

**HAY RANCH PROJECT CONDITIONAL USE PERMIT
HYDROLOGIC MONITORING AND REPORTING
FIRST QUARTER 2010
INYO COUNTY, CALIFORNIA**



PREPARED FOR



PREPARED BY

TEAM

ENGINEERING & MANAGEMENT, INC.
Bishop and Mammoth Lakes, California

APRIL 29, 2010

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

April 29, 2010

**RE: Hay Ranch Project Conditional Use Permit
Hydrologic Monitoring and Reporting
First Quarter Report 2010
Inyo County, California**

Dear Dr. Harrington:

TEAM Engineering & Management, Inc. (TEAM), is pleased to present the results of hydrologic monitoring activities conducted in Rose Valley relating to the Hay Ranch Project Conditional Use Permit (#2007-003) conducted from January through March 2010.

This Hay Ranch Project Conditional Use Permit, Hydrologic Monitoring and Reporting First Quarter Report 2010, Inyo County, California was produced with guidance from Inyo County Water Department and the Coso Operating Company Hay Ranch Water Extraction and Delivery System Final Environmental Impact Report's Hydrologic Monitoring and Mitigation Plan.

Information provided in this report includes a summary of Rose Valley monitoring activities conducted during Phase 1 of the Hay Ranch Project in 2009. Information provided in this report also includes hydrologic monitoring data collected in the first quarter 2010 during Phase 2 of the Hay Ranch Project. This report also presents groundwater elevation, surface flow, water quality and Hay Ranch South Production Well pumping data in graphical form.

* * * * *

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

Sincerely,

TEAM Engineering & Management, Inc.



Keith Rainville
Staff Geologist

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**HAY RANCH PROJECT CONDITIONAL USE PERMIT
HYDROLOGIC MONITORING AND REPORTING
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1.0 EXECUTIVE SUMMARY

The following summarizes hydrologic monitoring activities during the first quarter 2010 related to the Coso Operating Company's Hay Ranch Project Conditional Use Permit (CUP):

- Hay Ranch Project CUP pumping was initiated on December 25, 2009 with groundwater pumped from the Hay Ranch South Production Well. Approximately 151 million gallons of groundwater (465 acre feet) have been pumped through March 29, 2010
- The Hay Ranch Project CUP's preliminary baseline groundwater levels were set in January 2010. No "Maximum Acceptable Drawdowns" have been exceeded in the first quarter 2010.
- Weekly and monthly groundwater and surface water data were collected from 30 monitoring points throughout Rose Valley as per the schedule set forth in the Hay Ranch Project CUP's Hydrologic Monitoring and Mitigation Plan.
- Quarterly groundwater samples were collected from the Hay Ranch South, Coso Junction Store #2, and Little Lake Ranch North wells. These samples were analyzed for Total Dissolved Solids, and none of the samples exceeded "Threshold Requiring Action Levels."
- Weekly and monthly data transmittal, including groundwater and surface water hydrographs, occurred between TEAM Engineering & Management, Inc. and Inyo County Water Department. Monthly update letters and groundwater and surface water hydrographs have been posted on the Inyo County Water Department's public website: www.inyowater.org.
- Quarterly hydrographs are included herein which compare Rose Valley groundwater elevations, surface flow amounts, and Total Dissolved Solid amounts to Hay Ranch Project CUP pumping amounts over time.

2.0 INTRODUCTION

The Coso Operating Company, LLC (COC) operates a geothermal electric generating plant located to the east of Rose Valley in the Coso Mountains in Inyo County, California. COC proposed a project to pump water into the Coso geothermal field from groundwater wells located on the COC Hay Ranch Property in the Rose Valley Basin. Inyo County, as lead agency, approved the Final Environmental Impact Report (FEIR) associated with this project in 2009, issuing a Conditional Use Permit (CUP) for the project: Hay Ranch Water Extraction Project and CUP #2007-03 (Hay Ranch Project). The FEIR includes a Hydrologic Monitoring and Mitigation Plan (HMMP) which stipulates monitoring and mitigation requirements associated with the project. The primary objective of the HMMP is to protect the groundwater and surface water quality and availability in Rose Valley. In May 2009, Inyo County Water Department (ICWD) approved TEAM Engineering & Management, Inc. (TEAM) as the objective, third-party groundwater monitor with respect to the monitoring requirements stipulated in the HMMP.

2.1 BACKGROUND

The Rose Valley hydrologic system has been the subject of sporadic research since the early 1900s. Recent, more intensive study includes work by C. M. Bauer in 1996, and numerous studies from 2000 to the present related to the proposed Hay Ranch Project. COC has conducted groundwater monitoring since 2002 at a number of the monitoring wells specified in the HMMP. In addition to being used as an irrigation water supply well in the 1980s, the Hay Ranch South Well, the primary production well for the Hay Ranch Project, underwent two pump tests. In 2003, a 24-hour pump test was conducted, and groundwater elevation data was collected during this test. Then, from November to December 2007, a 14-day constant discharge aquifer test was conducted to evaluate potential impacts of the Hay Ranch Project. Groundwater elevation data was collected during this test both by data-logging pressure transducers and manual measurements taken with a depth-to-water (DTW) sounder in various Rose Valley wells.

As part of the California Environmental Quality Act (CEQA) process for the Hay Ranch Project, a Draft Environmental Impact Report (DEIR) and FEIR were produced from 2004 to 2009 with the creation of a numerical groundwater model for Rose Valley and a proposed HMMP for the project. The HMMP specifies which sites are to be included in the monitoring plan for the Hay Ranch Project, how often those sites will be monitored, the types of data to be collected, and the procedures for presenting the monitoring data to Inyo County.

The goal of the HMMP is to prevent potential off-site impacts of the Hay Ranch Project on groundwater and surface water users in Rose Valley. The HMMP is designed to monitor changes in groundwater levels throughout Rose Valley and compare the observed changes to groundwater-model predicted changes in order to predict and prevent potential impacts related to project pumping. The HMMP is broken into four phases: Phase 1 is Monitoring System Setup and Supplemental Data Collection; Phase 2 is Startup Monitoring and Reporting; Phase 3 is Model Recalibration and Redefinition of Pumping Rates and Durations; and Phase 4 is Ongoing Monitoring, Mitigation and Reporting.

In 2009, Phase 1 work was conducted by COC, TEAM and ICWD. On December 25, 2009 Phase 2 began with initiation of project pumping from the Hay Ranch South Well.

3.0 PHASE 1 MONITORING AND REPORTING

The purpose of the Phase 1 Monitoring and Reporting period was to install the hydrologic monitoring system in Rose Valley and collect background data to establish prevailing hydrologic conditions prior to any potential impacts caused by Phase 2 project implementation. From May to December 2009, 30 monitoring points were completed in Rose Valley from the Enchanted Village area in the north to the Little Lake Gap area in the south (Figure 1). These monitoring points include 25 wells and five surface water measuring points. Data logging pressure transducers were installed in 18 wells and 5 surface water measuring points to record hourly changes in water levels.

During Phase 1, two clusters of monitoring wells were completed on the Hay Ranch Property near the Hay Ranch South Well (the Hay Ranch Cluster 1 and 2 Wells). An additional monitoring well was completed north of the Red Hill Cinder Cone. Surface flow measuring devices (flumes) were installed at Davis Ranch and Little Lake Ranch. A Stilling Well was installed in the north end of Little Lake to measure lake level (stage).

Access agreements were finalized between COC and Rose Valley land owners to collect hydrologic data at numerous points in Rose Valley. Security systems were installed at Rose Valley monitoring points where necessary. Monitoring points were surveyed for northing, easting and elevation data.

Also during Phase 1, monthly field events were conducted to collect DTW and surface flow data from Rose Valley monitoring points. Background hydrologic data was collected from May to December 2009, and a data processing and transfer system was established between TEAM and ICWD. Monthly data packages, update letters and groundwater and surface flow hydrographs were produced. At least six months of groundwater elevation data was collected from wells specified by the HMMP to be used as “trigger wells” in the monitoring system.

3.1 ROSE VALLEY MONITORING POINTS

The hydrologic monitoring points throughout Rose Valley vary from active supply wells, to newly constructed monitoring wells, to inactive/former supply wells, to a hand-pumped campground well. Monitoring point locations range from the Enchanted Village area in the north to the Little Lake Hotel Well in the south, and from the Lego Well in the east to the Davis Ranch Wells in the west. Monitoring locations are on private and/or gated property as well as open, remote areas in Rose Valley. Some wells are locked in structures or behind gates, some have locked construction job boxes installed over the casings, and others have security installed on or around the well casing itself. Well owners include private individuals, the U.S. Navy, the Bureau of Land Management (BLM), the Los Angeles Department of Water and Power (LADWP), and Coso Operating Company. A summary table is included in this report (Table 1) which standardizes the names of the Rose Valley monitoring points and provides a reference to the names used in the HMMP for each monitoring point.

Important features of Rose Valley Monitoring Wells are as follows:

The Hay Ranch Cluster Wells feature shallow (1A and 2A), intermediate (1C and 2C) and deep (1B and 2B) screened intervals at each location to provide enhanced groundwater and upper aquifer data. These cluster wells provide data on groundwater drawdown on the Hay Ranch property itself. With their specific screened intervals, each cluster grouping also has the potential

to provide additional information on groundwater drawdown at specific depths. This data can be assessed to deduce upper aquifer parameters such as hydraulic conductivity and specific yield.

The Enchanted Village and Dunmovin Wells are active domestic supply wells. The Coso Junction Store #1 Well is located 20 yards north of an active business supply well, Coso Junction Store #2 Well. The Fossil Falls Well is a hand-operated well that supplies water for campers. At these locations, data collection procedures are in place to recognize and minimize the effects of in-well pumping. However, DTW readings from these well can potentially be affected by significant, recent pumping of these wells.

The Cal Pumice, Coso Junction Ranch, Lego, G-36, Red Hill, 18-28 and Cinder Road Wells are not actively pumped wells, and are currently used for groundwater elevation monitoring only.

3.2 PORTUGUESE BENCH MONITORING POINTS

On Portuguese Bench to the west of US 395, there are three monitoring points located at the Davis Ranch. Two of the monitoring points are supply wells for the property, Davis Ranch North and South Wells, respectively. A third monitoring point, Davis Ranch South Flow, captures outflow from the Davis Ranch South Well.

Davis Ranch North and South Wells are located just below ground surface and are artesian at the top of each well casing. Groundwater from these two wells flows into PVC supply pipes for use at Davis Ranch. At the Davis Ranch North Well, water from the PVC pipe flows downhill into a complicated, gravity-powered water-delivery system. Water from this North Well is used for consumption and irrigation. At the Davis Ranch South Well, water from the PVC pipe flows into a pond.

At the Davis Ranch North and South Wells, pressure transducers have been installed to record well head levels. A small change in head in these wells (hundredths of a foot) will result in increased or decreased flow.

Outflow from the North Well cannot be directly measured without interrupting the sensitive Davis Ranch water-delivery system. However, due to the simplicity of the water delivery system at the South Well, outflow can be directly measured without disruption. A flow metering system consisting of a trapezoidal flume and Stilling well with a data-logging pressure transducer has been installed (Davis Ranch South Flow) in the PVC outflow pipe. Hourly flow measurements are being recorded by the South Flow flume.

3.3 LITTLE LAKE RANCH MONITORING POINTS

The Little Lake Ranch (LLR) area of Rose Valley (Figure 2) extends northwards to the mouth of the Fossil Falls Canyon, east along the volcanic scarp, west to US 395 with some property on the west side of the highway, and south through Little Lake Gap into the lower Little Lake area. As currently understood, Little Lake is fed by groundwater springs; there is no surface water flow into the lake. The surface elevation of Little Lake is controlled by a pair of weirs located in the lake's southwest corner. From these weirs a system of trenches moves surface water from Little Lake south to Pond 1 and Pond 2. Surface water exiting the Little Lake Weirs flows southeast via a trench system toward Pond 1. The Siphon Well, located between the Little Lake Weirs and Pond 1, is a siphon well which provides additional surface flow via an outlet pipe to Pond 2. Coso Springs, located to the northeast of Pond 1, provides surface water to Pond 1. Trenches

connect surface flow between Little Lake Weir, Coso Springs, Pond 1 and Pond 2. These trenches ultimately converge, and all surface water exiting the property flows through the North Culvert, located south of Pond 2, and through the Little Lake Gap area where it can be diverted by LLR staff to various ponds and irrigation trenches in the lower Little Lake area for growth of avian forage.

At the northeast end of the property is the LLR North Well. The LLR North Well is approximately 0.75 miles north of Little Lake and has no pumping infrastructure installed. Located to the southwest of LLR North Well is the LLR 395 Well. This is the primary groundwater supply well for the property. To the southeast is the LLR Ranch House Well. This is a reserve groundwater supply well and is also pumped for irrigation purposes. The LLR Dock Well is located approximately 100 feet northwest of Little Lake itself north of the Boat House, and has a gasoline-engine powered pumping system in place that is rarely pumped. The LLR Stilling Well is located southeast of the Boat House in the north end of Little Lake, and measures the water level (stage) of the lake.

The Little Lake surface level can be manually controlled by two weirs located at the southwest corner of the lake. These concrete weirs have a slat system in place and a pair of three-inch diameter holes which can be plugged or opened to release water. Surface water flowing from the Little Lake weir trench system flows through the LLR Lake Outflow flume and then is diverted into the northwest corner of Pond 1. Water from Coso Springs flows through the LLR Coso Springs Flow flume and then enters the northeast corner of Pond 1. Water leaves Pond 1 at a concrete weir in the southwest corner and the pond's surface level can be controlled by a slat system at this weir. Water from Pond 1 flows by trench to the northwest corner of Pond 2. The LLR Siphon Well draws groundwater to the surface via a siphon pipe that discharges into Pond 2. Pond 2 has a concrete weir in the west corner and the pond's surface level can be controlled by a slat system. Water flows from the Pond 2 into a trench system that runs south through the LLR North Culvert Flow flume. LLR North Culvert Flow captures surface flow from Little Lake, Coso Springs, Ponds 1 and 2, and the Siphon Well.

The LLR Hotel Well is located west of US 395 and south of Little Lake. It is a seasonally artesian well, which is not directly connected to the LLR surface water transport system.

The LLR surface water system is regulated by LLR staff to place water in parts of the property as needed for wildlife and vegetation management.

A typical water management practice by LLR staff can have the following effects, for example:

In order to supply water to the lower Little Lake area, boards will be removed from the weirs at Little Lake, Pond 1 and Pond 2. Water will flow from Little Lake to the south. The resulting surface water level decline in Little Lake can be measured at the LLR Stilling Well. The LLR Lake Outflow flume will register an increase in flow. Outflow from Little Lake, Pond 1 and Pond 2, will register as increased flow at LLR North Culvert Flow. When the boards are replaced at Little Lake, at Pond 1 and at Pond 2, lake and pond levels will slowly rise. Flows will decrease at LLR Lake Outflow and LLR North Culvert Flow. Throughout this water movement event, flow from Coso Springs and the Siphon Well (if actively producing groundwater) will continue to supply water to the Ponds and, once the water levels in the Ponds have recovered, flow through North Culvert Flow.

In addition to active water management by LLR staff, wind and weather events can cause wave action that produces flow over the Little Lake Weirs. Also, if groundwater flow into Little Lake exceeds losses due to percolation and evapotranspiration, Little Lake surface level will rise, causing overflow at the lake weirs.

A spike in the LLR Lake Outflow hydrograph is typically indicative of water movement (removal of boards at the Little Lake Weirs) by LLR staff. After a time lag, increased outflow from Little Lake will also cause a spike in the LLR North Culvert Flow. Wind or weather events will cause a less dramatic increase in Lake Outflow and North Culvert Flow readings.

3.4 SUPPLEMENTAL DATA COLLECTION

In addition to setting up the monitoring system and conducting monthly DTW and surface flow measurements, supplemental data was collected during the Phase 1 period.

In September 2009, a field event was conducted to evaluate groundwater levels beneath Little Lake. Temporary drive-point piezometers were installed and then removed at four locations around Little Lake to depths of four or more feet beneath the lake bottom. At all four locations, the measurements indicated a downward hydraulic gradient from Little Lake to groundwater beneath Little Lake.

A bathymetric survey was conducted in August 2009 at 21 points across Little Lake. Depth to bottom was measured and location was recorded using a hand held GPS unit. The maximum depth measured was 4.8 feet in the central section of the lake, with average depths between 3-4.5 feet throughout most of the lake. The lake level was approximately one foot below the top of the east weir when this bathymetry survey was conducted.

In October and December of 2009, groundwater samples were collected from three wells: Hay Ranch South, Coso Junction Store #2, and Little Lake South wells. These groundwater samples were lab-analyzed for Total Dissolved Solids (TDS) to establish background water quality conditions. During sample collection, a hand-held field instrument recorded specific conductivity and computed TDS data. In addition to groundwater sample collection, pressure transducers in the Hay Ranch Cluster (1A-1C and 2A-2C), Red Hill, LLR North, LLR Dock and LLR Stilling wells recorded specific conductivity and computed TDS values hourly.

Data gaps regarding various details of monitoring points were closed where possible. In active supply wells which also serve as monitoring wells, total depth and pump depths were collected from owners. Precipitation gauges were identified in Rose Valley and in the Sierra to the north and southwest of Rose Valley to provide additional information for future groundwater modeling.

3.5 BASELINE GROUNDWATER LEVELS

At the conclusion of Phase 1, data from 2002 through 2009 was used to establish preliminary baseline groundwater elevations. Steve Brooks, Professional Geologist and Principal Hydrogeologist/Senior Project Manager of Schlumberger Water Services, conducted a Rose Valley Baseline Water Level Analysis. This analysis, dated January 19, 2010 is provided as Appendix A. ICWD accepted these preliminary baseline levels.

4.0 PHASE 2 MONITORING AND REPORTING

With the initiation of Hay Ranch South Production Well groundwater pumping by Coso Operating Company on December 25, 2009, the Hay Ranch Project entered into the Phase 2 Startup Monitoring and Reporting period as outlined in the HMMP. The objective of Phase 2 is to document the response of the Rose Valley aquifer to pumping at the Hay Ranch. In addition to monthly groundwater and surface water data collection from the 30 monitoring points in Rose Valley, during the initial three months of Phase 2 monitoring weekly data was collected from specific areas of Rose Valley. This hydrologic data will be used to improve initial estimates of aquifer specific yield, storage coefficients, hydraulic conductivity and groundwater recharge rates to validate or revise the numeric groundwater model.

