

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

July 5, 2016

**RE: Summary of Hydrologic Monitoring Activities, June 2016**  
Rose Valley, Inyo County, California  
Hay Ranch Project Conditional Use Permit #2007-03

Dear Dr. Harrington:

This letter summarizes hydrologic monitoring activities conducted in June 2016 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 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. On June 20, 2016 the ICWD extended the June 30, 2016 cessation of pumping date to September 30, 2016 which allows COC to pump the remaining volume from the 1,614 AF allowed for the previous year, as long as all other conditions of the CUP #2007-03 are adhered to.

## **Monitoring and Reporting**

During the June 2016 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 June 15, 16 and 23, 2016. Pressure transducer data was downloaded from

monitoring units, including one “BaroTroll” measuring barometric pressure. Also in June, a DTW measurement from LADWP 816 Well was requested by LADWP personnel.

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 June 15, 2016 compared to the maximum allowable pumping amounts. The total amount of groundwater extracted from the Hay Ranch property from December 25, 2009 to June 15, 2016 (Hay Ranch CUP project total) is approximately 16,463 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; is 1,614 AFY from July 1, 2014 to June 30, 2016; extended by ICWD to September 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.

For the current pumping rate period (July 1, 2015 to June 30, 2016) an estimated 1,387 AF of groundwater, of the 1,614 AF allowable, have been extracted from the Hay Ranch Property as of June 15, 2016. Based on the June 20 ICWD letter, the remaining amount for the pumping year (approximately 224 AF) can be pumped through September 30, 2016.

### **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 June 16 and 23, 2016, the Water Levels at the Lego Well and Little Lake Ranch North Well (LLR North) were measured in exceedance of their Trigger Levels by 0.04 feet and 0.14 feet, respectively.

The GWE at Lego was measured at 09:21 on June 23, 2016 was 3198.47 feet. The Trigger Level for Lego well is 0.70 feet. The Lego GWE has decreased by 0.74 feet compared to its 2010 baseline (3199.21), exceeding its Trigger Level. On June 23, 2016, Lego GWE was 1.66 feet above its Maximum Acceptable Drawdown level.

The GWE at LLR North as measured at 10:16 on June 16, 2016, was 3158.34 feet. The Trigger Level for LLR North is 0.40 feet. The LLR North GWE has decreased by 0.54 feet compared to its 2010 baseline (3158.88), exceeding its Trigger Level. On June 16, 2016, the LLR North GWE was 0.76 feet above its Maximum Acceptable Drawdown level.

Based on data collected by TEAM during the May to June 2016 monitoring period, none of the other Trigger Levels were 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 under CUP #2007-03.

## Operational Notes

As observed during the June 2016 monitoring event, the lock on the Cinder Road Well (RV-150) was drilled out and the box protecting the well was breached. There did not appear to be any damage to the well or transducer.

