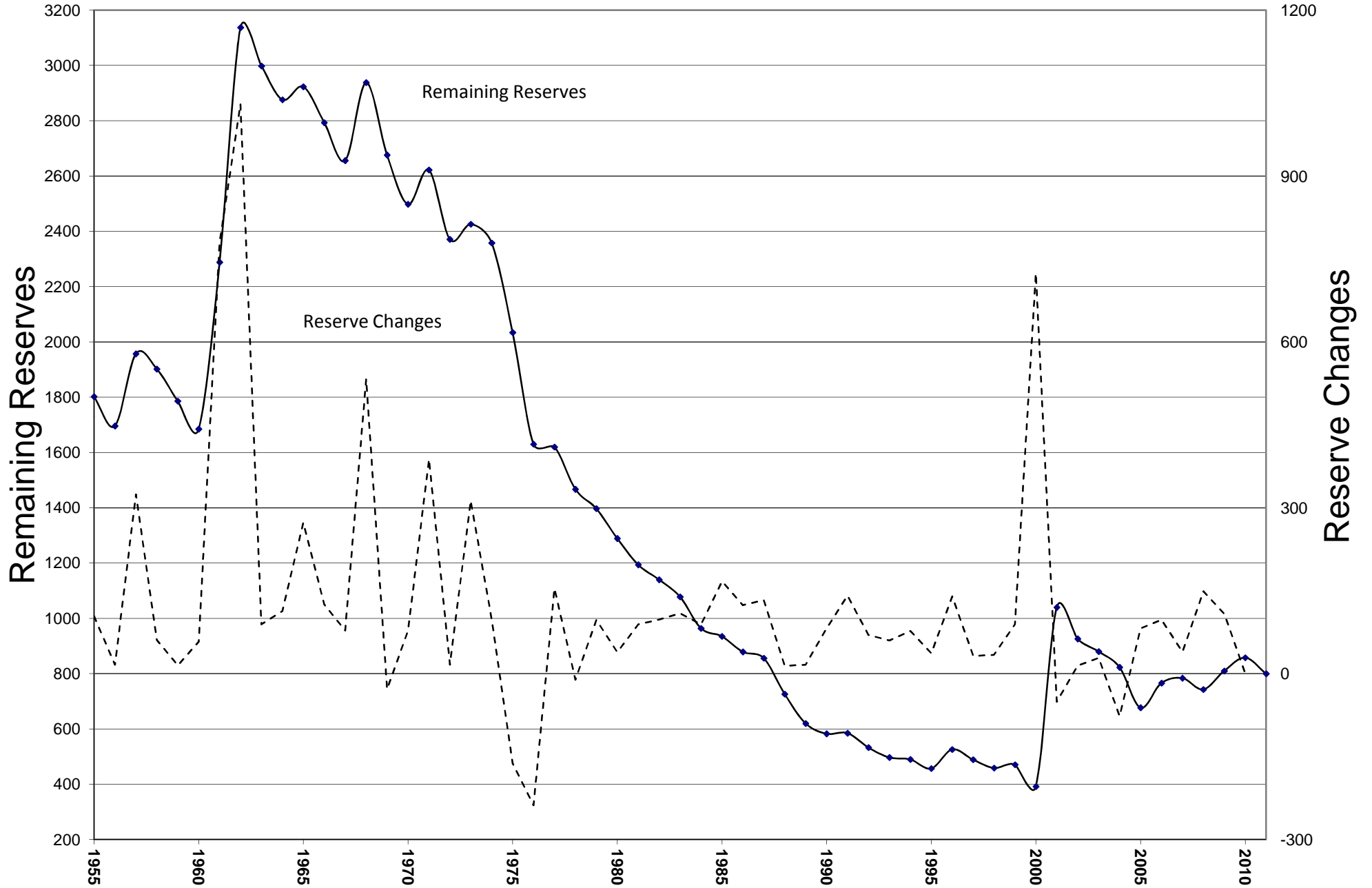
### Total Wells/Producing Wells/Idle Wells



