

Dr. Bob Harrington  
Inyo County Water Department  
135 South Jackson Street  
Independence, CA 93526

December 3, 2015

**RE: Summary of Hydrologic Monitoring Activities, November 2015**  
Rose Valley, Inyo County, California  
Hay Ranch Project Conditional Use Permit #2007-03

Dear Dr. Harrington:

This letter summarizes hydrologic monitoring activities conducted in November 2015 by TEAM Engineering & Management, Inc. (TEAM), related to the Hay Ranch Water Extraction Project and CUP #2007-03.

### **Background**

As outlined in the Hay Ranch Water Extraction Final EIR's Hydrologic Monitoring and Mitigation Plan (HMMP), *Phase 1: Monitoring System Setup and Supplemental Data Collection* occurred prior to December 25, 2009 at monitoring points throughout Rose Valley. With the initiation of pumping by Coso Operating Company, LLC (COC) on December 25, 2009, the Hay Ranch Water Extraction Project entered into the *Phase 2: Startup Monitoring and Reporting* period. *Phase 3: Model Recalibration and Redefinition of Pumping Rates and Durations* occurred from September 2010 to April 2011, with recalibration of the groundwater model by Daniel B. Stephens & Associates (DBS&A) and with redefinition of pumping rates and durations by Inyo County Water Department (ICWD). With the April 1, 2011 issuance of the ICWD's "Addendum to the HMMP for CUP#2007-003/Coso Operating Company, LLC" (2011 ICWD Addendum) the project entered *Phase 4: Ongoing Monitoring, Mitigation and Reporting*. In August 2013 further model revision occurred with results and new trigger levels detailed in ICWD's August 30, 2013 letter to COC regarding Conditional Use Permit #2007-003/Coso. In June 2014 further model revision was conducted by DBS&A with results and new trigger levels detailed in ICWD's June 27, 2014 letter to COC regarding Conditional Use Permit #2007-003/Coso.

### **Monitoring and Reporting**

During the November 2015 monthly hydrologic data collection event at the monitoring locations in the Rose Valley area, static depth-to-water (DTW) measurements, one visual observation of the Little Lake Ranch (LLR) Siphon Well Outflow and three sets of flow rates were collected by TEAM, as summarized in the attached table (Table 1). Data for this monthly field event was collected on November 18-19, 2015. Pressure transducer data was downloaded from monitoring units, including one "BaroTroll" measuring barometric pressure. Also in November, a DTW measurement at LADWP 816 Well was requested from LADWP personnel.

At the Hay Ranch Property, COC has pumped groundwater from two production wells: Hay Ranch North and Hay Ranch South. For the current calendar year of project pumping (January 2, 2015 to November 18, 2015) a total of approximately 1,416 acre feet (AF) of groundwater have been extracted from the Hay Ranch property (1,411 AF from the Hay Ranch North Well, and 5 AF from the Hay Ranch South Well).

Figure 1 presents the combined amount of groundwater pumped from the Hay Ranch North and South wells, in acre feet, from December 25, 2009 through November 18, 2015 compared to the maximum allowable pumping amounts. The total amount of groundwater extracted from the Hay Ranch property

from December 25, 2009 to November 18, 2015 (Hay Ranch CUP project total) is approximately 15,695 AF. The maximum allowable pumping rate was 3,000 acre-feet per year (AFY) for December 25, 2009 through December 31, 2010; was 4,839 AFY from January 1, 2011 through August 30, 2013; was 3,040 AFY from September 2013 through June 2014; and is 1,614 AFY from July 1, 2014 to June 30, 2016. As indicated on Figure 1, Coso Operating Company has pumped less than the maximum allowable amount of groundwater from the Hay Ranch Wells, for each respective period.