## 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**  
**June 2016**

Project Name:	Hay Ranch Project HMMP	Date: June 15,16 & 23, 2016
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	NM	NM	NM	NA	NM	TEAM manual read	NA	
RV-20	LADWP 816	NM	NM	NM	NA	NM	LADWP manual read	NA	Data provided by LADWP
RV-30	Cal Pumice	06/15/16	9:37	255.51	NA	3250.38	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	06/15/16	13:01	NM	Yes	NM	TEAM manual read	NA	3,329,039,635 gallons (10,216 AF) pumped since 12/25/09
RV-60	Hay Ranch 1A	06/15/16	13:25	201.22	NA	3230.95	TEAM manual read	Hourly	
RV-61	Hay Ranch 1B	06/15/16	13:17	212.89	NA	3218.96	TEAM manual read	Hourly	
RV-62	Hay Ranch 1C	06/15/16	13:13	210.32	NA	3221.18	TEAM manual read	NA	
RV-70	Hay Ranch South	06/15/16	13:02	NM	Yes	NM	TEAM manual read	NA	2,035,470,607 gallons (6,247 AF) pumped since 12/25/09
RV-80	Hay Ranch 2A	06/15/16	13:46	202.38	NA	3230.62	TEAM manual read	Hourly	
RV-81	Hay Ranch 2B	06/15/16	13:41	216.69	NA	3215.94	TEAM manual read	Hourly	
RV-82	Hay Ranch 2C	06/15/16	13:37	208.50	NA	3223.60	TEAM manual read	NA	
RV-90	Coso Jct Ranch	06/15/16	10:30	175.28	NA	3227.85	TEAM manual read	NA	
RV-100	Coso Jct Store #1	06/15/16	9:52	147.65	NA	3224.47	TEAM manual read	Hourly	
RV-110	Davis Ranch North Well	06/15/16	10:47	6.57	NA	3886.49	TEAM manual read	Hourly	
RV-111	Davis Ranch South Well	06/15/16	11:08	13.47	NA	3884.59	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)	06/15/16	10:08	140.73	NA	3200.10	TEAM manual read	Hourly	
RV-130	G-36	06/15/16	12:45	182.42	NA	3197.60	TEAM manual read	NA	
RV-140	Lego	06/23/16	9:21	224.38	NA	3198.47	TEAM manual read	Hourly	
RV-150	Cinder Road	06/15/16	12:10	191.84	NA	3186.12	TEAM manual read	Hourly	
RV-160	18-28 GTH	06/23/16	9:09	174.76	NA	3187.82	TEAM manual read	NA	
RV-170	Fossil Falls Campground	06/15/16	12:22	141.79	NA	3174.98	TEAM manual read	NA	
RV-180	LLR North Well	06/16/16	10:16	40.76	NA	3158.34	TEAM manual read	Hourly	
RV-210	LLR Dock Well	06/16/16	11:06	6.72	NA	3147.42	TEAM manual read	NA	
RV-220	LLR Stilling Well (lake surface)	06/16/16	11:12	4.21	NA	3146.82	TEAM manual read	Hourly	
RV-230	LLR Little Lake Outflow	06/16/16	11:34	NA	0.00	NA	TEAM manual read	Hourly	
RV-240	LLR Coso Springs Flow	06/16/16	11:45	NA	0.36	NA	TEAM manual read	Hourly	
RV-245	LLR North Culvert Flow	06/16/16	12:12	NA	0.00	NA	TEAM manual read	Hourly	
RV-250	LLR Siphon Discharge	06/16/16	12:04	NA	Yes	NA	TEAM visual read	NA	Siphon Well flowing into Pond 2
RV-260	LLR Hotel Well	06/16/16	9:53	0.56	NA	3138.22	TEAM manual read	NA	Water level above measuring point

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)