# District 6 Field Changes



# Remaining Reserves & Reserve Changes



Source: DOGGR & R. J. Bain

**SUMMARY OF DRILLING ACTIVITIES IN THE SACRAMENTO VALLEY**

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
<b>Number of Holes Drilled</b>	154~	178	192	191	122	126	141	155	180	164	153	155	163	156	228	238	214	234
<b>Number of Redrills</b>	3	27	12	23	10	11	25	20	30	43	19	1~	18	11	32	35	26	29
<b>Total Number of Holes</b>	157	205	204	214~	132	137	166	175	210	207	172	170	181	167	260	273	240	263
<b>Holes Completed as Gas Wells</b>	4-8	65	65	62	38	41	51	60	75	49	60	74	51	41	83	96	82	97
<b>Success Percentage</b>	31%	32%	32%	29%	29%	30%	31%	34%	36%	24%	34%	43%	31%	25%	31%	35%	38%	37%
<b>Number of Operators</b>	59	59	59	57	42	47	48	47	41	44	44	56	56	53	63	56	68	58
<b>Wells drilled below 10K'</b>					5	7	15	12	3	8	13	4	5	19	24	20	23	21
<b>Deepest Hole K'</b>					11.3	16.4~	15.2	18.3	11.3	12.4	11.1	12.0	11.8	12.9	19.7	12.8	14.1	13.2
<b>Number of Gas Wells</b>	812	878	880	916	923	923	942	960	982	997	1029	968	807	859	803	1111	1168	1218
<b>Total Gas Produced District 6 (Million MCF)</b>	255	215	251	234	256	264	267	258	167	162	142	163	142	168	146	184	151	175
<b>Remaining Reserves District 6 (Million MCF)</b>	2793	2656	2938	2676	2498	2622	2371	2426	2358	2358	2034	1630	1467	1397	1289	1194	1140	1078
<b>Wellhead Price (PG&amp;E Ave.)</b>				\$0.30	\$0.30	\$0.33	\$0.35	\$0.39	\$0.44	\$0.60	\$0.98	\$1.20	\$1.45	\$1.74	\$2.04	\$2.60	\$3.14	\$3.43



**SUMMARY OF DRILLING ACTIVITIES IN THE SACRAMENTO VALLEY (Continued)**

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<b>Number of Holes Drilled</b>	270	241	148	174	1.59	141	156	115	95	130	80	76	92	122	118	127	124	195
<b>Number of Redrills</b>	20	21	12	16	13	10	12	7	12	19								
<b>Total Number of Holes</b>	290	262	160	190	172	151	168	122	107	149	80	76	92	122	118	127	124	195
<b>Holes Completed as Gas Wells</b>	114	124	76	67	74	59	69	48	45	57	33	35	47	72	63	74	74	130
<b>Success Percentage</b>	39%	46%	48%	35%	43%	39%	41%	39%	42%	38%	44%	46%	51%	59%	53%	58%	60%	67%
<b>Number of Operators</b>	65	72	46	56	41	51	47	38	36	36	36	27	24	30	32	29	32	31
<b>Wells drilled below 10K'</b>	15	12	8	14	11	2	3	1	4	7	1	6	10	6	7	8	20	16
<b>Deepest Hole K'</b>	11.8	12.2	16.8	12.2	10.9	10.3	11.4	10.3	12+	11+								
<b>Number of Gas Wells</b>	1261	1354	1355	1330	1298	1235	1195	1184	1146	1103	1044	969	948	957	928	951	949	1031
<b>Total Gas Produced District 6 (Million MCF)</b>	207	199	191	155	143	122	119	139	121	94	84	71	73	69	73	76	79	81
<b>Remaining Reserves District 6 (Million MCF)</b>	964	935	879	856	726	620	583	585	531		491	457	526	489	459	471	392	1040
<b>Wellhead Price (PG&amp;E Ave.)</b>	\$3.72	\$2.92	\$2.14	\$1.69	\$1.70	\$1.85	\$2.13	\$1.90	\$1.52	\$1.73	\$1.58	\$1.26	\$1.83	\$2.21	\$2.18	\$2.34	\$4.76	\$7.07