4.1 MONITORING AND REPORTING

In January, February and the first week of March 2010, weekly data collection occurred at the Cal Pumice and Hay Ranch Cluster wells, and also at the suite of monitoring points at Little Lake Ranch (North, Dock, Stilling, Siphon and Hotel wells; Little Lake, Coso Springs, and North Culvert flows).

After March 1, weekly data collection occurred at Cal Pumice, Hay Ranch Cluster and Little Lake Hotel wells. Also during March, groundwater samples were collected from three wells in Rose Valley to gather TDS data.

During the first quarter 2010, no Maximum Acceptable Drawdowns were exceeded in Hay Ranch Project trigger wells as established by the January, 2010, ICWD-accepted preliminary baseline groundwater elevations.

Hydrographs from both the weekly and monthly field events were submitted to ICWD. The monthly hydrographs featuring the full suite of Rose Valley monitoring points were uploaded to the ICWD website: www.inyowater.org. These hydrographs along with monthly letter reports can be viewed on-line at www.inyowater.org/coso/default/htm. The April 2010 monthly hydrographs are included in this report as Appendix B.

Weekly reads from the Hay Ranch South Production Well Totalizer documenting groundwater extraction amounts are included in this report as Table 2.

Hydrographs which combine various Rose Valley monitoring points comparing groundwater elevations to Hay Ranch South Well pumping amounts over time are included in this report as Figures 3 through 10. Groundwater elevations, in feet above mean sea level, are listed on the left axis. Hay Ranch South average daily pumping amounts, in acre feet per day, are listed on the right axis in inverse order. In these figures, Rose Valley monitoring points have been grouped along similar groundwater elevation contours.

A hydrograph which combines groundwater and surface water elevations in the Little Lake area to Hay Ranch South Well pumping amounts over time is included in this report as Figure 11. Groundwater and surface water elevations at the LLR Dock, LRR Stilling Well (lake surface level) and LLR Hotel Well are listed, in feet above mean sea level, on the left axis. Hay Ranch South average daily pumping amounts, in acre feet per day, are listed on the right axis in inverse order.

A hydrograph which combines groundwater and surface water elevations in the immediately vicinity of Little Lake to LLR Lake Outflow amounts over time is included in this report as Figure 12. Groundwater and surface water elevations at the LLR Dock and LRR Stilling Well (Little Lake surface level) are listed, in feet above mean sea level, on the left axis. Surface water outflow from Little Lake, captured by the LLR Lake Outflow flume in cubic feet per second, is listed on the right axis in inverse order.

A hydrograph which combines surface water flows in the Little Lake Ranch area to Hay Ranch South pumping rates over time is also included in this report as Figure 13. Surface water flows from Lake Outflow, Coso Springs Flow and North Culvert Flow are listed on the left axis, in cubic feet per second. Hay Ranch South average daily pumping amounts, in acre feet per day, are listed on the right axis in inverse order. As noted in Section 3.3, surface flow captured by the North Culvert Flow flume represents an accumulation of surface flows from Little Lake, Coso Springs and the Siphon flow.

Tabular data, in digital format, of groundwater elevations and flow amounts from Rose Valley monitoring points can be obtained by contacting ICWD in writing at PO Box 337, 135 South Jackson St., Independence, CA, 93526 or by phone at (760) 878-0001.

4.2 GROUNDWATER QUALITY

On March 15, 2010 groundwater samples were collected from the Hay Ranch South, Coso Junction Store #2, and LLR North wells and analyzed for TDS. These groundwater samples were analyzed by TestAmerica, Inc. a California-Certified Analytical Laboratory. Prior to sample collection, groundwater was purged from each well until groundwater physical parameters, as monitored by a YSI 556 MPS hand-held unit, stabilized.

At the Hay Ranch South Well, the groundwater sample HRS was collected from the production outflow pipe at 13:35 hours. Approximately 8,000 gallons of groundwater was purged from this well prior to sample collection. The laboratory analytical result from HRS was TDS 740 milligrams per liter (mg/L). The previous laboratory analytical result for HRS sampled December 28, 2009, was TDS 890 mg/L.

At the Coso Junction Store #2 Well, the groundwater sample CJS#2 was collected from the groundwater holding tank located 20 yards north of this active supply well. The CJS#2 groundwater sample was collected from the holding tank's sample port at 12:43 hours. Approximately 25 gallons of groundwater was purged from this holding tank prior to sample collection. The laboratory analytical result from CJS#2 was TDS 490 mg/L. A quality assurance duplicate was sampled at 12:44 hours and labeled QAMW. The laboratory analytical result from QAMW was TDS 460 mg/L. The previous laboratory analytical result for CJS#2 sampled December 28, 2009, was TDS 550 mg/L.

At the LLR North Well, the groundwater sample LLR North was collected at 11:23 hours. Approximately 25 gallons of groundwater was purged from this well prior to sample collection. The laboratory analytical result from LLR North was TDS 510 mg/L. The previous laboratory analytical result for LLR North sampled October 1, 2009, was TDS 570 mg/L.

At all three wells, the TDS values from the March 15, 2010 groundwater sampling event are below "Threshold Requiring Action" values as specified in Table 3-2 of the HMMP (1500 mg/L for Coso Junction Store #2 and LLR North Well, and 2000 mg/L for Hay Ranch South Well).

Groundwater Quality graphs are presented in Figures (14-16), comparing TDS levels in Rose Valley monitoring wells with Hay Ranch South pumping amounts over time. This data is being collected by the in-well, data logging transducers. The transducers are converting hourly specific conductivity measurements to computed TDS values. TDS values, in parts per million (equivalent to mg/L) are listed on the left axis. Hay Ranch South pumping amounts are listed on the right axis, in average acre feet per day.

4.3 DATA COLLECTION AND PROCESSING

A protocol for measuring and sampling the Rose Valley monitoring sites has been defined and instituted by TEAM with the oversight of ICWD. Transducer hanging points, flow and DTW measuring points have been marked, surveyed and standardized (where feasible). Groundwater levels were measured by lowering a sounding probe into a well and obtaining two successive readings that agree to within 0.01 feet. These measurements were referenced to a mark at the top of the casing. The results of the measurements were then recorded on field sheets.

Field sheets are copied and archived at TEAM. Data from these sheets is input into the project database program "Coso.dbf" and checked against the field sheets. Data from the Coso database is then graphed in flow and groundwater hydrographs. TEAM performs internal quality control and quality assurance checks on this data and then transmits the draft hydrographs to ICWD. After review and/or discussion with ICWD, the draft hydrographs are finalized and uploaded to the ICWD server for public posting on www.inyowater.org.

4.4 OPERATIONAL NOTES

During the first quarter 2010, there were two operational issues of note. In January 2010, the pressure transducer installed in the Davis Ranch South Well experienced venting issues with its cable, resulting in inaccurate water level measurements. These inaccuracies were confirmed by manual DTW measurements at the well and by flow readings from the Davis Ranch South Flow flume. The Davis Ranch South transducer was replaced in February 2010 with an operational unit.

At Little Lake Ranch, the Hotel Well is a seasonally artesian well. During Phase 1 monitoring system set-up, the magnitude of groundwater elevation fluctuations at the Hotel Well was unquantified. In September 2009, temporary well security at the Hotel Well was installed along with a pressure transducer. From September 2009 to early January 2010, groundwater elevations in the Hotel Well were below this security casing.

In mid January 2010, groundwater levels at the Hotel Well became elevated above the top the well and security casing. When the well became artesian, the pressure transducer was removed and the well was sealed. Water levels in this well were subsequently monitored on a weekly basis during the first quarter using a temporary casing extension to take a manual DTW measurement. When groundwater levels decline below top of casing, the pressure transducer will be reinstalled.

Groundwater elevation data from the first and second quarter 2010 will be used to assess the magnitude of head changes in this well. If feasible, the Hotel Well casing will be raised to create a non-artesian monitoring point. A more permanent security system will then be installed to allow continuous groundwater level monitoring using a pressure transducer.

4.5 ADDITIONAL OBSERVATIONS

During the week of January 18-24, 2010, a storm system deposited significant amounts of snow and rain on the Rose Valley floor. This large storm system caused notably lower barometric pressure during the January 2010 monitoring event. Groundwater levels in Rose Valley monitoring wells respond to changes in barometric pressure. When barometric pressure drops, groundwater elevations rise slightly; when barometric pressure increases, groundwater levels are slightly depressed.

During January 2010 LLR staff moved water from Little Lake south to the lower Little Lake area as part of the seasonal management plan. After the cessation of this water movement event, lake surface level increased to the top of the weir boards. During parts of February and March, unmanaged flow occurred over the lake weirs, registering in the LLR monitoring system as both a high lake surface level capture by the Stilling Well and by a steady increase of flow at Lake Outflow and North Culvert Flow.

Preliminary precipitation data from the Los Angeles Department of Water and Power (LADWP) are summarized as follows:

As of March 30, LADWP reported the Cottonwood Lakes snow sensor, located to the northwest of Rose Valley, was recording 14.1 inches of water content, approximately 110% of normal to date. The LADWP also reported the South Haiwee precipitation sensor, located at the northern end of Rose Valley, was recording 7.6 inches of rain, approximately 139% of normal to date. As reported by LADWP on March 1, 2010 the Eastern Sierra Overall Snowpack's water content, weighted by contribution to the Owens River, was 17.3 inches, approximately 101% normal to date.

5.0 GENERAL CONDITIONS

Geology, hydrogeology and geochemistry are inexact sciences, and investigative data commonly contain large uncertainties. The behavior of groundwater can be complex. Our judgments and conclusions are based upon the analytical data obtained from groundwater measurements collected by TEAM, data supplied to TEAM by COC, Inyo County and other sources, as well as our experience on similar projects. Services performed for this project by TEAM Engineering & Management, Inc. are in accordance with professional standards for groundwater and hydrologic assessment investigations; no guarantees are either expressed or implied.

TABLES

TABLE 1
HAY RANCH PROJECT MONITORING POINT SUMMARY

Well ID	Well Name	Hay Ranch Project FEIR HMMP reference names from HMMP Tables 3-1 and 3-2	Monitoring Role	Current Well Use	Transducer Installed	Data Logging Frequency
RV-10	Enchanted Village	Wells located west of Haiwee Reservoir	Observation	Active Supply	No	NA
RV-20	LADWP V816	Same	Observation	Inactive	No	NA
RV-30	Cal Pumice	Pumice Mine Well	Trigger	Inactive	Yes	Hourly
RV-40	Dunmovin	Same or Dunmovin Area well	Trigger	Active Supply	No	NA
RV-50	Hay Ranch North	Same	Production/GWQ	Production	Flow Meter	NA
RV-60	HR 1A	Six New Hay Ranch Observation wells	Undecided	Inactive	Yes	Hourly
RV-61	HR 1B	Six New Hay Ranch Observation wells	Undecided	Inactive	Yes	Hourly
RV-62	HR 1C	Six New Hay Ranch Observation wells	Undecided	Inactive	Yes	Hourly
RV-70	Hay Ranch South	Same	Production/GWQ	Production	Flow Meter	NA
RV-80	HR 2A	Six New Hay Ranch Observation wells	Undecided	Inactive	Yes	Hourly
RV-81	HR 2B	Six New Hay Ranch Observation wells	Undecided	Inactive	Yes	Hourly
RV-82	HR 2C	Six New Hay Ranch Observation wells	Undecided	Inactive	Yes	Hourly
RV-90	Coso Jct Ranch	Coso Ranch North	Trigger	Inactive	Yes	Hourly
RV-100	Coso Jct Store #1	Coso Junction #1	Trigger/GWQ (#2)	Inactive/Active Supply*	Yes	Hourly
RV-110	Davis Ranch North	Not Mentioned	Observation	Artesian	Yes	Hourly
RV-111	Davis Ranch South	Not Mentioned	Observation	Artesian	Yes	Hourly
RV-112	Davis Ranch South Flow	Not Mentioned	Observation	Flume	Yes	Hourly
RV-120	Red Hill (BLM)	New well to be located between Coso Jnc and Cinder Road Red Hill	Trigger**	Inactive	Yes	Hourly
RV-130	Well G36	Well G-36 or Navy G-36 Well	Trigger	Inactive	No	NA
RV-140	Lego Well	Same or Navy Lego Well	Trigger	Inactive	Yes	Hourly
RV-150	Cinder Road well	Cinder Road, Red Hill	Trigger	Inactive	Yes	Hourly
RV-160	Well 18-28 GTH	Well 18-28 or Navy 18-28 Well	Trigger	Inactive	Yes	Hourly
RV-170	Fossil Falls Campground	Same	Observation	Active Supply	No	NA
RV-180	LLR North Well	Little Lake Ranch North Well	Trigger/GWQ	Inactive	Yes	Hourly
RV-190	LLR 395 Well	Little Lake Major Operational Changes	Observation	Active Supply	No	NA
RV-200	LLR Ranch Well	Little Lake Major Operational Changes	Observation	Active Supply	No	NA
RV-210	LLR Dock	Little Lake North Dock Well	Observation	Inactive	Yes	Hourly
RV-220	LLR Lake Stilling	Little Lake	Observation	Actively Managed	Yes	Hourly
RV-230	LLR Lake Outflow	Little Lake Weir	Observation	Actively Managed Flume	Yes	Hourly
RV-240	LLR Coso Springs	Coso Springs	Observation	Flume	Yes	Hourly
RV-245	LLR North Culvert	Little Lake North Culvert Weir	Observation	Actively Managed Flume	Yes	Hourly
RV-250	LLR Siphon Well	Pond P1 Siphon Well***	Observation	Active Siphon	No	NA
RV-260	LLR Hotel Well	Little Lake Hotel Well	Observation	Inactive	Yes****	Hourly

GWQ- Groundwater Quality monitoring well

* RV-100 Coso Jct Store #1 Well is an inactive well located approximately 20 yards north of Coso Jct Store #2 well which is an active supply well where groundwater quality is being recorded.

** The Trigger Level for RV-120 was not set in HMMP Table 3-1. However, a preliminary baseline level was set on January 19, 2010.

*** RV-250 LLR Siphon Well supplies water directly to LLR Pond 2, not LLR Pond 1 as erroneously stated in the HMMP.

**** RV-260 LLR Hotel Well is a seasonally artesian well. Hourly pressure transducer reads are occurring during periods of non-artesian groundwater elevations.

TABLE 2
HAY RANCH PROJECT GROUNDWATER PUMPING TO DATE

HAY RANCH SOUTH PRODUCTION WELL

Date: 12/25/2009 Totalizer Initial Read (gallons): 741,800,000
Date: 03/29/2010 Totalizer Recent Read (gallons): 893,331,000

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
40172	12/25/09	0	-	0.0	0.0	0	0.0
40175	12/28/09	3.5	2,902,000	8.9	3.5	2,902,000	8.9
40182	1/4/10	10.5	9,469,000	29.1	7.0	6,567,000	20.2
40189	1/11/10	17.5	18,101,000	55.5	7.0	8,632,000	26.5
40196	1/18/10	24.5	24,009,000	73.7	7.0	5,908,000	18.1
40199	1/21/10	27.5	28,463,000	87.3	3.0	4,454,000	13.7
40203	1/25/10	31.5	33,589,000	103.1	4.0	5,126,000	15.7
40210	2/1/10	38.5	40,633,000	124.7	7.0	7,044,000	21.6
40217	2/8/10	45.5	46,049,000	141.3	7.0	5,416,000	16.6
40224	2/15/10	52.5	55,035,000	168.9	7.0	8,986,000	27.6
40227	2/18/10	55.5	59,004,000	181.1	3.0	3,969,000	12.2
40231	2/22/10	59.5	67,248,000	206.4	4.0	8,244,000	25.3
40238	3/1/10	66.5	81,177,000	249.1	7.0	13,929,000	42.7
40245	3/8/10	73.5	96,304,000	295.5	7.0	15,127,000	46.4
40252	3/15/10	80.5	114,238,000	350.6	7.0	17,934,000	55.0
40254	3/17/10	82.5	120,024,000	368.3	2.0	5,786,000	17.8
40259	3/22/10	87.5	132,704,000	407.3	5.0	12,680,000	38.9
40266	3/29/10	96.5	151,531,000	465.0	7.0	18,827,000	57.8

Data based on manual reads by TEAM of the Hay Ranch South Production Well Totalizer
Hay Ranch Project pumping initiated on 12/25/09
As of 3/29/10 no groundwater has been pumped from Hay Ranch North Production Well