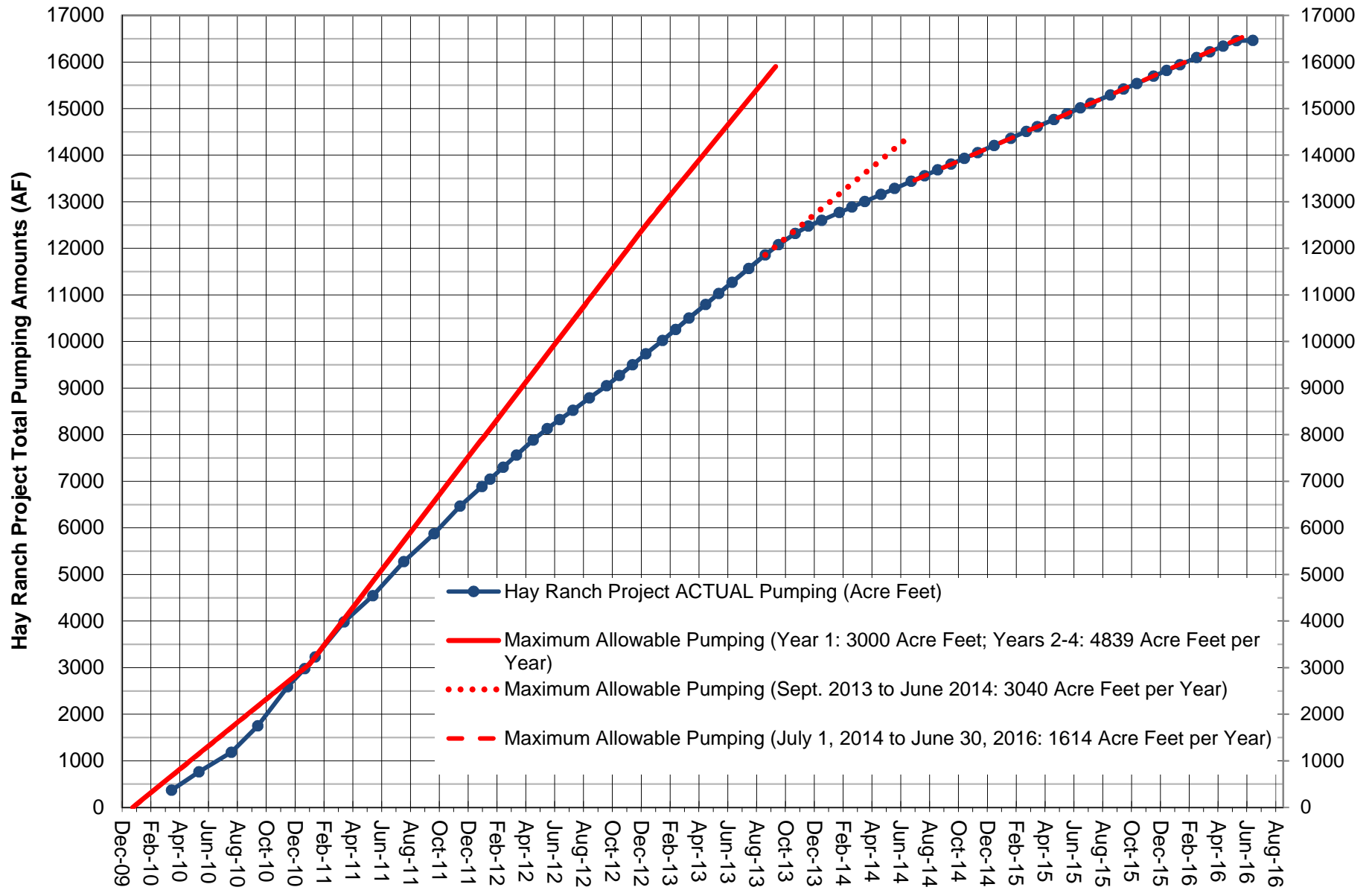
GWE- Groundwater elevation in feet above mean sea level (ft amsl)

**TABLE 2**  
**Hay Ranch Project Groundwater Baselines and Trigger Levels**  
**May 2016**

Well ID	Monitoring Point	Baseline GWE <sup>1</sup> (feet amsl)	Recent Date of Measurement	Recent GWE (feet amsl)	Recent GWE Compared to Baseline (feet)	Drawdown Trigger Level <sup>3</sup> (feet)	Recent GWE Compared to Trigger Level (feet)	Recent GWE Above Max DD <sup>2</sup> (feet)
RV-80	HR 2A	3240.92	06/15/16	3230.62	-10.30	15.3	5.00	6.20
RV-90	Coso Jct Ranch	3230.65	06/15/16	3227.71	-2.94	9.30	6.36	6.36
RV-100	Coso Jct Store #1	3227.59	06/15/16	3224.27	-3.32	8.30	4.98	5.08
RV-120	Red Hill Well	3200.66	06/15/16	3200.10	-0.56	3.00	2.44	3.24
RV-130	G-36	3198.35	06/15/16	3197.60	-0.75	2.20	1.45	2.55
RV-140	Lego	3199.21	06/23/16	3198.47	-0.74	0.70	-0.04	1.66
RV-150	Cinder Road	3186.92	06/15/16	3186.12	-0.80	1.00	0.20	1.50
RV-160	18-28 GTH	3187.67	06/23/16	3187.82	0.15	0.70	0.85	2.25
RV-180	LLR North Well	3158.88	06/16/16	3158.34	-0.54	0.40	-0.14	0.76

- 1) GWE: Groundwater elevation measured in feet above mean sea level. Baseline GWEs set January 2010 and March 2011 and approved by Inyo County Water Department (ICWD)
- 2) Max DD: Maximum Acceptable Drawdown from Table 1 of ICWD's "June 27, 2014 Conditional Use Permit#2007-003/Coso "
- 3) "Trigger Level at Cessation of Pumping" from Table 1 of ICWD's "June 27, 2014 Conditional Use Permit#2007-003/Coso ". No action is required until groundwater decline is observed to exceed trigger levels by more than 0.25 feet.

**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.