API #	Conf	Operator	Well	S/T/R	Field	Spud Date	Rrdate	ABD date	Comp Date	TD	Rig #	Dir	Class	Map
09521326		ABA Energy Corp.	"Lee Anne" 6	27/5N/2E MD	Lindsey Slough Gas	8/24/2011	9/8/2011		9/26/2011	8950	PG 6		OG	610
10320408		ABA Energy Corp.	"VBC" 3	20/23N/3W MD	Malton-Black Butte Gas	9/29/2011	10/12/2011		10/12/2011	5650	PG 2	*	OG	622
10120911	C	Bright Dot Oil and Gas, LLC	"Richter" 1-8	8/11N/3E MD	Karnak Gas	8/23/2011	9/9/2011		10/10/2011	-1	PG 5	*	OG	617
07720731		Capitol Oil Corp.	"Staten Island" 1	33/4N/4E MD	River Island Gas	7/29/2011	8/17/2011		8/29/2011	10200	PG 5		OG	610
01120917		Central Valley Gas Strg	"C.V.G.S." 1A-U	25/18N/2W MD	Princeton Gas	6/1/2011	6/12/2011		6/12/2011	2525	PG 7	*	GS	618
01120925		Central Valley Gas Strg	"C.V.G.S." 1-L	25/18N/2W MD	Princeton Gas	6/15/2011	6/29/2011		6/29/2011	3010	PG 7	*	GS	618
01120924		Central Valley Gas Strg	"C.V.G.S." 2-L	25/18N/2W MD	Princeton Gas	9/18/2011	10/2/2011		10/20/2011	2850	PG 7	*	GS	618
01120918		Central Valley Gas Strg	"C.V.G.S." 2-U	25/18N/2W MD	Princeton Gas	8/16/2011	8/26/2011		8/26/2011	2325	PG 7	*	GS	618
01120919		Central Valley Gas Strg	"C.V.G.S." 3-U	25/18N/2W MD	Princeton Gas	7/3/2011	7/13/2011		7/13/2011	2754	PG 7	*	GS	618
01120920		Central Valley Gas Strg	"C.V.G.S." 4-U	25/18N/2W MD	Princeton Gas	8/30/2011	9/14/2011		9/14/2011	2700	PG 7	*	GS	618
01120921		Central Valley Gas Strg	"C.V.G.S." 5-U	25/18N/2W MD	Princeton Gas	7/16/2011	7/27/2011		7/27/2011	2644	PG 7	*	GS	618
01120923		Central Valley Gas Strg	"C.V.G.S." 7U	25/18N/2W MD	Princeton Gas	7/27/2011	8/12/2011		8/12/2011	2869	PG 7	*	GS	618
09521327		JCG Energy Investors #1, LLC	"HNJ Farms" 24-1	24/8N/1E MD	Dixon Gas (ABD)	10/14/2011	10/30/2011	10/29/2011		7370	PG 4		OG	616
09521324		Lodi Gas Storage, LLC.	"Lambie" S-10A	25/4N/1W MD	Kirby Hill Gas	4/5/2011	4/18/2011		6/11/2011	2552	PG 7	*	GS	612
09521323		Lodi Gas Storage, LLC.	"Lambie" S-2C	25/4N/1W MD	Kirby Hill Gas	3/8/2011	3/22/2011		6/13/2011	2480	PG 7	*	GS	612
07720733		Lodi Gas Storage, LLC.	"Loma" M-4B	9/4N/7E MD	Lodi Gas	10/24/2011	11/8/2011		1/19/2012	3577	PG 7	*	GS	611
01120932	C	Royale Energy Inc.	"Bristol" 1	33/15N/2W MD		9/17/2011	9/29/2011			-1	PG 6	*	OG	618
01120911	C	Royale Energy Inc.	"Goddard" 3	7/15N/2W MD		1/7/2011	2/1/2011		2/17/2011	-1	PG 6	*	CEOP	W6-2