**Trigger Levels and Maximum Acceptable Drawdowns**

In Table 1 of the June 27, 2014 ICWD Letter to Coso Operating Company, Drawdown at Cessation of Pumping Trigger Levels (Trigger Levels) and Maximum Acceptable Drawdowns have been set for specific monitoring wells based on a pumping rate of 1,614 AFY starting on July 1, 2014.

Based on the manual depth to water (DTW) data collected by TEAM on November 19, 2015, the Water Level at Little Lake Ranch (LLR) North was measured below its Trigger Level by 0.02 feet.

The baseline groundwater elevation (GWE) for LLR North, set by Inyo County Water Department in January 2010, is 3158.88 feet. The GWE at LLR North, as measured at 10:20 on November 19, 2015, was 3158.46 feet. The Trigger Level for LLR North was 0.42 feet below its baseline value. The LLR North GWE has decreased by 0.42 feet, exceeding its Trigger Level by 0.02 feet as of November 19. The LLR North GWE was 0.88 feet above its Maximum Acceptable Drawdown level as of November 19.

Based on data collected by TEAM during the October to November 2015 monitoring period, no other Trigger Levels were equaled or exceeded at Hay Ranch Project monitoring wells which have baselines and trigger levels established (Table 2). No Maximum Acceptable Drawdown levels have been reached during COC pumping.

**Operational Notes**

During the October to November 2015 monitoring period, the pressure transducer in HR 1B (RV-61) appears to have experienced power failure and data was unable to be downloaded from this unit. A battery backup was installed and the transducer was operational upon leaving site. The pressure transducer at Coso Junction Store #1 (RV-100) is inoperative and its monthly data was unable to be retrieved. We plan to replace this transducer during the December 2015 field event.

**Data Transmittal**

TEAM posted updates to the “Coso” database on the ICWD web server. Current Hay Ranch Project hydrographs in PDF form were uploaded to the ICWD website ([www.inyowater.org](http://www.inyowater.org)).

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If you have any questions or require additional information, please contact TEAM at your convenience.

Sincerely,

TEAM Engineering & Management, Inc.

Greg M. Foote  
Project Scientist

**TABLE 1**  
**Field Observations of Rose Valley Hydrologic Monitoring Points**  
**November 18-19, 2015**

Project Name:	Hay Ranch Project HMMP	Date: November 18-19, 2015
Location:	Rose Valley, Inyo County	
Observer(s):	G. Foote	Page: 1 of 1