FIGURES

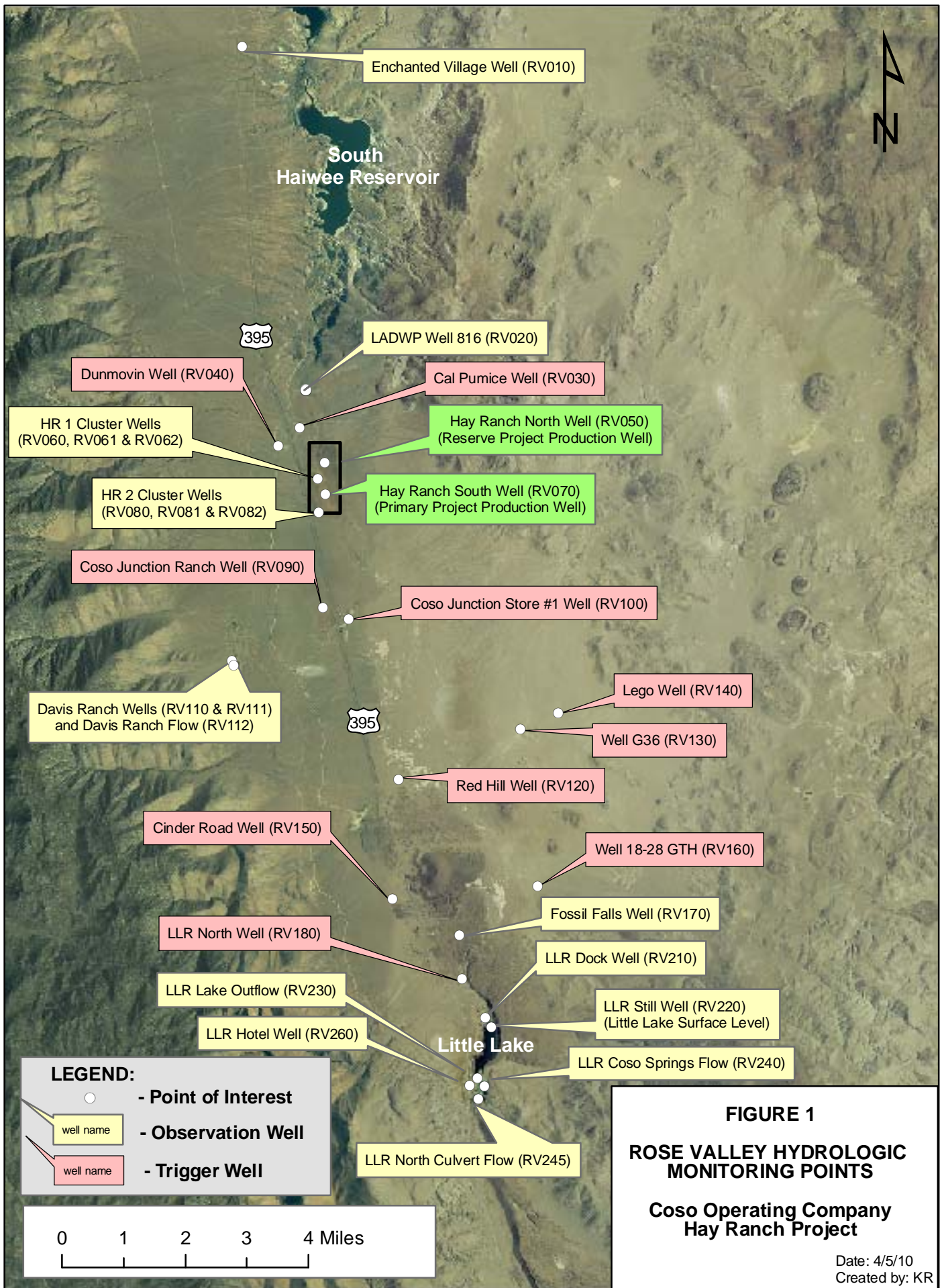


FIGURE 1
ROSE VALLEY HYDROLOGIC MONITORING POINTS
Coso Operating Company Hay Ranch Project
Date: 4/5/10
Created by: KR

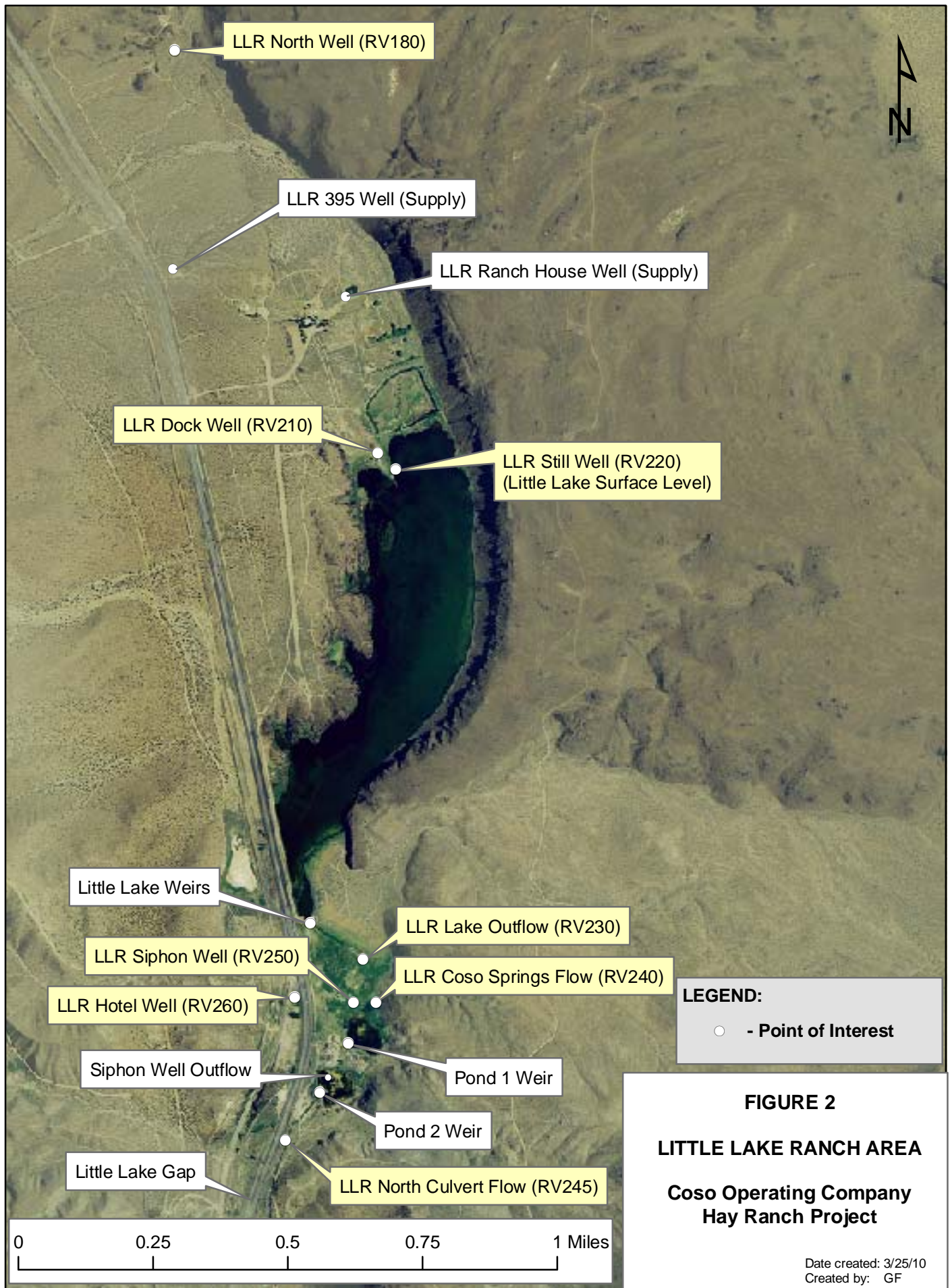
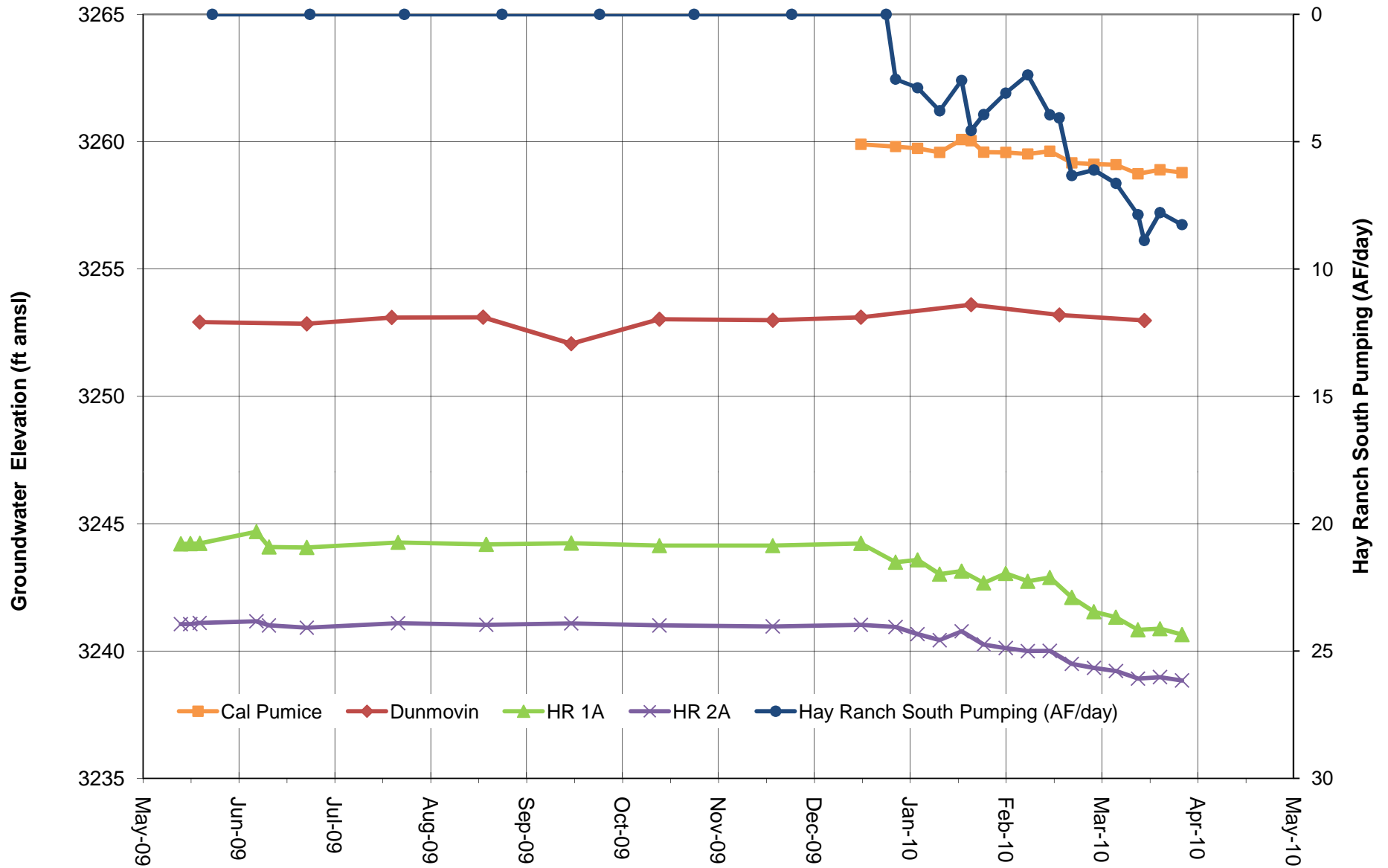


FIGURE 2
LITTLE LAKE RANCH AREA
Coso Operating Company
Hay Ranch Project

Date created: 3/25/10
Created by: GF

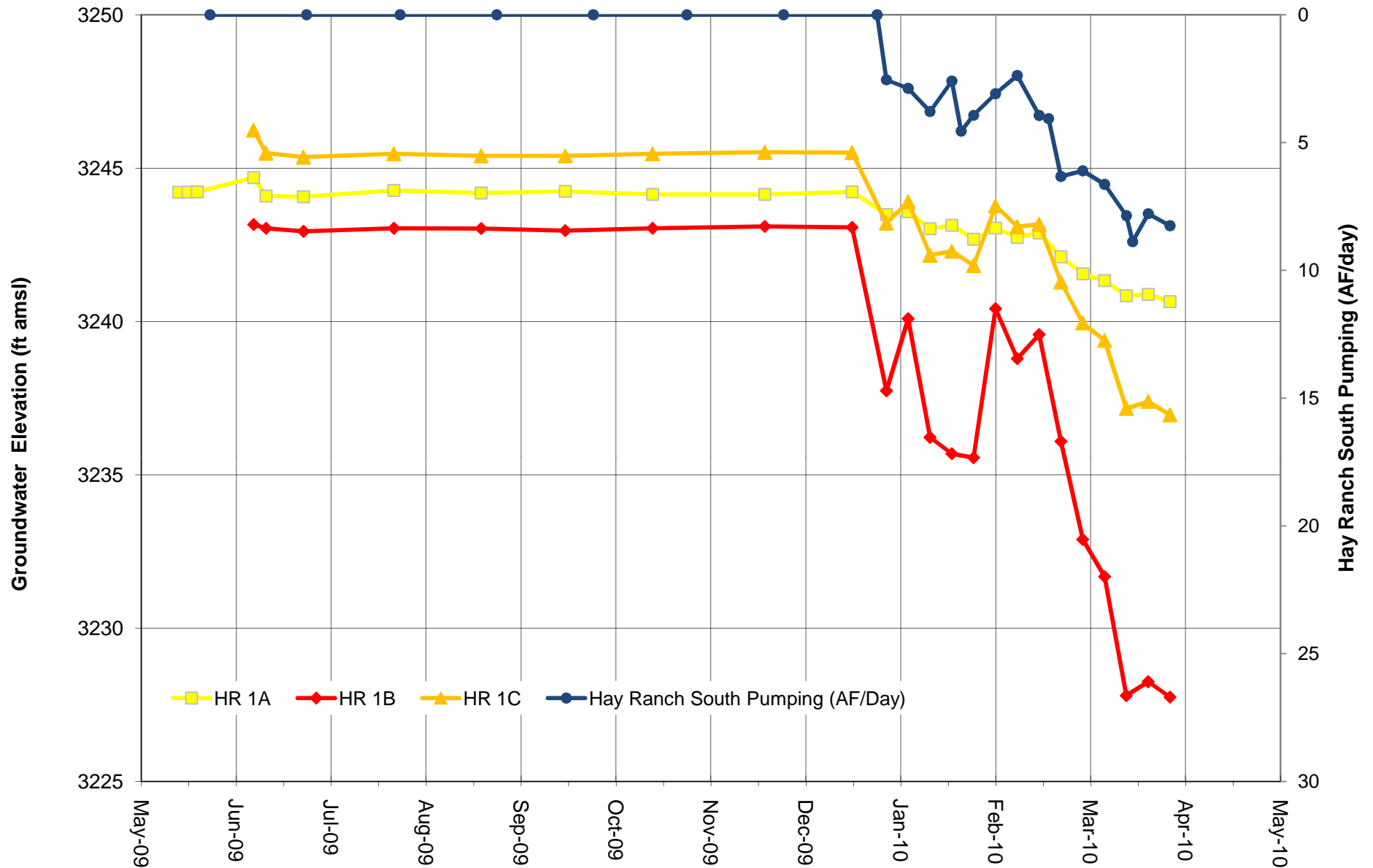
FIGURE 3

GROUNDWATER ELEVATION and HR SOUTH PUMPING:
Cal Pumice, Dunmovin, HR 1A and HR 2A



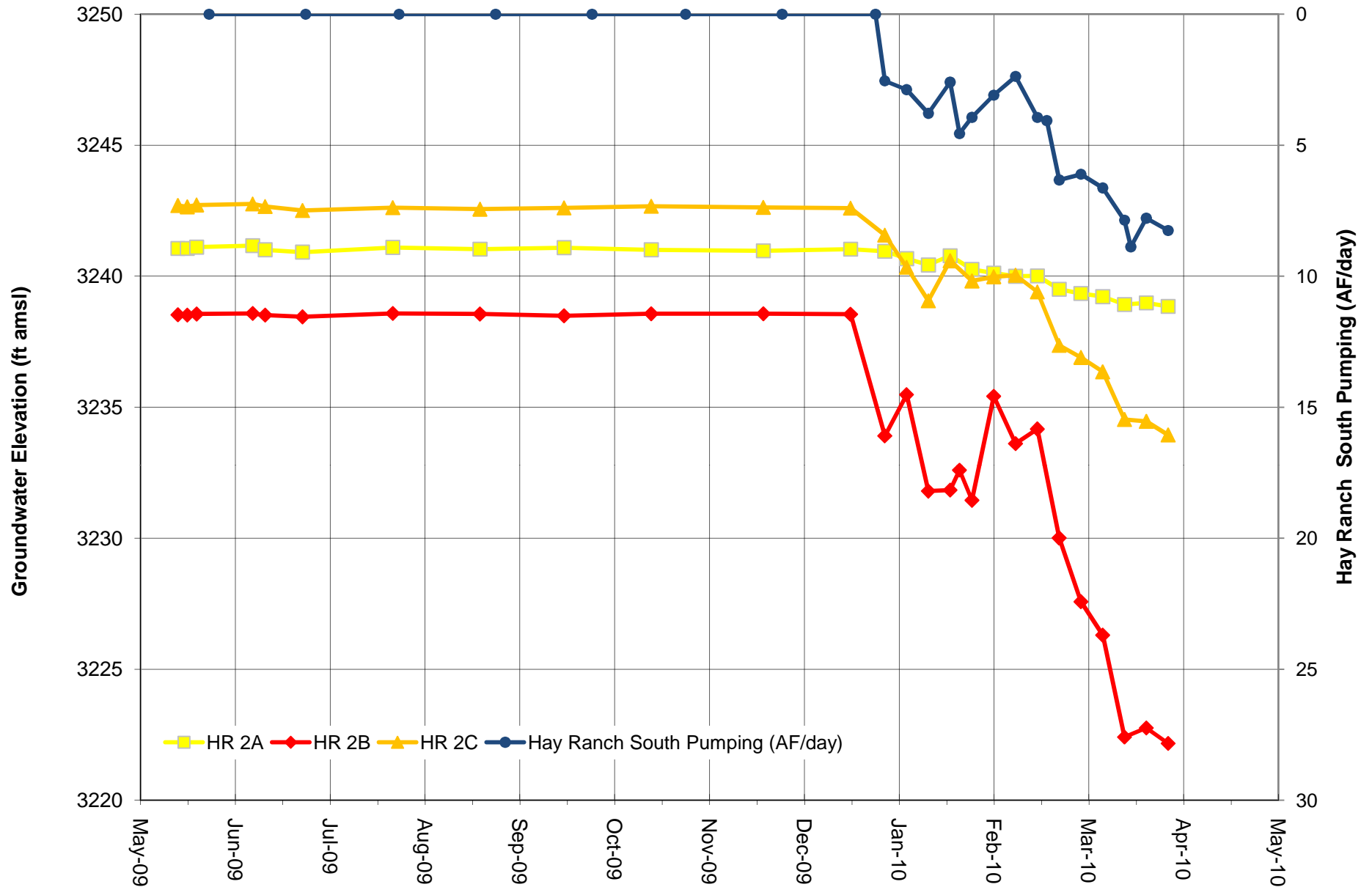
Note: Groundwater elevation data based on manual depth-to-water measurements.
Hay Ranch South pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 4
GROUNDWATER ELEVATION and HR SOUTH PUMPING:
HR 1A, HR 1B and HR 1C