01120912	C	Royale Energy Inc.	"Hubbard" 1	6/15N/2W MD		2/13/2011	3/6/2011	3/6/2011		-1	PG 6	*	CEOP	W6-2
01120934	C	Royale Energy Inc.	"Jewel" 1	18/15N/2W MD		10/16/2011	11/1/2011			-1	PG 6		OG	618
01120935	C	Royale Energy Inc.	"Maximus" 1	6/15N/2W MD		11/8/2011	11/19/2011	11/19/2011		-1	PG 6		OG	618
09521325	C	Royale Energy Inc.	"Uxbridge" 1	5/4N/3E MD	Cache Slough Gas	6/12/2011	6/21/2011	6/21/2011		-1	PG 4	*	OG	610
07720732		Source Energy Corp.	"Pacific" 1-3	3/3N/4E MD	River Island Gas	8/28/2011	9/8/2011		10/10/2011	7150	PG 4		OG	610
10320407		Sullivan Drilling Inc.	"Pedro" 1	13/23N/5W MD		6/3/2011	9/4/2011	9/4/2011		1000	WW		OG	W6-2
01120910	C	Venoco Inc.	"Baber" 29-1	29/17N/3W MD		2/10/2011	3/1/2011		5/6/2011	-1	Ensign 582		CEOP	W6-2
01120909		Venoco Inc.	"Balsdon" 11-25	25/14N/1W MD	Grimes, West, Gas	1/21/2011	2/5/2011		3/29/2011	8996	Ensign 582		OG	618
01120927		Venoco Inc.	"Balsdon" 1-35	35/14N/1W MD	Grimes Gas	7/8/2011	8/4/2011	8/4/2011		9453	Ensign 582		OG	618
01120933		Venoco Inc.	"Balsdon" 1-35A	35/14N/1W MD	Grimes Gas	8/24/2011	9/13/2011		9/29/2011	9750	Ensign 582		OG	618
10120908		Venoco Inc.	"Buttes Community 1" 21-1	21/16N/1E MD	West Butte Gas	7/3/2011	7/13/2011	7/13/2011		4000	Ensign 503	*	OG	618
10120906		Venoco Inc.	"Buttes Community 1" 34-8	34/16N/1E MD	Sutter Buttes Gas	6/25/2011	7/2/2011		8/1/2011	3760	Ensign 503	*	OG	618
10120907		Venoco Inc.	"Buttes Community 1" 34-9	34/16N/1E MD	Sutter Buttes Gas	6/10/2011	6/22/2011		7/20/2011	4525	Ensign 503	*	OG	618
10120903		Venoco Inc.	"Buttes Community 1" 36-3	2/15N/1E MD	Sutter Buttes Gas	3/12/2011	3/24/2011		3/31/2011	5919	Ensign 503	*	OG	618
10120899		Venoco Inc.	"Buttes Community 1" 402	9/15N/1E MD	Sutter Buttes Gas	1/13/2011	1/25/2011		3/4/2011	6625	Ensign 503		OG	618
10120901		Venoco Inc.	"Buttes Community 1" 417	34/16N/1E MD	Sutter Buttes Gas	3/3/2011	3/11/2011		3/22/2011	5230	Ensign 503	*	OG	618
10120891		Venoco Inc.	"Buttes Community 1" 419	20/16N/1E MD	Sutter Buttes Gas	12/31/2010	1/12/2011		1/21/2011	6400	Ensign 503		OG	618
10120900		Venoco Inc.	"Buttes Community 1" 54-3	34/16N/1E MD	Sutter Buttes Gas	1/27/2011	2/5/2011		2/11/2011	5100	Ensign 503	*	OG	618
02121035		Venoco Inc.	"Carriere" 18-4	18/19N/1W MD	Willows-Beehive Bend Gas	12/8/2011	12/23/2011			7589	Ensign 582	*	OG	620