Well ID	Monitoring Point	Date	Time	DTW (ft)	Flow (cfs)	GWE (ft amsl)	Method	Transducer Log Interval	Notes
RV-10	Dews	11/18/15	16:50	232.11	NA	3754.81	TEAM manual read	NA	
RV-20	LADWP 816	UA	UA	UA	NA	UA	LADWP manual read	NA	Data provided by LADWP
RV-30	Cal Pumice	11/18/15	10:21	258.26	NA	3247.63	TEAM manual read	Hourly	
RV-40	Dunmovin	NM	NM	NM	NA	NM	TEAM manual read	NA	Discontinued due to new in-well infrastructure
RV-50	Hay Ranch North	11/18/15	14:49	NM	Yes	NM	TEAM manual read	NA	3,174,718,841 gallons (9743 AF) pumped since 12/25/09
RV-60	Hay Ranch 1A	11/18/15	14:35	201.20	NA	3230.97	TEAM manual read	Hourly	
RV-61	Hay Ranch 1B	11/18/15	15:05	223.60	NA	3208.25	TEAM manual read	Hourly	
RV-62	Hay Ranch 1C	11/18/15	15:02	218.82	NA	3212.68	TEAM manual read	NA	
RV-70	Hay Ranch South	11/18/15	14:48	NM	Yes	NM	TEAM manual read	NA	1,939,376,791 gallons (5952 AF) pumped since 12/25/09
RV-80	Hay Ranch 2A	11/18/15	16:02	202.10	NA	3230.90	TEAM manual read	Hourly	
RV-81	Hay Ranch 2B	11/18/15	15:52	221.24	NA	3211.39	TEAM manual read	Hourly	
RV-82	Hay Ranch 2C	11/18/15	14:50	212.59	NA	3219.51	TEAM manual read	NA	
RV-90	Coso Jct Ranch	11/18/15	10:45	175.18	NA	3227.95	TEAM manual read	NA	
RV-100	Coso Jct Store #1	11/18/15	10:57	147.72	NA	3224.40	TEAM manual read	Hourly	
RV-110	Davis Ranch North Well	11/18/15	14:05	6.56	NA	3886.50	TEAM manual read	Hourly	
RV-111	Davis Ranch South Well	11/18/15	14:20	12.71	NA	3885.35	TEAM manual read	Hourly	Pump installed in DR South well
RV-112	Davis Ranch South Flow	NM	NM	NM	NM	NM	NM	NA	Discontinued: Flow actively managed
RV-120	Red Hill Well (BLM)	11/18/15	11:48	140.68	NA	3200.15	TEAM manual read	Hourly	
RV-130	G-36	11/18/15	13:31	182.21	NA	3197.81	TEAM manual read	NA	
RV-140	Lego	11/18/15	13:17	224.06	NA	3198.79	TEAM manual read	Hourly	
RV-150	Cinder Road	11/18/15	12:20	191.75	NA	3186.21	TEAM manual read	Hourly	
RV-160	18-28 GTH	11/18/15	13:00	174.57	NA	3188.01	TEAM manual read	NA	
RV-170	Fossil Falls Campground	11/18/15	12:38	141.70	NA	3175.07	TEAM manual read	NA	
RV-180	LLR North Well	11/19/15	10:20	40.64	NA	3158.46	TEAM manual read	Hourly	
RV-210	LLR Dock Well	11/19/15	10:36	6.45	NA	3147.69	TEAM manual read	NA	
RV-220	LLR Stilling Well (lake surface)	11/19/15	10:43	3.94	NA	3147.10	TEAM manual read	Hourly	
RV-230	LLR Little Lake Outflow	11/19/15	12:08	NA	1.0	NA	TEAM manual read	Hourly	
RV-240	LLR Coso Springs Flow	11/19/15	11:31	NA	0.36	NA	TEAM manual read	Hourly	
RV-245	LLR North Culvert Flow	11/19/15	12:41	NA	1.2	NA	TEAM manual read	Hourly	
RV-250	LLR Siphon Discharge	11/19/15	12:20	NA	Yes	NA	TEAM visual read	NA	Siphon Well flowing into Pond 2
RV-260	LLR Hotel Well	11/19/15	9:57	0.27	NA	3138.51	TEAM manual read	NA	

NM - not measured; NA - not applicable; IO - Inoperative; UA - Data currently unavailable

DTW - Depth to water in feet (ft) below top of casing or other reference point; a negative DTW indicates that the groundwater elevation is above the surveyed reference point

Flow - In cubic feet per second (cfs)

GWE- Groundwater elevation in feet above mean sea level (ft amsl)