Note: GWE data based on manual DTW measurements. HR South pumping is average acre feet per day.
Screened intervals: HR 1A 170-260 feet; HR 1B 490-540 feet; HR 1C 340-405 feet.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

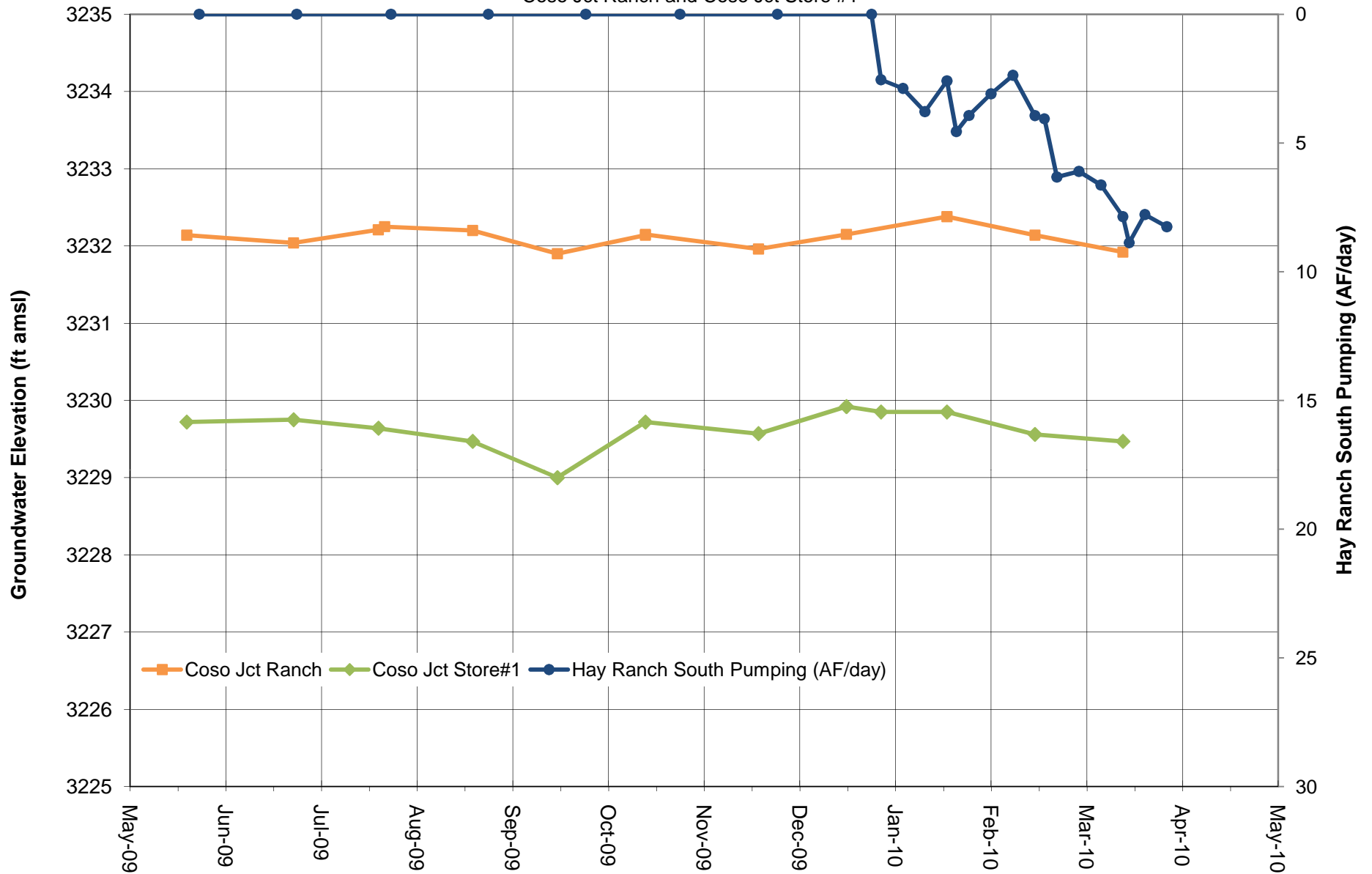
FIGURE 5
GROUNDWATER ELEVATION and HR SOUTH PUMPING:
HR 2A, HR 2B and HR 2C



Note: GWE data based on manual DTW measurements. HR South pumping is average acre feet per day.
Screened intervals: HR 2A 180-300 feet; HR 2B 519-584 feet; HR 2C 370-420 feet.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

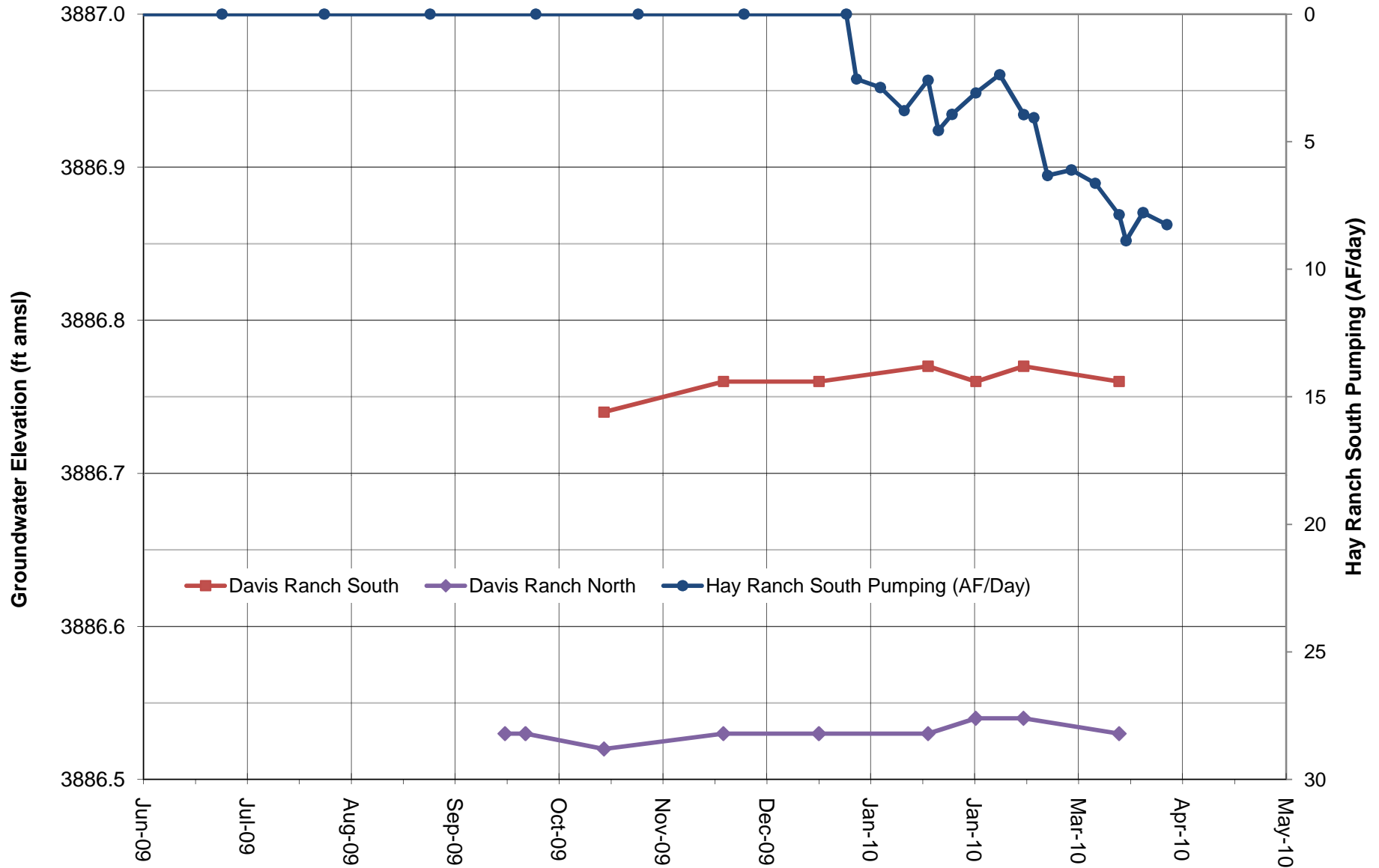
FIGURE 6

GROUNDWATER ELEVATION and HR SOUTH PUMPING:
Coso Jct Ranch and Coso Jct Store #1



Note: Groundwater elevation data based on manual depth-to-water measurements.
Hay Ranch South pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

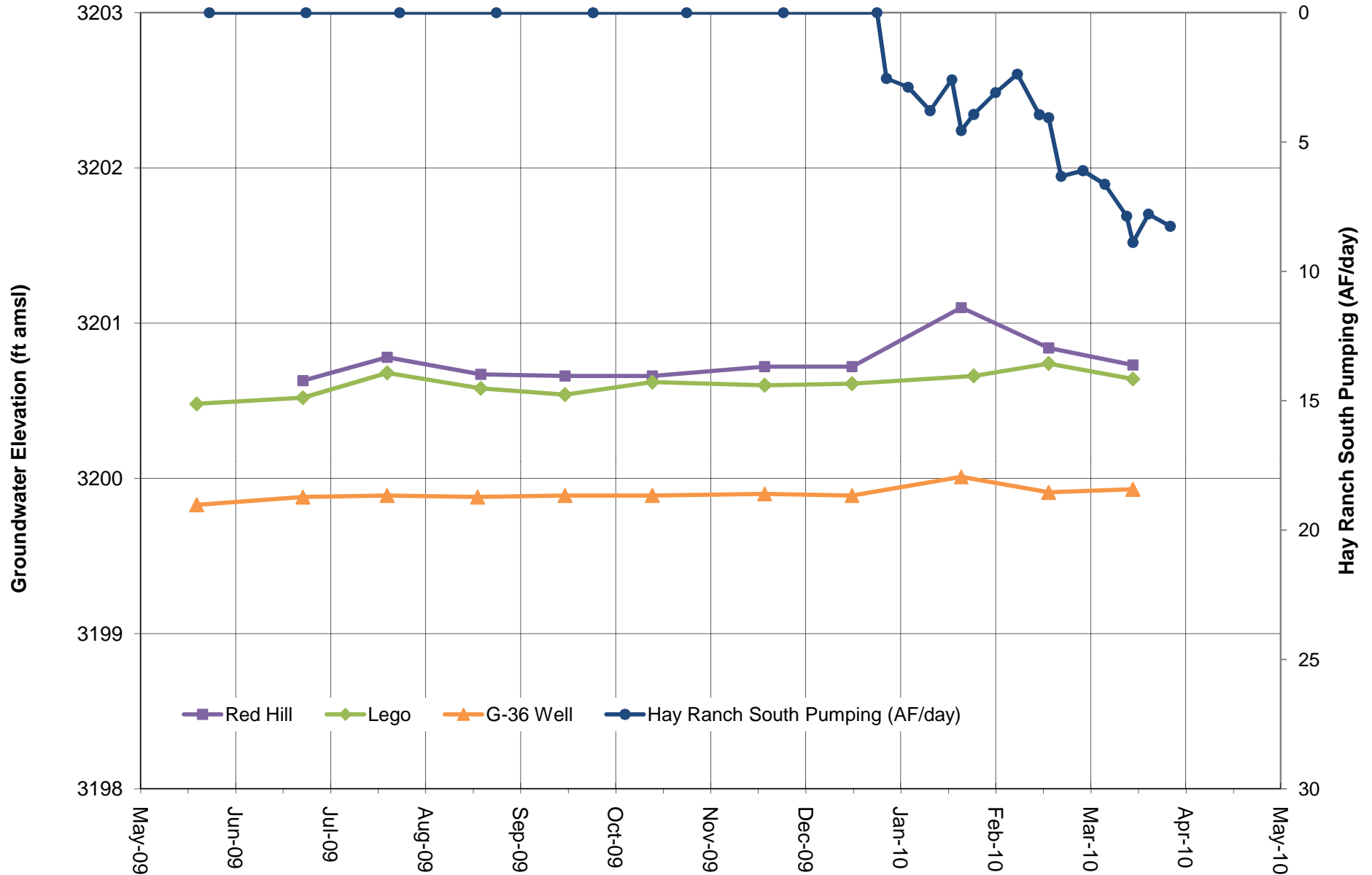
FIGURE 7
GROUNDWATER ELEVATION and HR SOUTH PUMPING:
Davis Ranch North and South



Note: Groundwater elevation data based on manual depth-to-water measurements.
Hay Ranch South pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

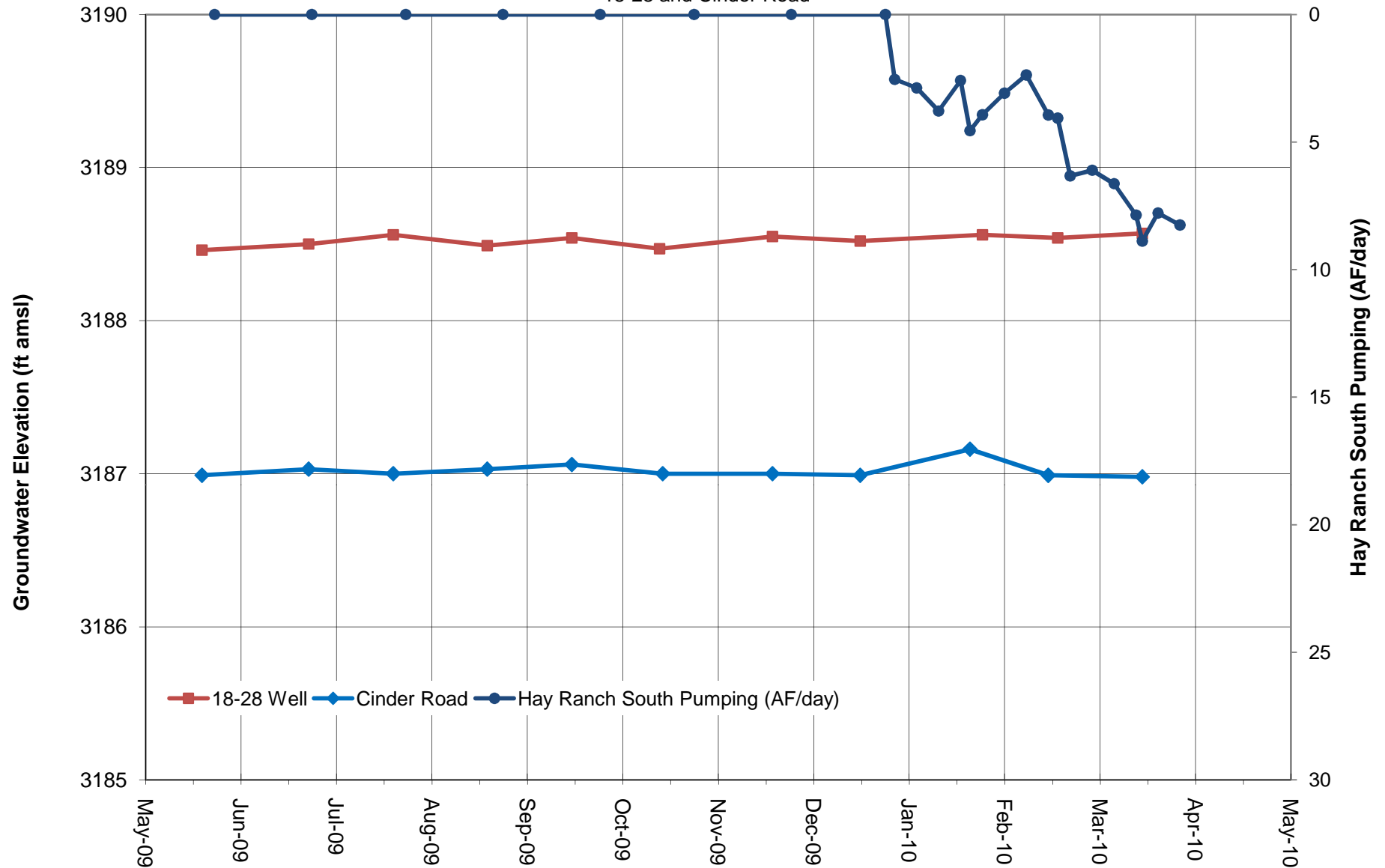
FIGURE 8

GROUNDWATER ELEVATION and HR SOUTH PUMPING:
Red Hill, Lego and G-36



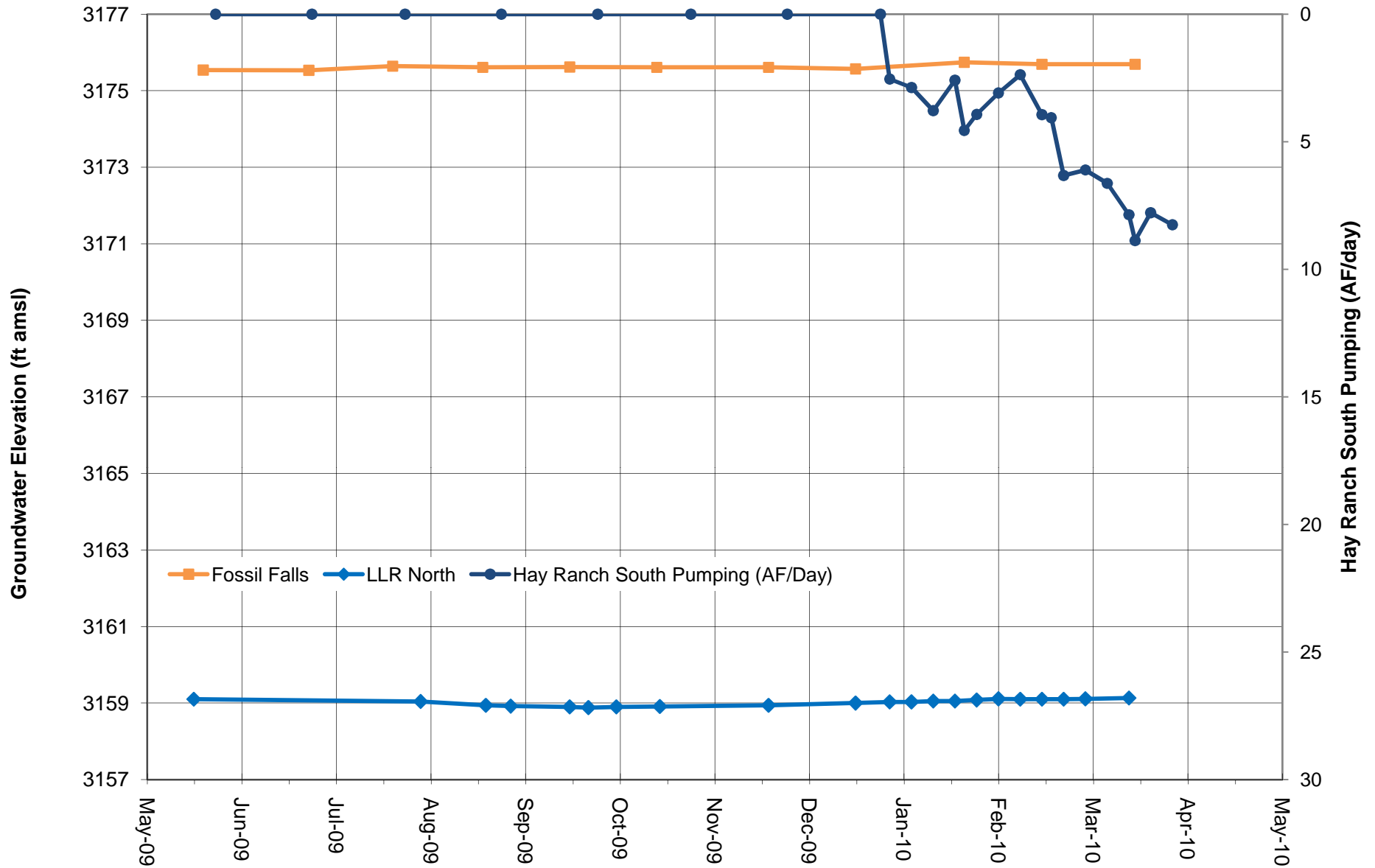
Note: Groundwater elevation data based on manual depth-to-water measurements.
Hay Ranch pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 9
GROUNDWATER ELEVATION and HR SOUTH PUMPING:
18-28 and Cinder Road