API #	Conf	Operator	Well	S/T/R	Field	Spud Date	Rrdate	ABD date	Comp Date	TD	Rig #	Dir	Class	Map
02121036		Venoco Inc.	"Carriere" 18-5	18/19N/1W MD	Willows-Beehive Bend Gas	4/10/2011	4/23/2011		5/10/2011	7593	Ensign 582	*	OG	620
10120898		Venoco Inc.	"Grimes Operating Unit 32" 14	32/15N/1E MD	Grimes Gas	11/6/2011	11/19/2011		12/8/2011	8190	Ensign 582	*	OG	618
01120904		Venoco Inc.	"Grimes Operating Unit 7" 23	7/14N/1E MD	Grimes Gas	11/22/2011	12/4/2011		12/25/2011	8371	Ensign 582	*	OG	618
01120905		Venoco Inc.	"Grimes Operating Unit 7" 24	7/14N/1E MD	Grimes Gas	12/20/2010	1/3/2011			8015	Ensign 582	*	OG	618
02121023		Venoco Inc.	"Holzapfel" 12-1	12/22N/4W MD	Malton-Black Butte Gas	1/26/2011	2/5/2011		3/9/2011	5060	PG 7	*	OG	622
02121034		Venoco Inc.	"Hunt Unit" 13-1	13/22N/4W MD	Malton-Black Butte Gas	2/8/2011	2/14/2011	3/9/2011	3/8/2011	4589	Ensign 503	*	OG	620
01120914		Venoco Inc.	"O. P. Davis" B-47	25/15N/1W MD	Sycamore Gas	5/25/2011	6/6/2011		7/5/2011	7895	Ensign 582	*	OG	618
01120915		Venoco Inc.	"O. P. Davis" B-48	25/15N/1W MD	Sycamore Gas	6/6/2011	6/21/2011		7/7/2011	7935	Ensign 582	*	OG	618
01120916		Venoco Inc.	"O. P. Davis" B-49	26/15N/1W MD	Sycamore Gas	5/9/2011	5/22/2011	5/22/2011		7980	Ensign 582	*	OG	618
10120882		Venoco Inc.	"Sanborn" 30-20	30/15N/1E MD	Grimes Gas	1/5/2011	1/17/2011	1/17/2011		8039	Ensign 582	*	OG	618
02121046		Venoco Inc.	"Sec 49/Sprague Lewis/Doheny LW" 33/20N/2W MD	33/20N/2W MD	Willows-Beehive Bend Gas	7/15/2011	7/26/2011	7/26/2011		6498	Ensign 503	*	OG	620
02121044		Venoco Inc.	"Section 20 Unit" 22	20/20N/2W MD	Willows-Beehive Bend Gas	5/29/2011	6/9/2011	6/8/2011		6180	Ensign 503	*	OG	620
02121043		Venoco Inc.	"Section 20 Unit" 23	20/20N/2W MD	Willows-Beehive Bend Gas	5/18/2011	5/29/2011		6/23/2011	6333	Ensign 503	*	OG	620
02121045		Venoco Inc.	"Section 37" 9	21/20N/2W MD	Willows-Beehive Bend Gas	5/5/2011	5/16/2011		5/25/2011	6300	Ensign 503		OG	620
02121039		Venoco Inc.	"Section 58 Unit" 24	2/19N/2W MD	Willows-Beehive Bend Gas	4/26/2011	5/7/2011	5/7/2011		7404	Ensign 582	*	OG	620
02121047		Venoco Inc.	"Section 58" 23	3/19N/2W MD	Willows-Beehive Bend Gas	10/2/2011	10/15/2011		11/1/2011	7855	Ensign 582		OG	620
02121026		Venoco Inc.	"Section 60" 26	33/20N/2W MD	Willows-Beehive Bend Gas	12/23/2010	1/2/2011		2/4/2011	6553	Ensign 514	*	OG	620
02121030		Venoco Inc.	"Section 70 Unit" 19	11/19N/2W MD	Willows-Beehive Bend Gas	2/16/2011	3/1/2011		3/23/2011	7200	Ensign 503	*	OG	620