## Hay Ranch Project Groundwater Pumping To Date November 2015

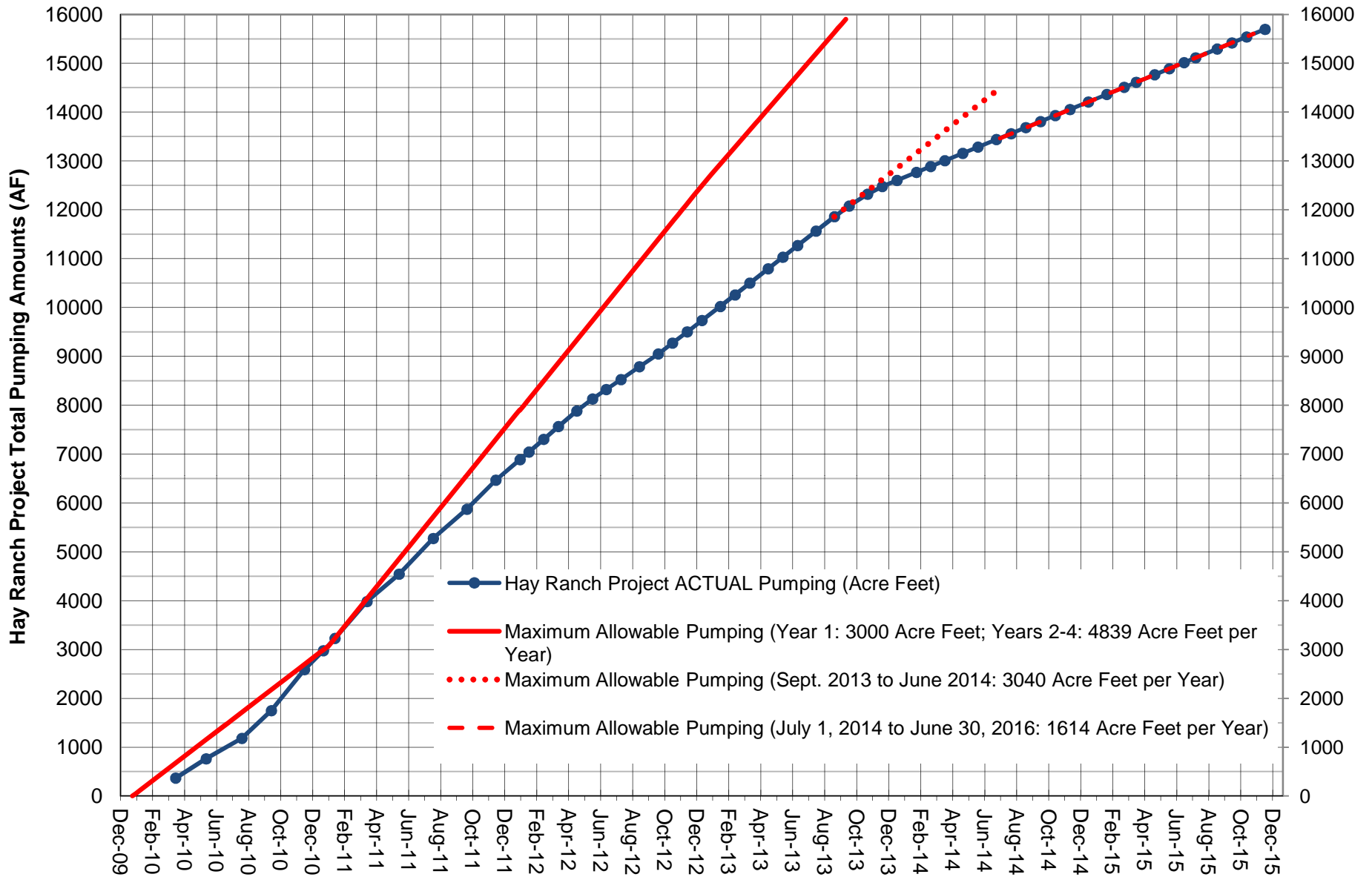
Hay Ranch North and South Well Groundwater Extraction Amounts			
Time period	Groundwater Production Well	Groundwater Extracted (Gallons) (Acre Feet)	
Date: 12/25/09 to 11/18/15	Hay Ranch South Well Project Totals:	1,939,376,791	5952
Date: 10/14/15 to 11/18/15	Hay Ranch South Well Recent Period:	31,764	0
Date: 12/25/09 to 11/18/15	Hay Ranch North Well Project Totals:	3,174,718,841	9743
Date: 10/14/15 to 11/18/15	Hay Ranch North Well Recent Period:	50,513,316	155