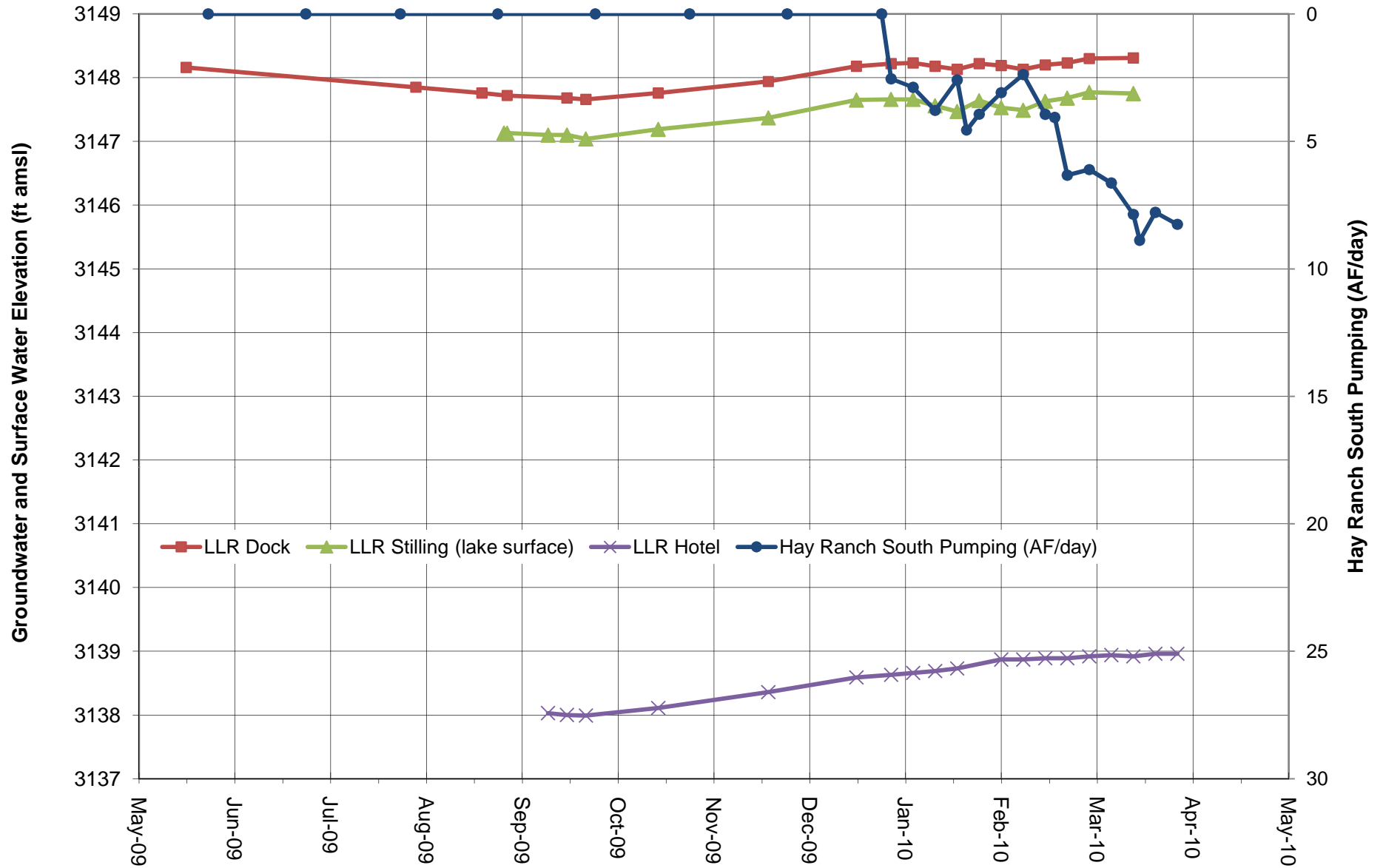
Note: Groundwater elevation data based on manual depth-to-water measurements.
Hay Ranch South pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 10
GROUNDWATER ELEVATION and HR SOUTH PUMPING:
Fossil Falls and LLR North



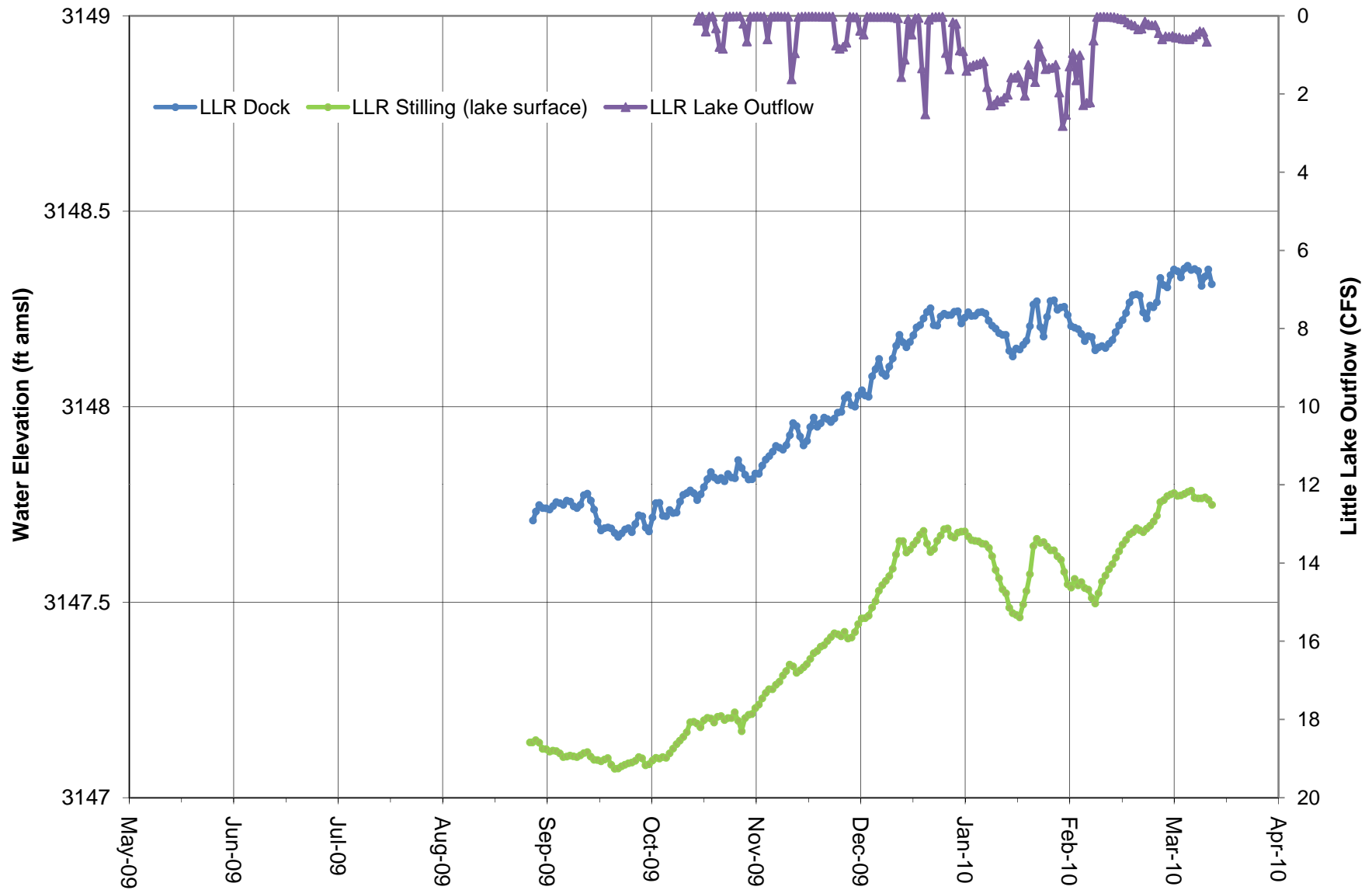
Note: Groundwater elevation data based on manual depth-to-water measurements.
Hay Ranch South pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 11
WATER ELEVATION and HR SOUTH PUMPING:
LLR Dock, LLR Stilling and LLR Hotel



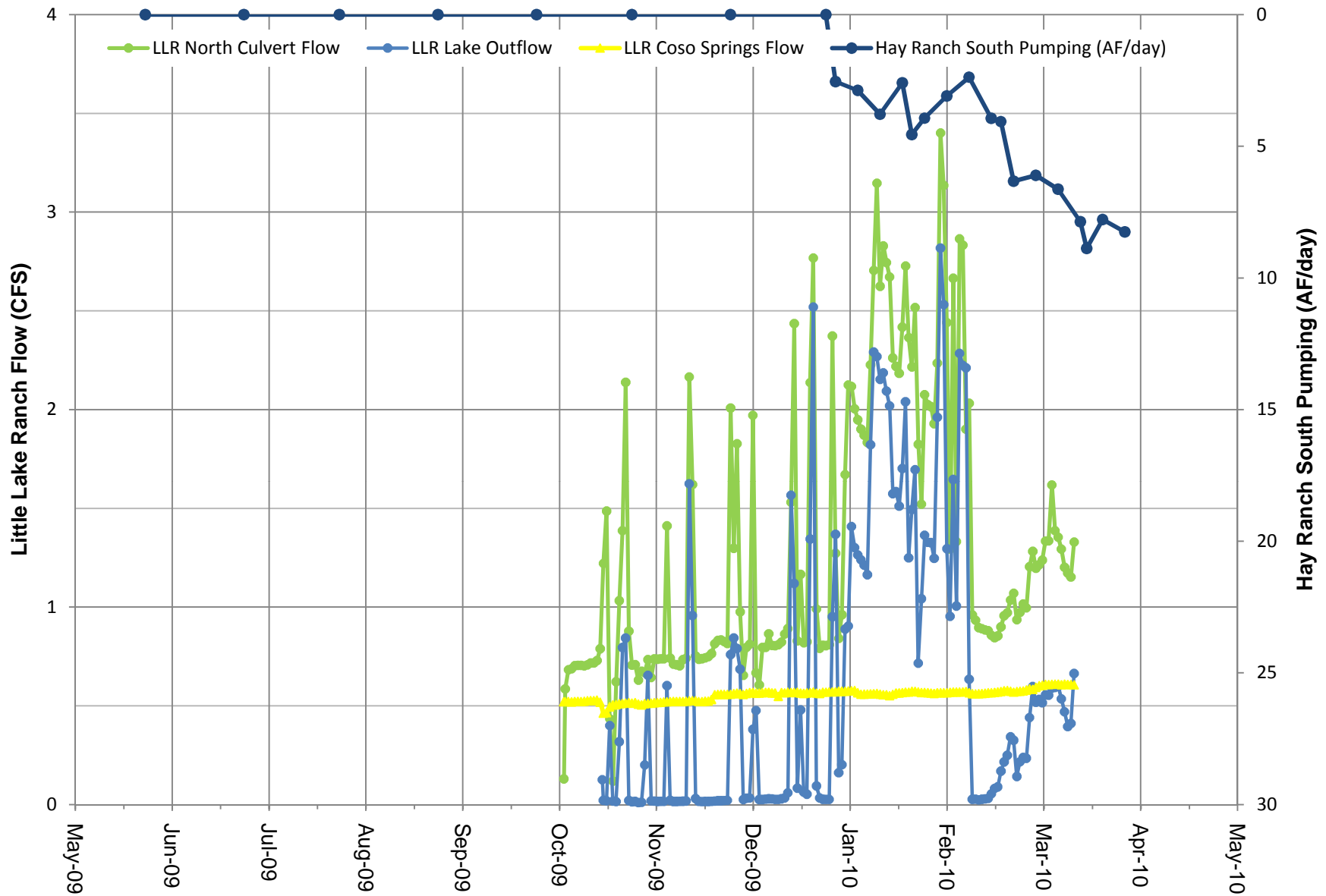
Note: Groundwater and surface water elevation data based on manual depth-to-water measurements.
 Hay Ranch South pumping is average acre feet per day.
 Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 12
WATER ELEVATION and LITTLE LAKE OUTFLOW:
LLR Dock and LLR Stilling



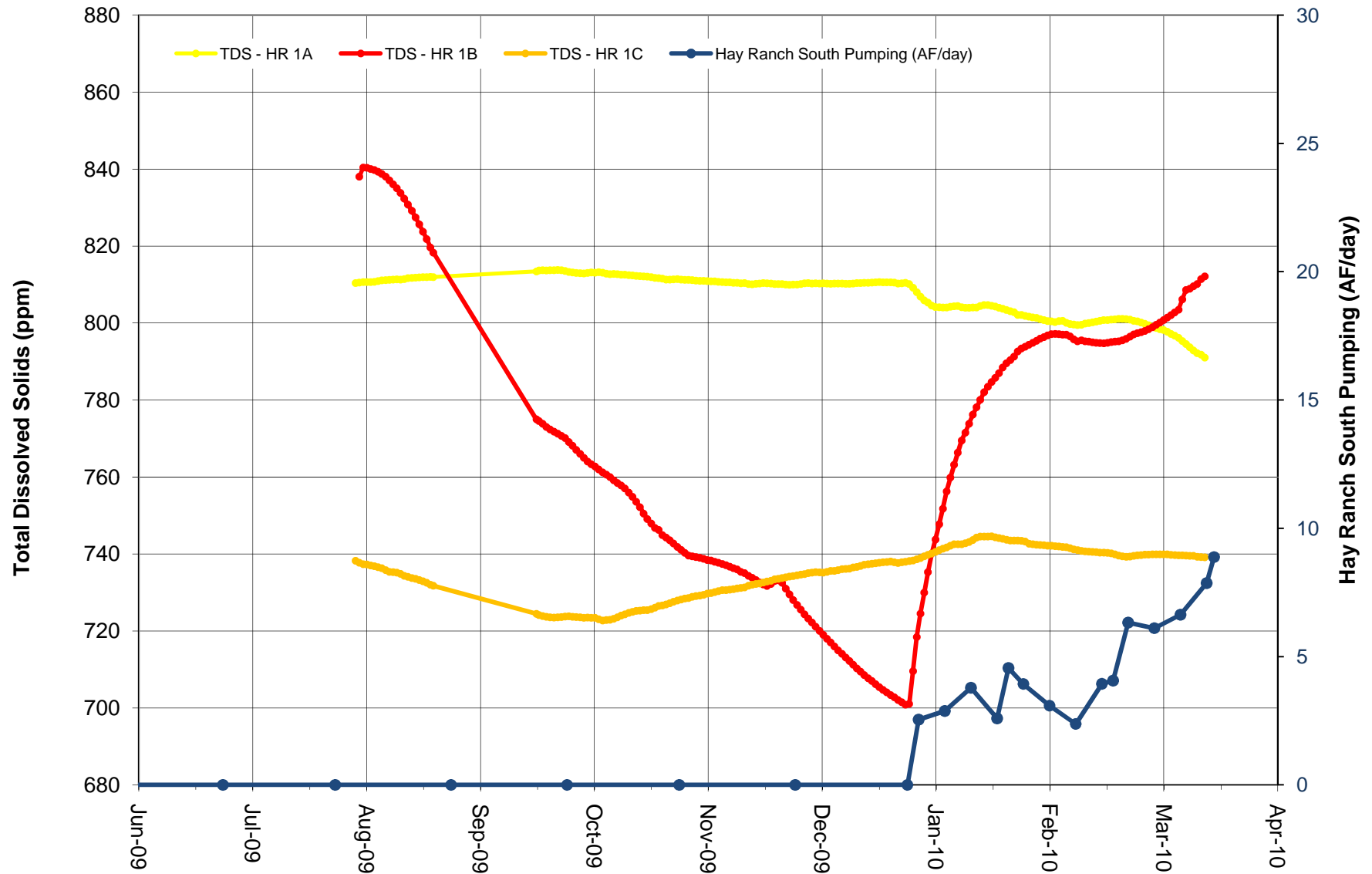
Note: Groundwater and surface water elevations based on pressure transducer data.
 Little Lake Outflow based on pressure transducer data; flow is cubic feet per second.
 Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 13
 LLR FLOW and HR SOUTH PUMPING:
 North Culvert, Coso Springs and Little Lake Outflow