02121040		Venoco Inc.	"Section 70 Unit" 20	11/19N/2W MD	Willows-Beehive Bend Gas	4/21/2011	5/3/2011		5/13/2011	6913	Ensign 503	*	OG	620
02121048		Venoco Inc.	"Section 70" 21	11/19N/2W MD	Willows-Beehive Bend Gas	7/28/2011	8/10/2011		8/18/2011	7235	Ensign 503		OG	620
02121031		Venoco Inc.	"Sprague Lewis" 13	34/20N/2W MD	Willows-Beehive Bend Gas	1/11/2011	1/22/2011		2/4/2011	6784	PG 7	*	OG	620
02121037		Venoco Inc.	"Sprague Lewis" 14	34/20N/2W MD	Willows-Beehive Bend Gas	3/27/2011	4/8/2011		4/20/2011	7150	Ensign 503		OG	620
02121038		Venoco Inc.	"Sprague Lewis" 16	33/20N/2W MD	Willows-Beehive Bend Gas	4/10/2011	4/20/2011		5/3/2011	7100	Ensign 503		OG	620
01120928		Venoco Inc.	"Strain" 2-1	35/14N/1W MD	Grimes, West, Gas	9/16/2011	9/29/2011		11/30/2011	8866	Ensign 582		OG	618
01120913		Venoco Inc.	"Strain" 3-1	3/13N/1W MD		3/4/2011	3/16/2011	3/16/2011		5039	Ensign 582	*	CEOP	618
01120926		Venoco Inc.	"Strain" 3-1A	3/13N/1W MD		3/21/2011	4/6/2011	4/6/2011		9017	Ensign 582	*	CEOP	618
01120930		Venoco Inc.	"Strain" 35-2	35/14N/1W MD	Grimes, West, Gas	8/7/2011	8/21/2011		11/15/2011	9000	Ensign 582		OG	618
02121050	C	Venoco Inc.	"Transamerica" 6-1	6/18N/2W MD		8/11/2011	8/19/2011	9/7/2011		-1	Ensign 503		CEOP	620
10120905		Venoco Inc.	"Unit 31" 8	31/15N/1E MD	Grimes Gas	6/24/2011	7/6/2011		9/22/2011	8172	Ensign 582	*	OG	618
02121053		Venoco Inc.	"Whyler Trust" 69-1	13/19N/2W MD	Willows-Beehive Bend Gas	10/18/2011	11/3/2011		11/30/2011	8000	Ensign 582		OG	620
06720515		Vintage Prod California LLC	"RVGU" 304H	29/4N/3E MD	Rio Vista Gas	10/17/2011	11/14/2011		12/4/2011	7114	Ensign 561	*	OG	610
06720513		Vintage Prod California LLC	"Wilcox" 18	32/4N/3E MD	Rio Vista Gas	9/1/2011	9/20/2011		10/1/2011	10024	Ensign 561		OG	610
06720514		Vintage Prod California LLC	"Wilcox" 20	32/4N/3E MD	Rio Vista Gas	9/25/2011	10/12/2011		10/20/2011	10104	Ensign 561		OG	610
06720517		Vintage Prod California LLC	"wilcox" 22	32/4N/3E MD	Rio Vista Gas	11/19/2011	12/2/2011		12/22/2011	6870	H&P 442		OG	610
00720111		Wild Goose Storage LLC	"Wild Goose Gas Unit 2" WG33HZ	17/17N/1E MD	Wild Goose Gas	4/28/2011	5/13/2011		5/13/2011	3600	PG 7		GS	620
00720112		Wild Goose Storage LLC	"Wild Goose Gas Unit 2" WG34HZ	17/17N/1E MD	Wild Goose Gas	5/15/2011	5/28/2011		5/28/2011	3542	PG 7	*	GS	620

# 2011 Drilling Activity By Township & Range

No. of Holes Drilled

6 / 4

No. of Completions

R. J. Bain & M. F. Cummings 2/2012