Total Groundwater Extraction Amounts at Hay Ranch Property (Combined Totals of Hay Ranch North and South Wells)									
Date Numeric	Date Short	Total Days Elapsed	Total Gallons Pumped Since 12/25/2009	Total Acre Feet Pumped Since 12/25/2009	Days in Period	Total Gallons Pumped for period	Acre Feet Pumped for period	Average Daily Acre Feet Pumped for period	
40172	12/25/09	0	-	0	0	0	0	0	0
40196	01/18/10	24.5	24,009,000	73.7	24	5,908,000	18.1		2.6
40254	03/17/10	82.5	120,024,000	368.3	58	5,786,000	17.8		8.9
40312	05/14/10	140.5	248,524,000	762.7	58	57,698,000	177.1		5.7
40380	07/21/10	208.5	384,977,000	1181.5	68	59,458,000	182.5		5.5
40436	09/15/10	264.5	569,767,000	1748.6	56	108,283,000	332.3		11.9
40499	11/17/10	327.5	843,610,000	2588.9	63	123,692,000	379.6		13.6
40535	12/23/10	363.5	969,708,000	2975.9	36	27,212,000	83.5		10.4
40557	1/14/11	385.5	1,051,742,000	3227.7	22.0	82,034,000	251.8		11.4
40618	3/16/11	446.0	1,297,555,396	3982.1	61.0	245,813,396	754.4		12.4
40679	5/16/11	507.0	1,480,298,532	4542.9	61.0	182,743,136	560.8		9.2
40744	7/20/11	572.0	1,718,358,135	5273.4	65.0	238,059,603	730.6		11.2
40808	9/22/11	636.0	1,913,288,042	5871.7	74.0	194,929,907	598.2		8.1
40863	11/16/11	691.0	2,107,009,325	6466.2	55.0	193,721,283	594.5		10.8
40909	1/1/12	737.0	2,244,015,454	6886.6	46.0	137,006,129	420.5		9.1
40926	1/18/12	754.0	2,294,961,279	7043.0	17.0	50,945,825	156.3		9.2
40954	2/15/12	782.0	2,379,615,567	7302.8	28.0	84,654,288	259.8		9.3
40982	3/14/12	810.0	2,464,852,032	7564.4	28.0	85,236,465	261.6		9.3
41017	4/18/12	845.0	2,568,756,136	7883.2	35.0	103,904,104	318.9		9.1
41047	5/18/12	875.0	2,648,936,175	8129.3	30.0	80,180,039	246.1		8.2
41073	6/13/12	901.0	2,711,863,226	8322.4	26.0	62,927,051	193.1		7.4
41101	7/11/12	929.0	2,777,902,728	8525.1	28.0	66,039,502	202.7		7.2
41136	8/15/12	964.0	2,863,864,296	8788.9	35.0	85,961,568	263.8		7.5
41172	9/20/12	1000.0	2,949,088,794	9050.4	36.0	85,224,498	261.5		7.3
41199	10/17/12	1027.0	3,021,454,950	9272.5	27.0	72,366,156	222.1		8.2
41227	11/14/12	1055.0	3,096,463,909	9502.7	28.0	75,008,959	230.2		8.2
41255	12/12/12	1083.0	3,172,187,028	9735.1	28.0	75,723,119	232.4		8.3
41290	1/16/13	1118.0	3,265,225,259	10020.6	35.0	93,038,231	285.5		8.2
41318	2/13/13	1146.0	3,342,527,748	10257.8	28.0	77,302,489	237.2		8.5
41346	3/13/13	1174.0	3,421,705,247	10500.8	28.0	79,177,499	243.0		8.7
41381	4/17/13	1209.0	3,517,213,337	10793.9	35.0	95,508,090	293.1		8.4
41409	5/15/13	1237.0	3,594,345,906	11030.6	28.0	77,132,569	236.7		8.5
41437	6/12/13	1265.0	3,672,013,949	11269.0	28.0	77,668,043	238.4		8.5