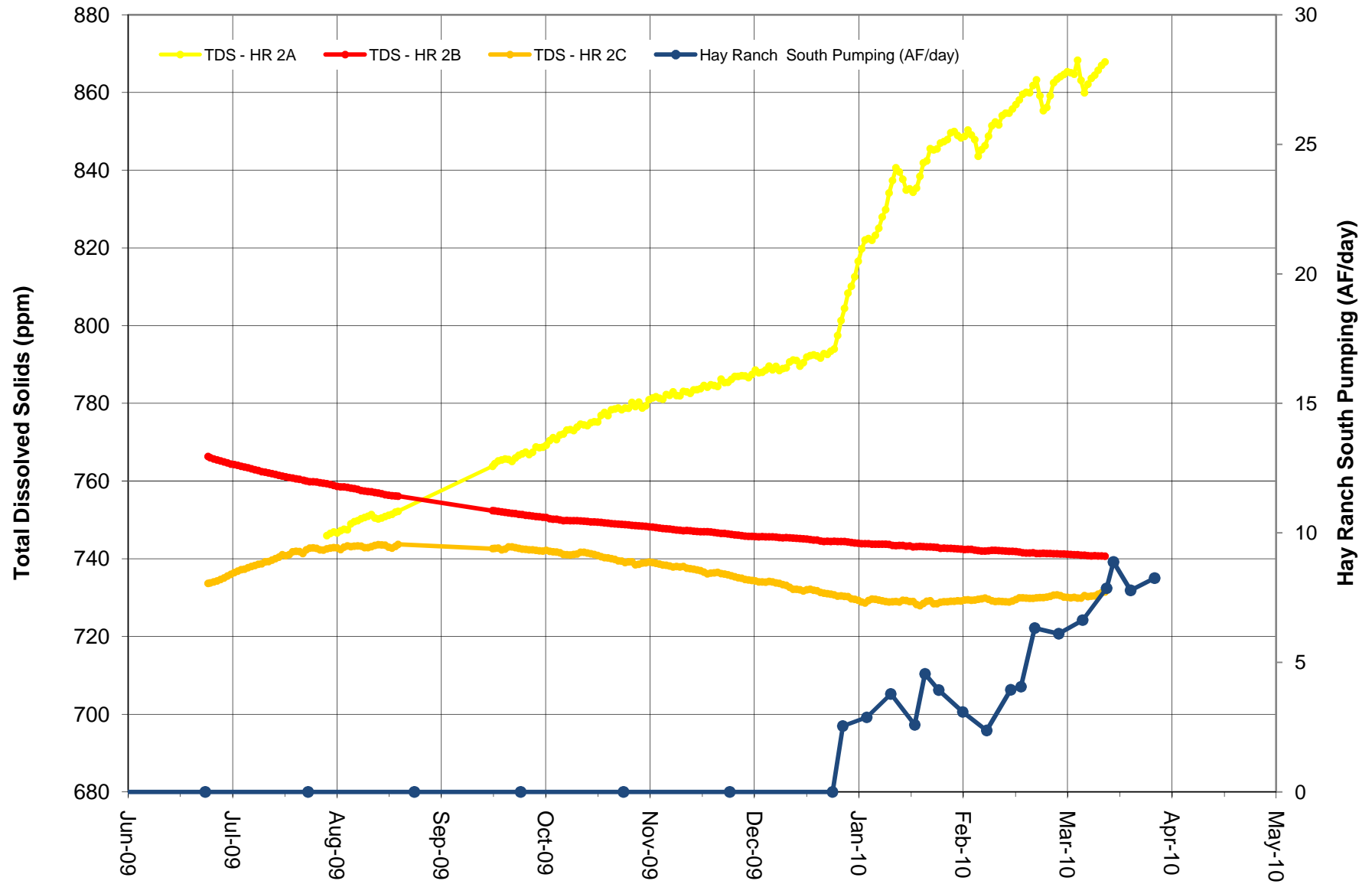
Note: Little Lake Ranch Flows are cubic feet per second.
 HR South pumping is average acre feet per day.
 Flows at Little Lake Outflow and North Culvert are influenced both by natural and water management processes at LLR.

FIGURE 14
TOTAL DISSOLVED SOLIDS and HR SOUTH PUMPING:
HR 1A, HR 1B and HR 1C



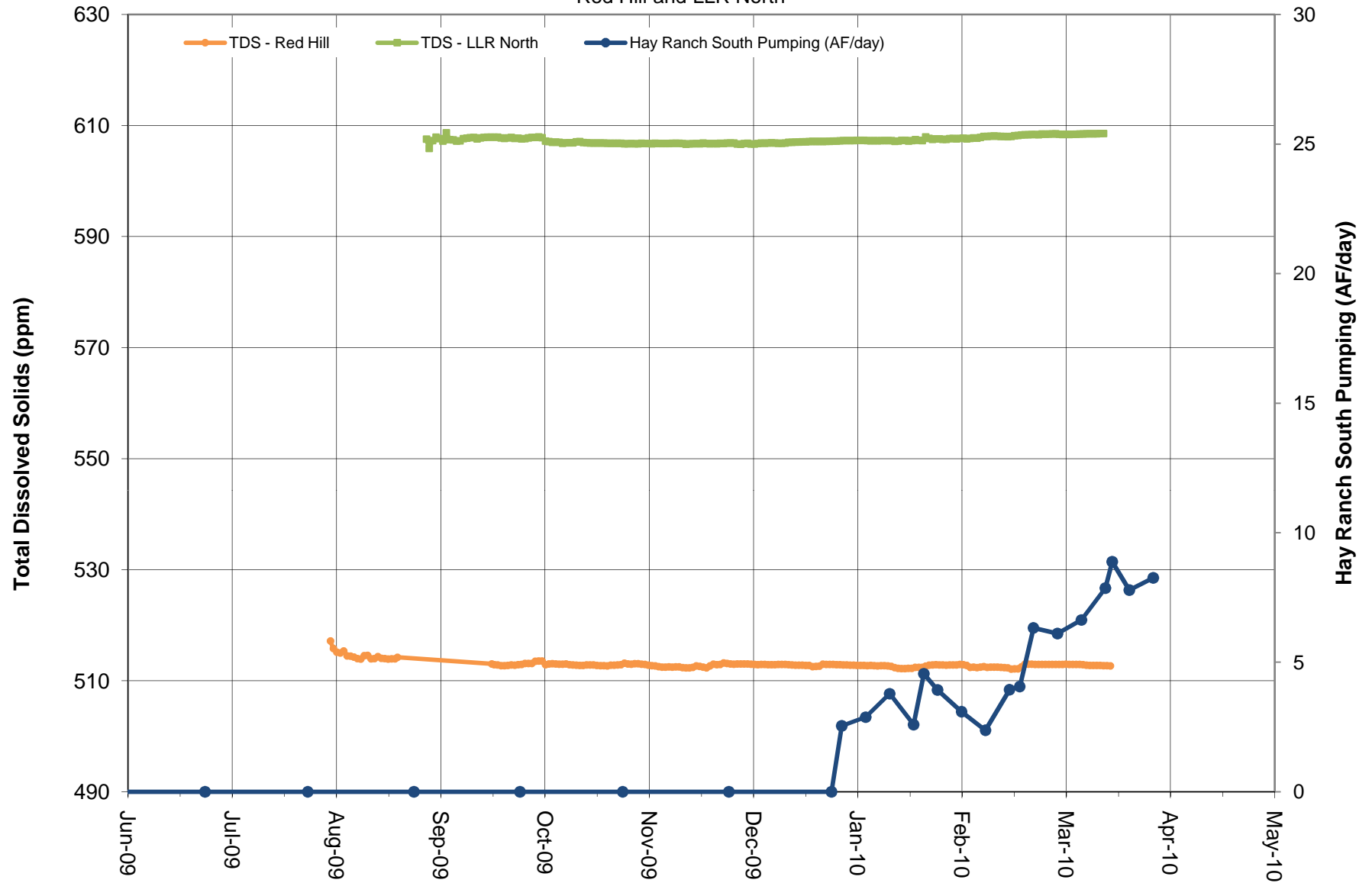
Note: TDS data from in-well transducers. HR South pumping is average acre feet per day.
Screened intervals: HR 1A 170-260 feet; HR 1B 490-540 feet; HR 1C 340-405 feet.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 15
TOTAL DISSOLVED SOLIDS and HR SOUTH PUMPING:
HR 2A, HR 2B and HR 2C



Note: TDS data from in-well transducers. HR South pumping is average acre feet per day.
 Screened intervals: HR 2A 180-300 feet; HR 2B 519-584 feet; HR 2C 370-420 feet.
 Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

FIGURE 16
TOTAL DISSOLVED SOLIDS and HR SOUTH PUMPING:
Red Hill and LLR North



Note: TDS data from in-well transducers. HR South pumping is average acre feet per day.
Coso Operating initiated Hay Ranch Project pumping on 12/25/09.

APPENDIX A

**ROSE VALLEY BASELINE WATER LEVEL ANALYSIS
PREPARED BY SCHLUMBERGER WATER SERVICES
JANUARY 19, 2010**

TECHNICAL MEMORANDUM



To: Bob Harrington, Ph.D.
Company: Inyo County Water Department
Copy to: Chris Ellis, Coso Operating Company
SWS Ref: 2815
From: Steve Brooks
Date: January 19, 2010
Pages: 5 including this page and attached table

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ROSE VALLEY BASELINE WATER LEVEL ANALYSIS

The following technical memorandum describes our analysis of the background water level data collected by various parties as part of the Hay Ranch groundwater extraction project. This work was completed as part of identifying an initial set of baseline groundwater levels to be used for comparing both spatial and temporal changes in water levels across the Rose Valley basin and their relationship to groundwater extraction at the Hay Ranch.

Difficulties in establishing baseline groundwater levels for any groundwater impact analysis are complicated by:

1. Natural and anthropogenic stresses on the aquifer system that can occur at both a regular and irregular frequency, and occur over time spans varying from hours to years create trends that need to be understood.
2. The spatial (both lateral and vertical) heterogeneity present in all natural groundwater systems can result in highly variable responses to aquifer stresses.
3. Consistency in field measurements is required to minimize instrumentation and human error, and facilitate clarity with data interpretation.

Examples of natural aquifer stresses include; tidal forces, barometric pressure changes, precipitation induced recharge, evapotranspiration and changes in subsurface inflows and outflows due to changes in groundwater gradients between basins. These stresses can have temporal variability that range from hourly (tidal and barometric pressure) to seasonal or annual (recharge and subflow). Examples of anthropogenic stresses include groundwater pumping, artificial recharge and the operation of surface water features such as reservoirs, canals and lakes. Depending on the distance between the stress and the area of concern these can have temporal variability ranging from days to months.

All groundwater basins are affected by the natural aquifer stresses listed above; however over the short-term (days to weeks) these are often overwhelmed by the anthropogenic stresses present. Over the longer-term, sufficient data can commonly be collected to reliably filter out or account for water level changes from natural stresses. The Rose Valley is both “blessed” and “cursed” with an absence of anthropogenic stresses. The absence of groundwater pumping of any magnitude indicates that groundwater level changes due to Hay Ranch pumping can be more precisely measured; however this has also resulted in a mindset whereby it has been assumed that water level changes on the order of tenths of a foot can be used as a clear indication of impacts from Hay Ranch pumping. Such magnitudes of change may have some relevance in the future for wells close to Little Lake, but not until the natural aquifer stresses and their role in groundwater level trends are better understood. Presently we do not understand the natural variability in groundwater levels on a daily, seasonal or annual time-scale well enough to use one-time, site-specific measurements to attribute water level changes to any specific cause. However, this problem is not unique to the Rose Valley and is the case in virtually all regulated groundwater basins. The methods used to accommodate this problem within the regulatory framework include:

- 1) Conduct monitoring at appropriate locations and frequency to allow for an early-warning of possible impacts.
- 2) Analyze the monitoring data in their entirety so as to properly assess what, if any, other phenomena may be impacting groundwater levels.
- 3) Rely on average groundwater levels over a representative period of time.
- 4) Utilize data trends to provide confirmation as to the potential cause of a change in groundwater levels.

The current HMMP incorporates No. 1, and indirectly incorporates Nos. 2 and 3 through the subjective analysis of the data by the Inyo County Water Department technical group. No. 4 was to be used in conjunction with the background data set to identify suitable baseline groundwater levels; however, the presence of a number of trends of unknown cause combined with anomalous water level changes that could not be attributed to any known cause requires additional data collection prior to establishing baseline water levels. A summary analysis of the existing water level dataset is provided in Table 1. As can be observed in Table 1, many of the data ranges (difference between the highest water level and lowest) are approximately 0.70 feet or less with a typical diurnal fluctuation of 15% or more of this value. It is recommended that the HR1 and HR2 cluster wells not be used as trigger wells at this time, but rather are used to better understand the water level responses at the Cal-Pumice and Coso Store and Coso Ranch wells. The reason for this is that the depth-specific construction of the cluster wells is not consistent with the groundwater model construction used to determine the trigger levels. In the model the pumping from the Hay Ranch wells was assigned assuming a relatively uniform vertical extraction profile, whereas the data from the cluster wells is indicating a much greater degree of vertical heterogeneity. As a result, the model is not an appropriate tool for evaluating depth-specific drawdown at these wells at this time.

Based on these observations, and in an effort to protect both other groundwater users in the basin and Coso's right to pump groundwater, it is recommended that baseline water levels be established at the lowest value presently available through December 24, 2009, as these levels occurred with no Hay Ranch pumping and therefore occurred under natural conditions; and based on groundwater conditions near Little Lake have had no impact on groundwater flow towards and into the lake. Based on the available data the following levels have been developed:

Well #	Well Name	Preliminary Baseline WL Elev. (ft)
RV030	Cal Pumice	TBD – based on anomalous drop on 12/4/09
RV040	Dunmovin	3252.73 (see table 1)
RV060	HR1a	NA
RV061	HR1b	NA
RV062	HR1c	NA
RV080	HR2a	NA
RV081	HR2b	NA
RV082	HR2c	NA
RV090	Coso Junction Ranch	3230.65
RV100	Coso Junction Store #1	3227.59 (see table 1)
RV120	Red Hill	3200.66
RV130	G-36	3198.35
RV140	Lego	3199.21
RV150	Cinder Road	3186.92
RV160	18-28	3187.67
RV180	LLR North	3158.88

NA – not appropriate at this time

However, while the additional data collection is occurring it is also recommended that a high degree of care be taken to collect good quality, consistent water level information from the Coso Junction Ranch, G36 and Red Hill wells as they will provide the best early-warning information regarding a larger-than-expected impact from Hay Ranch pumping. Groundwater extraction data (total extracted and times if possible) from the Dunmovin and Coso Junction area should also be collected. Wells G36 and Red Hill, in particular, are suitably far from the Hay Ranch and any other obvious groundwater system stress that they should provide a relatively stable dataset and one with more discernible trends. The establishment of baseline water levels should be re-addressed after the winter precipitation season has ended. At that time a more robust baseline level including an accounting for diurnal fluctuations should be more readily developed.

Table 1
Summary of Background Water Level Data Through Dec. 24, 2009

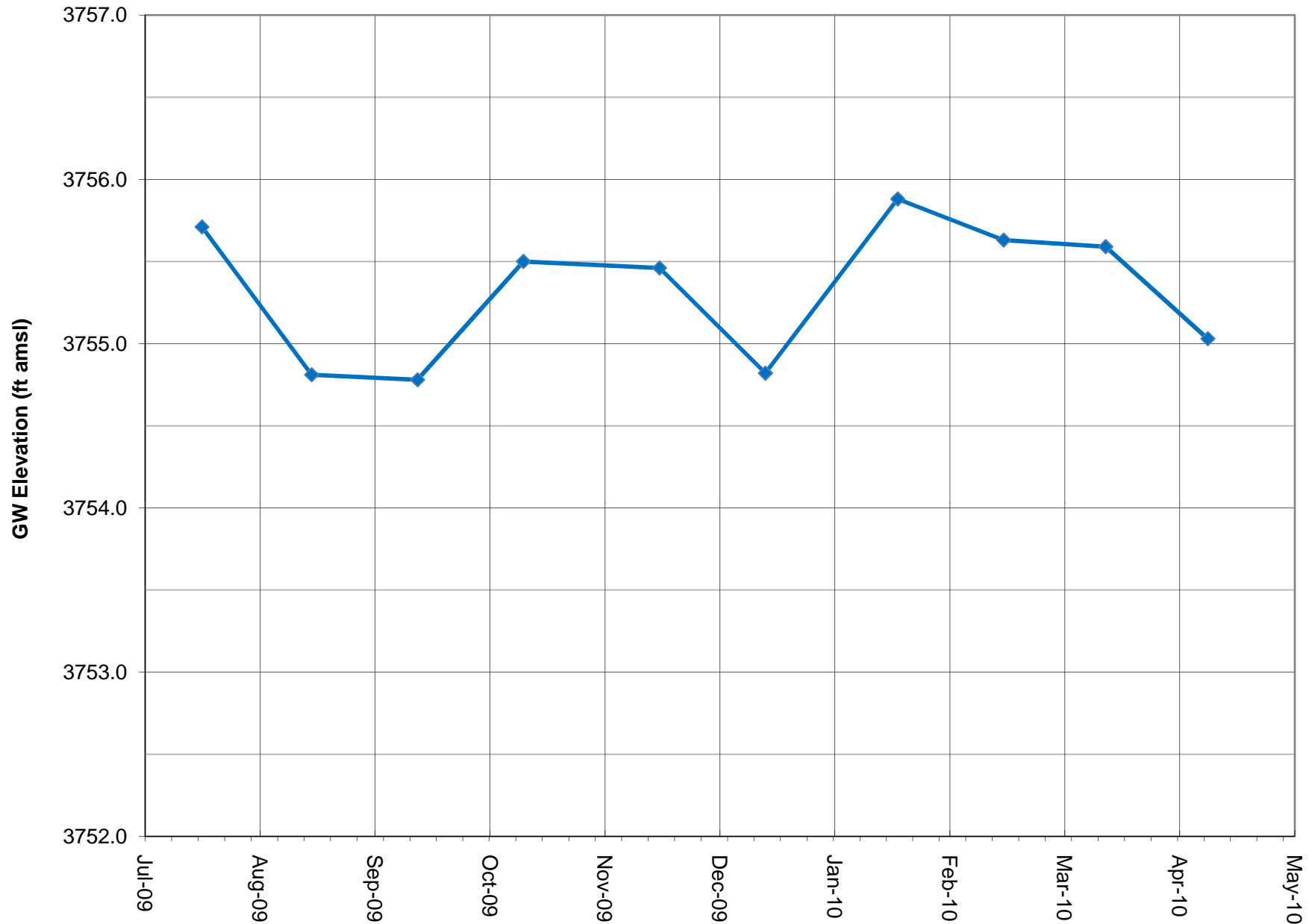
Well Id	Well Name	Period of Record	Data Range over Period of Record (ft)	Data Range in 2009 (ft)*	Maximum WL	Date of Maximum WL	Minimum WL	Date of Minimum WL	Typical Diurnal Variation (ft)	comments
RV010	Enchanted Village	7/21/09-12/17/09	0.93	0.93	3755.71	7/21/2009	3754.78	9/16/2009	NA	
RV020	LADWP V816	1/23/09-12/1/09	46.93	42.35	3442.79	3/11/1997	3395.86	4/9/2009	NA	Large water level change due to aquifer testing. 3259.90 is anomalously low and needs to be reconciled prior to assigning a baseline value.
RV030	Cal-Pumice	6/30/04-12/24/09	6.50	6.40	3266.43	10/25/2007	3259.90	12/17/2009	0.16	
RV040	Dunmovin	12/17/08-12/17/09	1.04	1.04	3253.11	8/19/2009 and 12/17/09	3252.07	9/16/2009	NA	
RV050	Hay Ranch North	9/30/02-11/19/09	7.02	1.85	3246.08	9/12/2007	3239.06	12/3/2007	0.19	Large water level change due to aquifer testing
RV060	HR1 Cluster Shallow	4/8/09-12/24/09	0.62	0.62	3244.69	6/8/2009	3244.07	6/24/2009	0.1	
RV061	HR1 Cluster Deep	4/8/09-12/24/09	0.22	0.22	3243.16	6/8/2009	3242.94	6/24/2009	0.1	
RV062	HR1 Cluster Mid	4/8/09-12/24/09	0.88	0.88	3246.24	6/8/2009	3245.36	6/24/2009	0.1	
RV070	Hay Ranch South	9/30/02-10/14/09	3.15	0.27	3241.78	9/16/2009	3238.63	9/30/2002	NA	
RV080	HR2 Cluster Shallow	4/8/09-12/24/09	0.25	0.25	3241.17	6/8/2009	3240.92	6/24/2009	0.24	
RV081	HR2 Cluster Deep	4/8/09-12/24/09	0.13	0.13	3238.58	6/8/2009 and 7/23/09	3238.45	6/24/2009	0.1	
RV082	HR2 Cluster Mid	5/15/09-12/24/09	0.25	0.25	3242.76	6/8/2009	3242.51	6/24/2009	0.08	
RV090	Coso Junction Ranch	1/13/03-12/17/09	2.14	0.17	3232.79	11/15/2007	3230.65	1/13/2003	0.12	
RV100	Coso Junction Store	11/21/02-12/24/09	2.67	0.92	3229.92	12/17/2009	3227.25	3/20/2003	0.13	WLs complicated by pumping, however general rising trend agrees with rest of basin. 3227.25 may be artificially low due to pumping, recommend using 3227.59
RV110	Davis Ranch 1	9/16/09-12/17/09	0.01	0.01	3886.53	12/17/2009	3886.52	10/15/2009	0	
RV111	Davis Ranch 2	10/15/09-12/17/09	1.02	1.02	3887.76	12/17/2009	3886.74	10/15/2009	0.01	
RV120	Red Hill Well	5/7/09-12/17/09	0.12	0.12	3200.78	7/21/2009	3200.66	10/14/2009	0.08	
RV130	G36	11/5/02-12/17/09	1.55	0.17	3199.90	11/19/2009	3198.35	11/21/2002	NA	Two lower elevations in 2002 appear anomalous.
RV140	Lego	2/11/03-12/17/09	1.47	0.58	3200.68	7/21/2009	3199.21	2/18/2003	0.4	
RV150	Cinder Road	11/21/08-12/17/09	0.14	0.12	3187.06	9/16/2009	3186.92	11/21/2008	0.08	
RV160	18-28	3/29/04-12/17/09	0.89	0.49	3188.56	5/8/2009 and 7/21/09	3187.67	3/29/2004	0.15	
RV170	Fossil Falls	10/1/02-12/17/09	0.29	0.11	3175.64	6/10/2005 and 7/21/09	3175.35	11/21/2002	NA	
RV180	LL North	11/19/07-12/24/09	0.22	0.22	3159.10	5/18/2009	3158.88	9/22/2009	0.02	
RV210	LL Dock	8/28/2009-12/24/09	0.52	0.52	3148.18	12/17/2009	3147.66	9/22/2009	0.02	
RV260	LL Hotel	9/22/09-12/24/09	0.60	0.60	3138.59	12/17/2009	3137.99	9/22/2009	0.02	

NA - insufficient data to determine

APPENDIX B

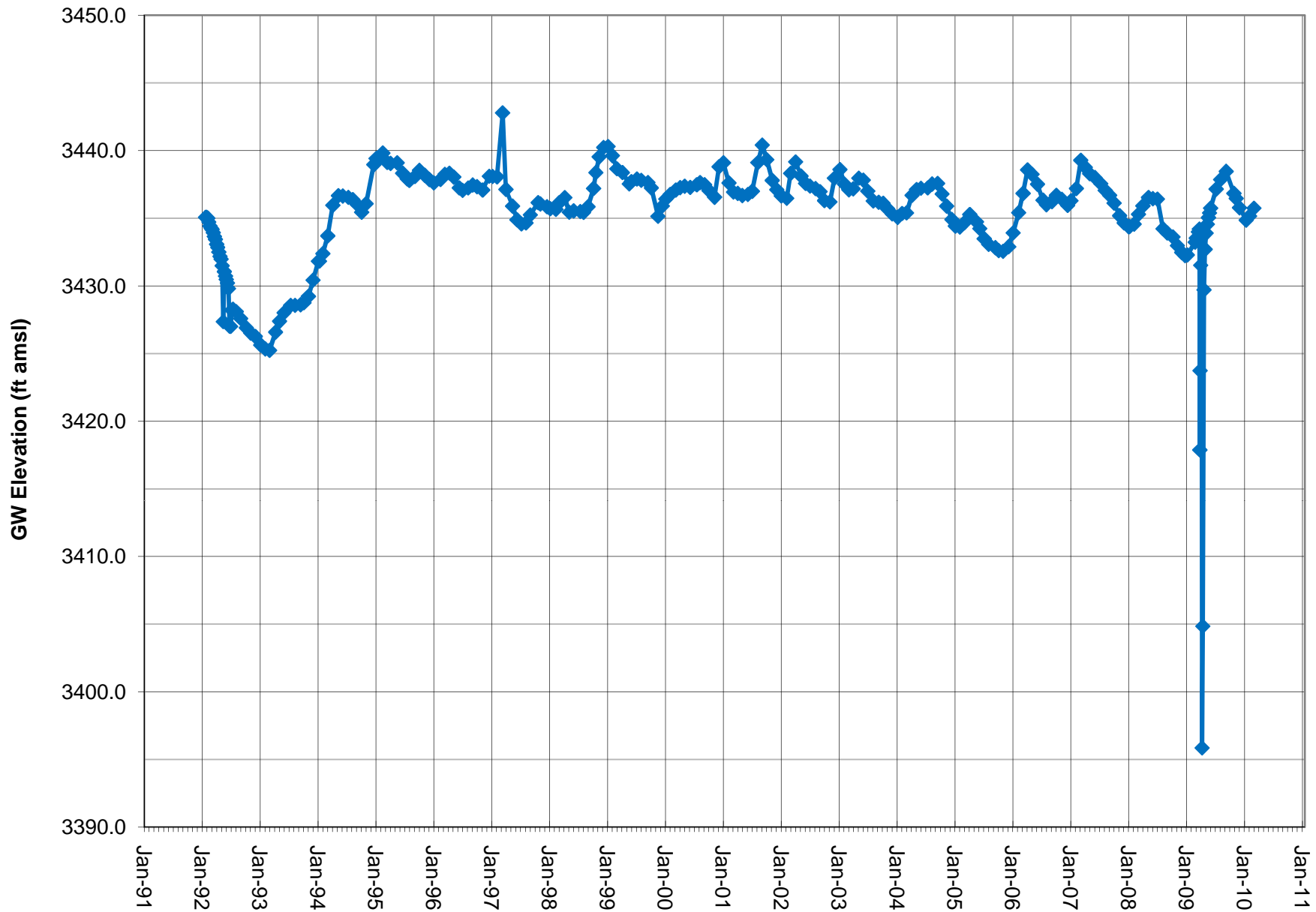
**HAY RANCH PROJECT CUP
MONTHLY HYDROGRAPHS
APRIL 13-14, 2010**

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV010 - Enchanted Village Well



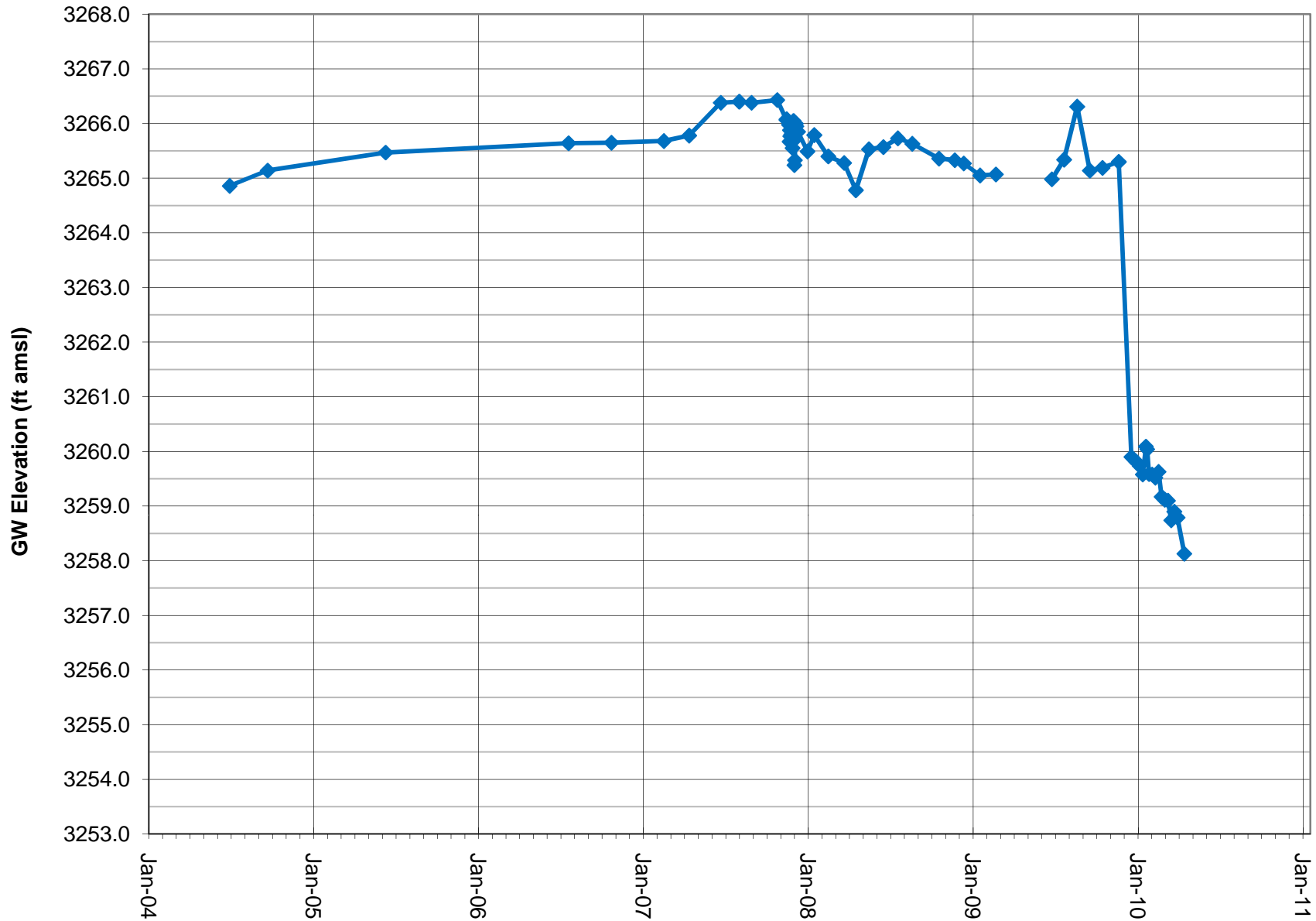
Note: Groundwater elevation data based on manual depth-to-water measurements.
DTW measured to .01 foot; GWE calculated using approximate surface elevation.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV020 - LADWP 816 Well



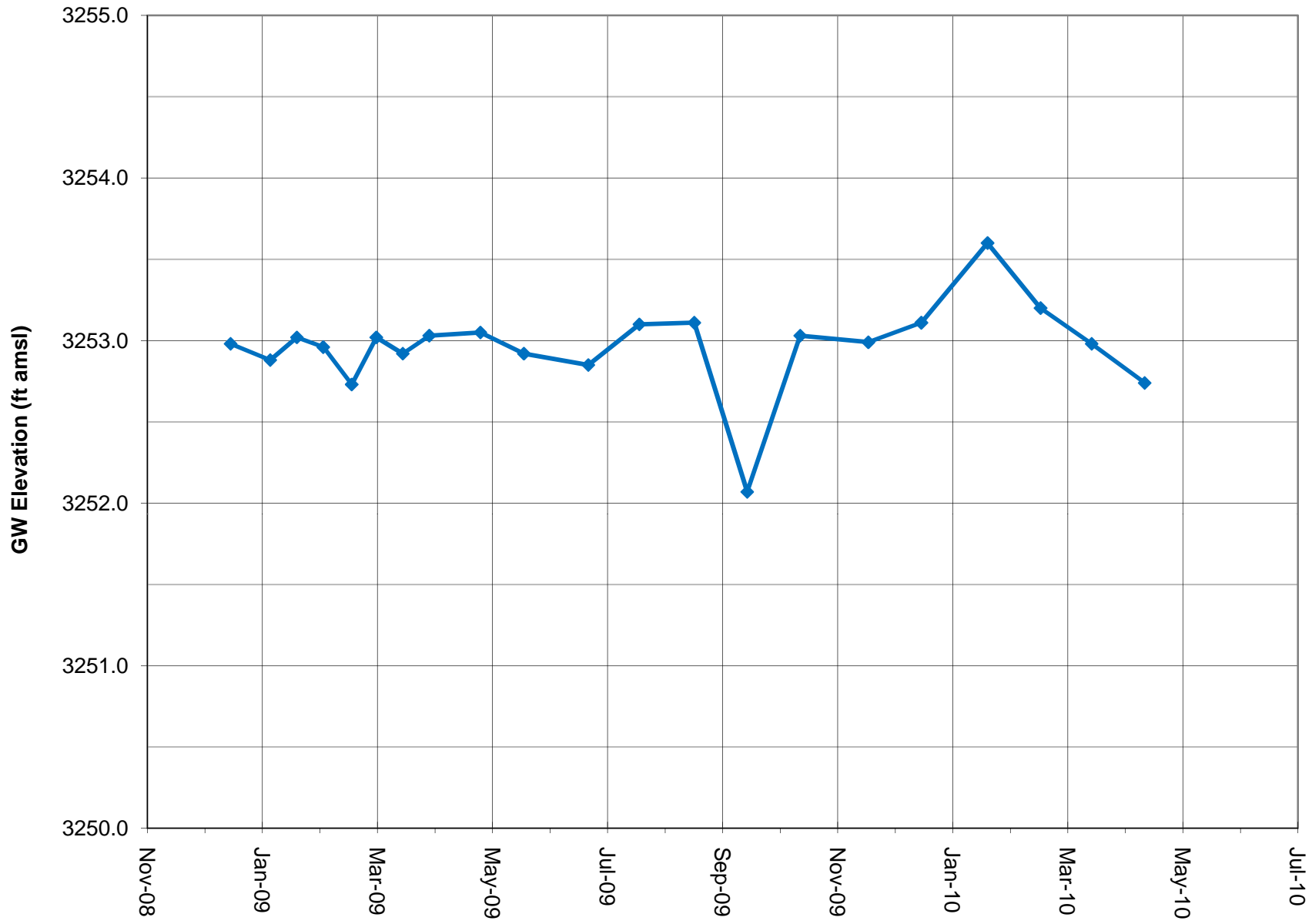
Note: Groundwater elevation data based on manual depth-to-water measurements.
LADWP conducted a groundwater pump test on a nearby well in the first quarter 2009.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) **RV030 - Cal Pumice Well**