41472	7/17/13	1300.0	3,768,453,448	11565.0	35.0	96,439,499	296.0		8.5
41507	8/21/13	1335.0	3,864,718,242	11860.4	35.0	96,264,794	295.4		8.4
41535	9/18/13	1363.0	3,935,703,228	12078.2	28.0	70,984,986	217.8		7.8
41570	10/23/13	1398.0	4,014,592,733	12320.3	35.0	78,889,505	242.1		6.9
41598	11/20/13	1426.0	4,066,039,225	12478.2	28.0	51,446,492	157.9		5.6
41626	12/18/13	1454.0	4,106,672,296	12602.9	28.0	40,633,071	124.7		4.5
41663	1/24/14	1491.0	4,160,236,831	12767.3	37.0	53,564,535	164.4		4.4
41690	2/20/14	1518.0	4,199,109,084	12886.6	27.0	38,872,253	119.3		4.4
41717	3/19/14	1545.0	4,238,188,704	13006.5	27.0	39,079,620	119.9		4.4
41751	4/22/14	1579.0	4,287,133,798	13156.7	34.0	48,945,094	150.2		4.4
41780	5/21/14	1608.0	4,328,804,442	13284.6	29.0	41,670,644	127.9		4.4
41815	6/25/14	1643.0	4,379,288,623	13439.5	35.0	50,484,181	154.9		4.4
41843	7/23/14	1671.0	4,417,985,081	13558.3	28.0	38,696,458	118.8		4.2
41871	8/20/14	1699.0	4,458,949,864	13684.0	28.0	40,964,783	125.7		4.5
41899	9/17/14	1727.0	4,498,802,460	13806.3	28.0	39,852,596	122.3		4.4
41927	10/15/14	1755.0	4,539,112,035	13930.0	28.0	40,309,575	123.7		4.4
41955	11/12/14	1783.0	4,579,290,075	14053.3	28.0	40,178,040	123.3		4.4
41990	12/17/14	1818.0	4,629,762,924	14208.2	35.0	50,472,849	154.9		4.4
42025	1/21/15	1853.0	4,680,088,713	14362.7	35.0	50,325,789	154.4		4.4
42058	2/23/15	1886.0	4,727,695,937	14508.8	33.0	47,607,224	146.1		4.4
42081	3/18/15	1909.0	4,760,930,221	14610.8	23.0	33,234,284	102.0		4.4
42116	4/22/15	1944.0	4,811,310,841	14765.4	35.0	50,380,620	154.6		4.4
42144	5/20/15	1972.0	4,851,693,297	14889.3	28.0	40,382,456	123.9		4.4
42172	6/17/15	2000.0	4,892,229,845	15013.7	28.0	40,536,548	124.4		4.4
42194	7/9/15	2022.0	4,924,156,920	15111.7	22.0	31,927,075	98.0		4.5
42235	8/19/15	2063.0	4,983,281,487	15293.1	41.0	59,124,567	181.4		4.4
42263	9/16/15	2091.0	5,023,729,536	15417.3	28.0	40,448,049	124.1		4.4
42291	10/14/15	2119.0	5,063,572,723	15539.5	28.0	39,843,187	122.3		4.4
42326	11/18/15	2154.0	5,114,095,632	15694.6	35.0	50,522,909	155.0		4.4

**Notes:**

Data based on manual reads by TEAM of the Hay Ranch North and South Well Totalizers and digital reads from Coso Operating Company.  
Hay Ranch Project groundwater pumping was initiated on 12/25/09.

**FIGURE 1**  
ACTUAL AND MAXIMUM ALLOWABLE PUMPING AMOUNTS (TOTALS) FOR HAY RANCH PROJECT



Note: The "maximum allowable pumping" is based on a pumping rate of 3000 AF/yr for 12/09 to 12/10, 4839 AF/yr for 1/11 to 8/13, 3040 AF/yr from 9/13 to 6/14, and 1,614 AF/yr from 7/14 to 6/16.