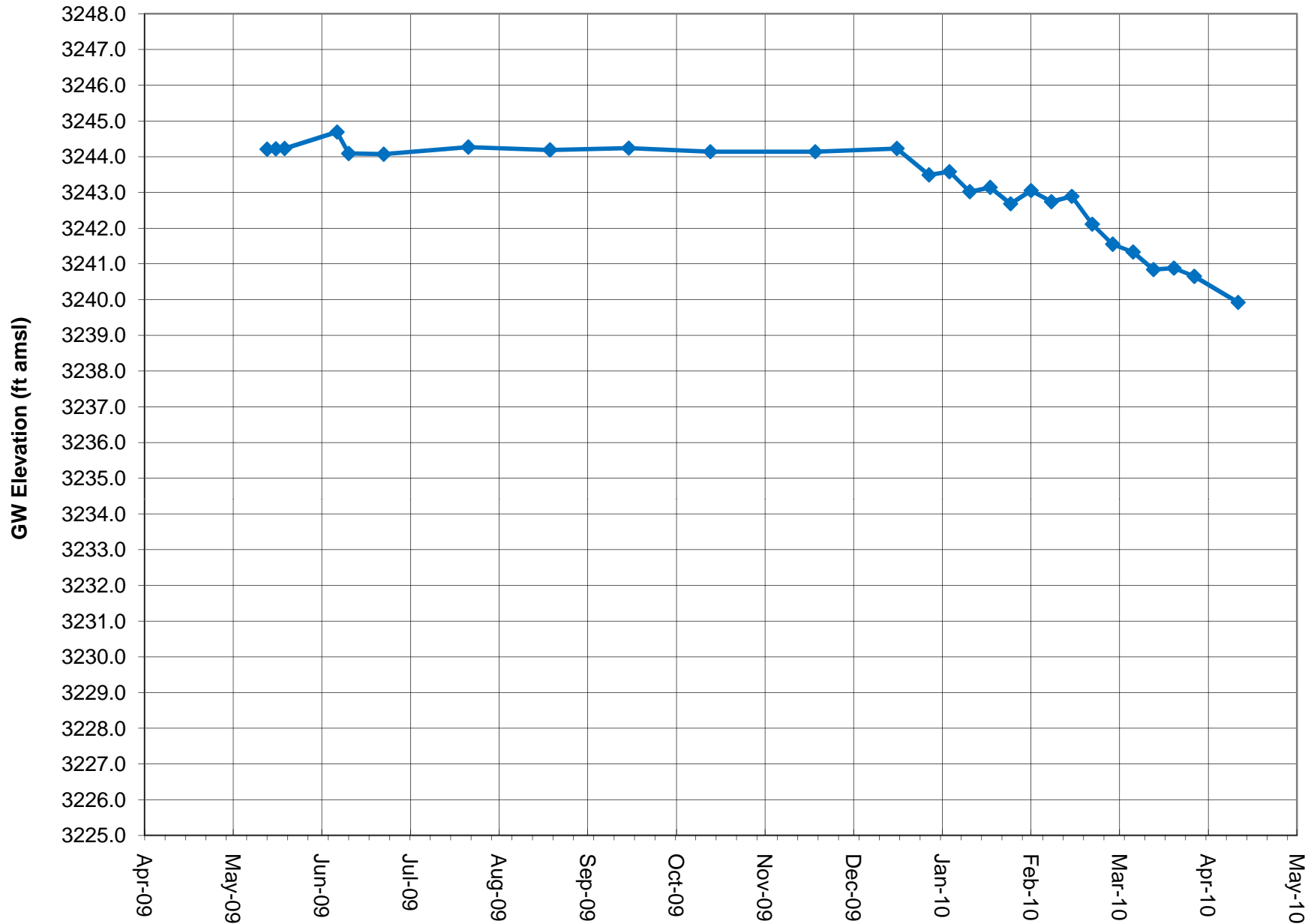
Note: A data gap exists in 2009 during a LADWP pump test on a nearby well.
 The notable DTW change from 11/19/09 to 12/17/09 was confirmed by in-well PT.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV040 - Dunmovin Well



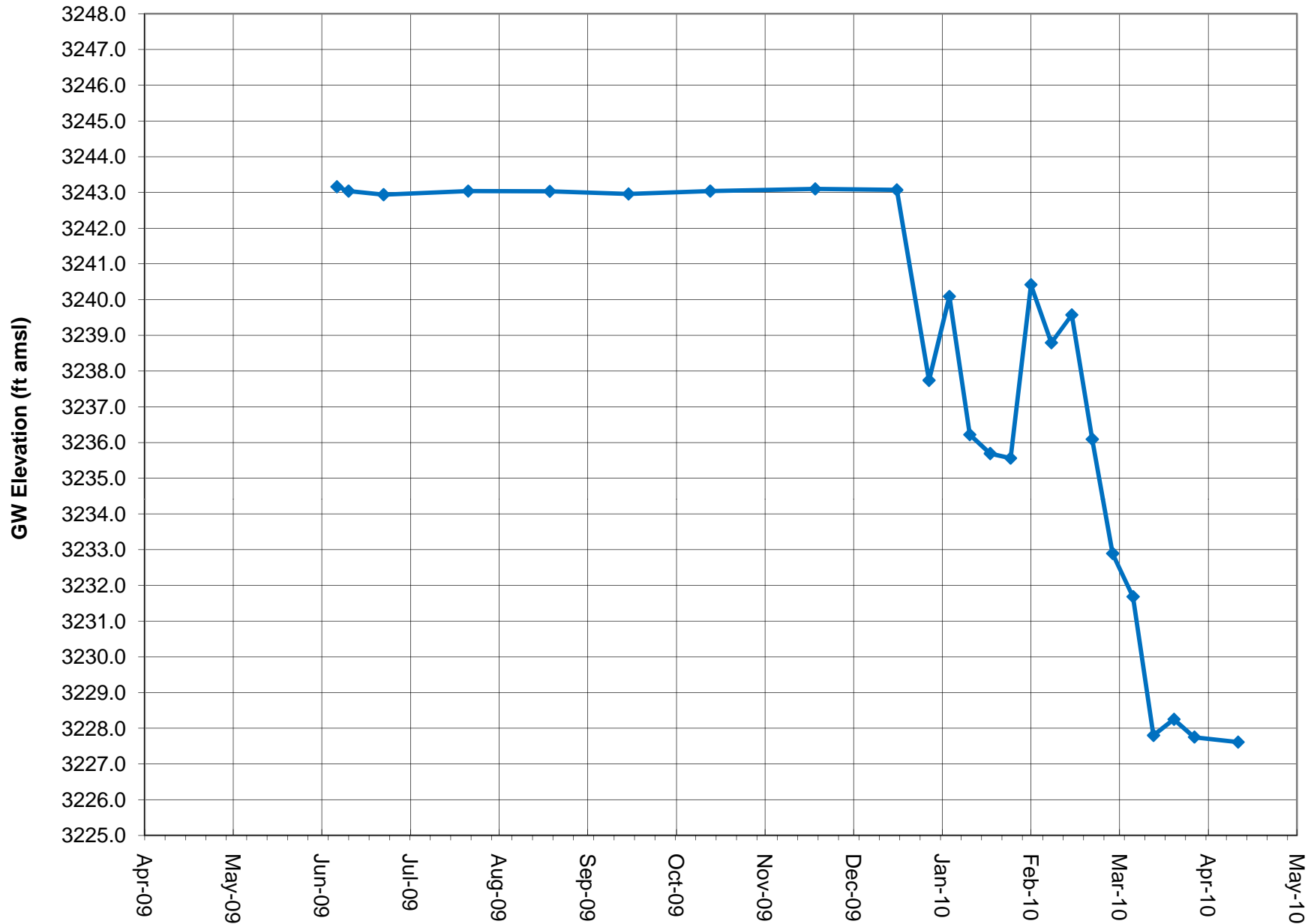
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Dunmovin Well is an active domestic supply well.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV060 - Hay Ranch 1A Well



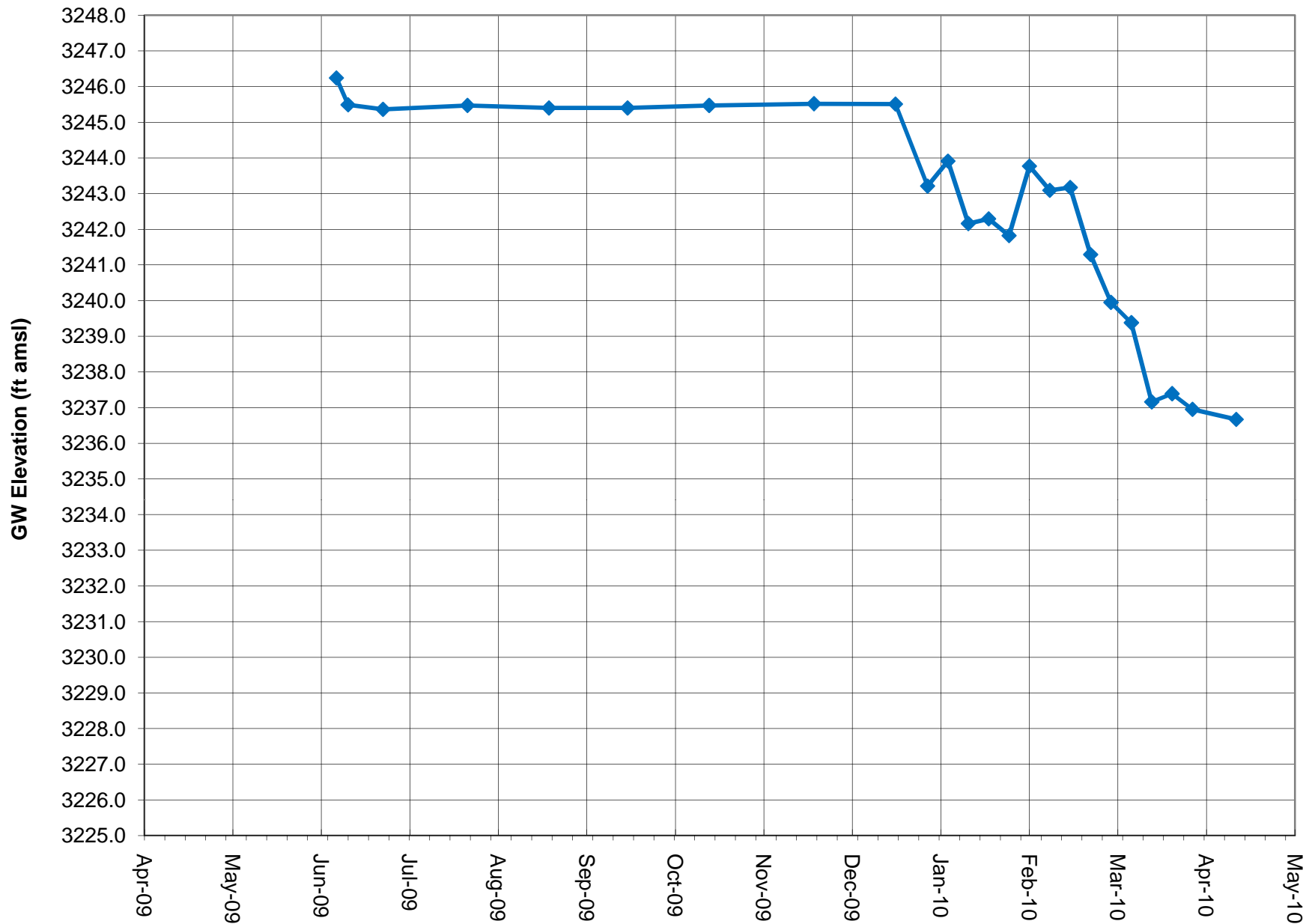
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Screened interval is 170-260 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV061 - Hay Ranch 1B Well



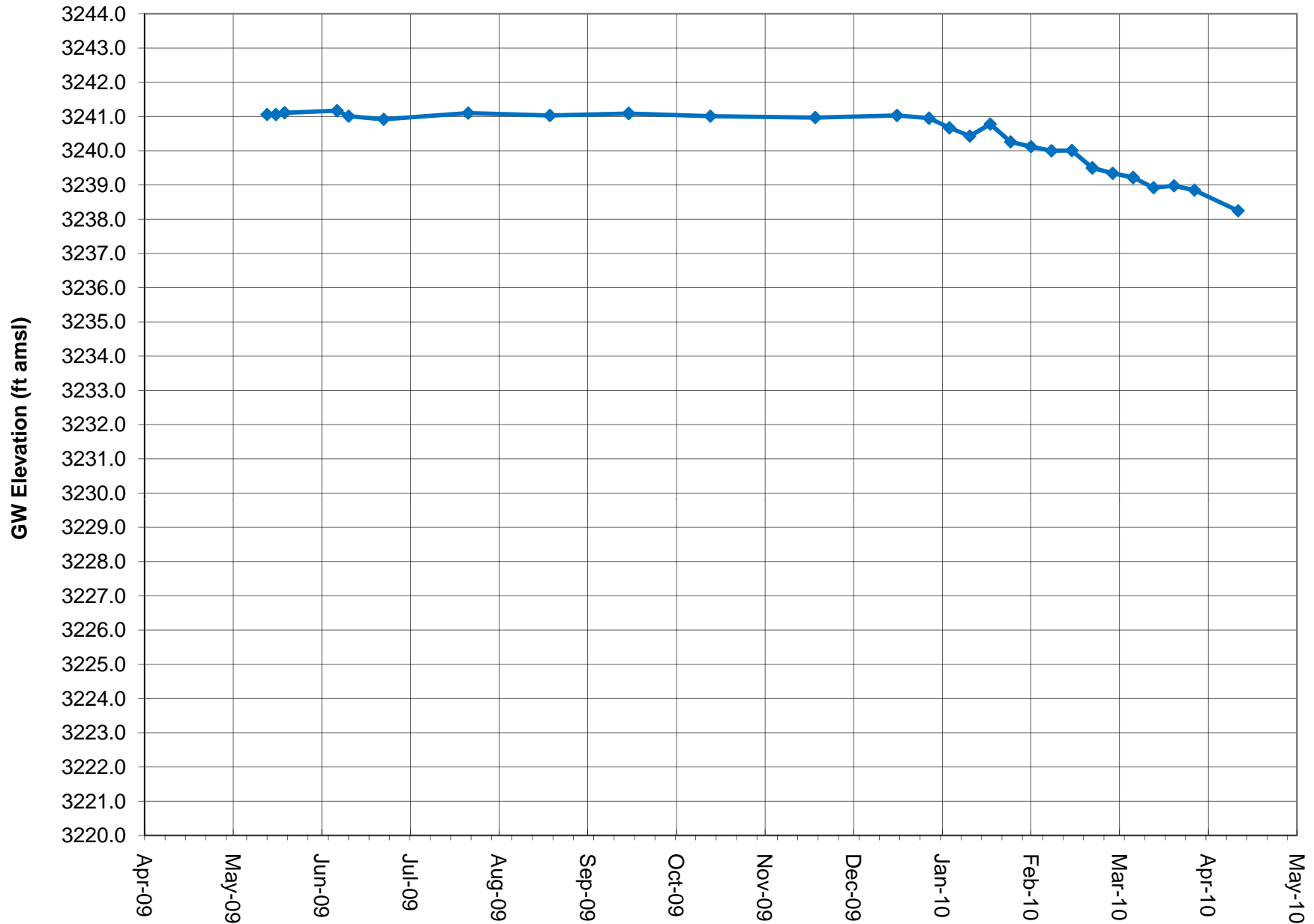
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Screened interval is 490-540 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV062 - Hay Ranch 1C Well



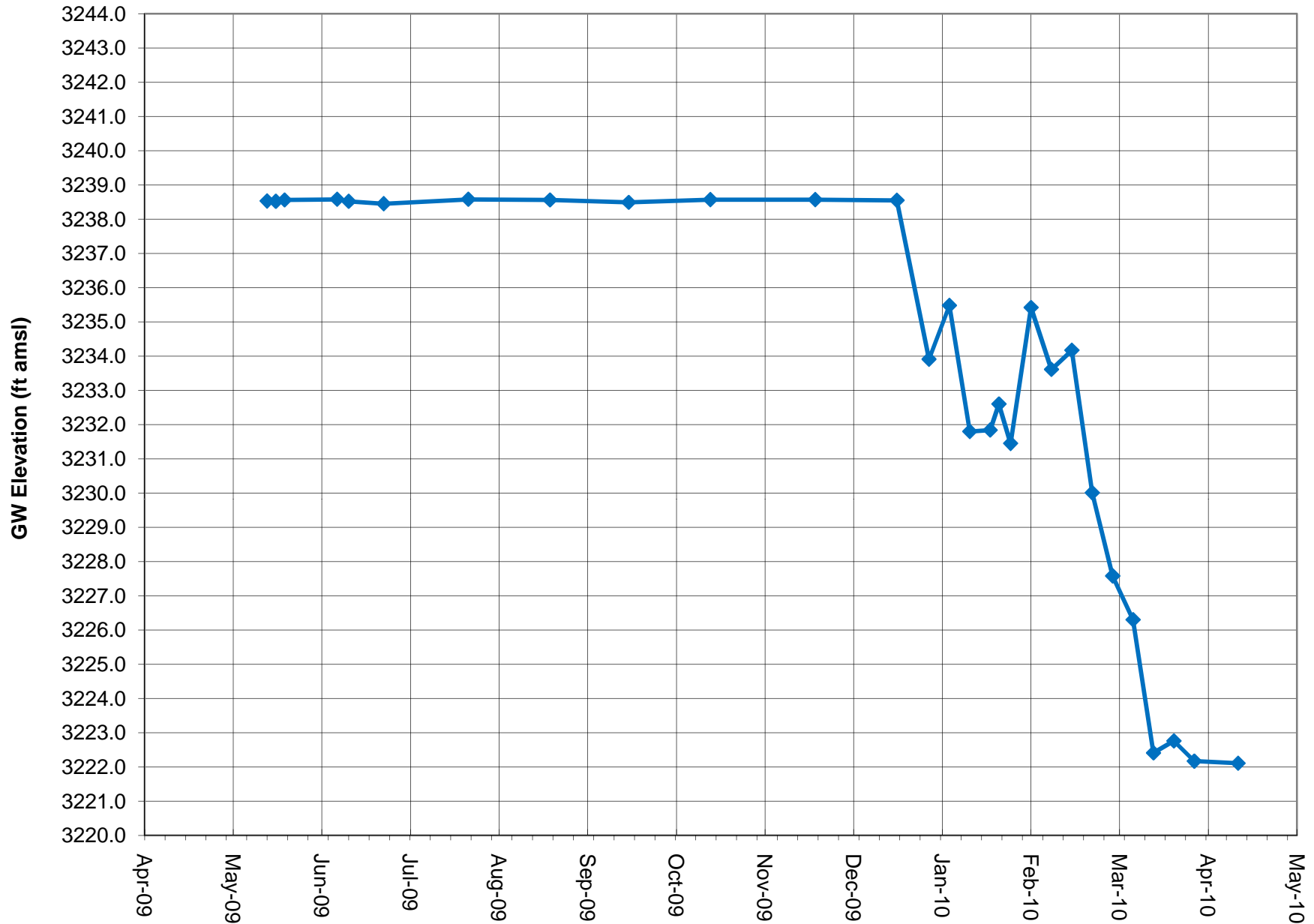
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Screened interval is 340-405 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV080- Hay Ranch 2A Well



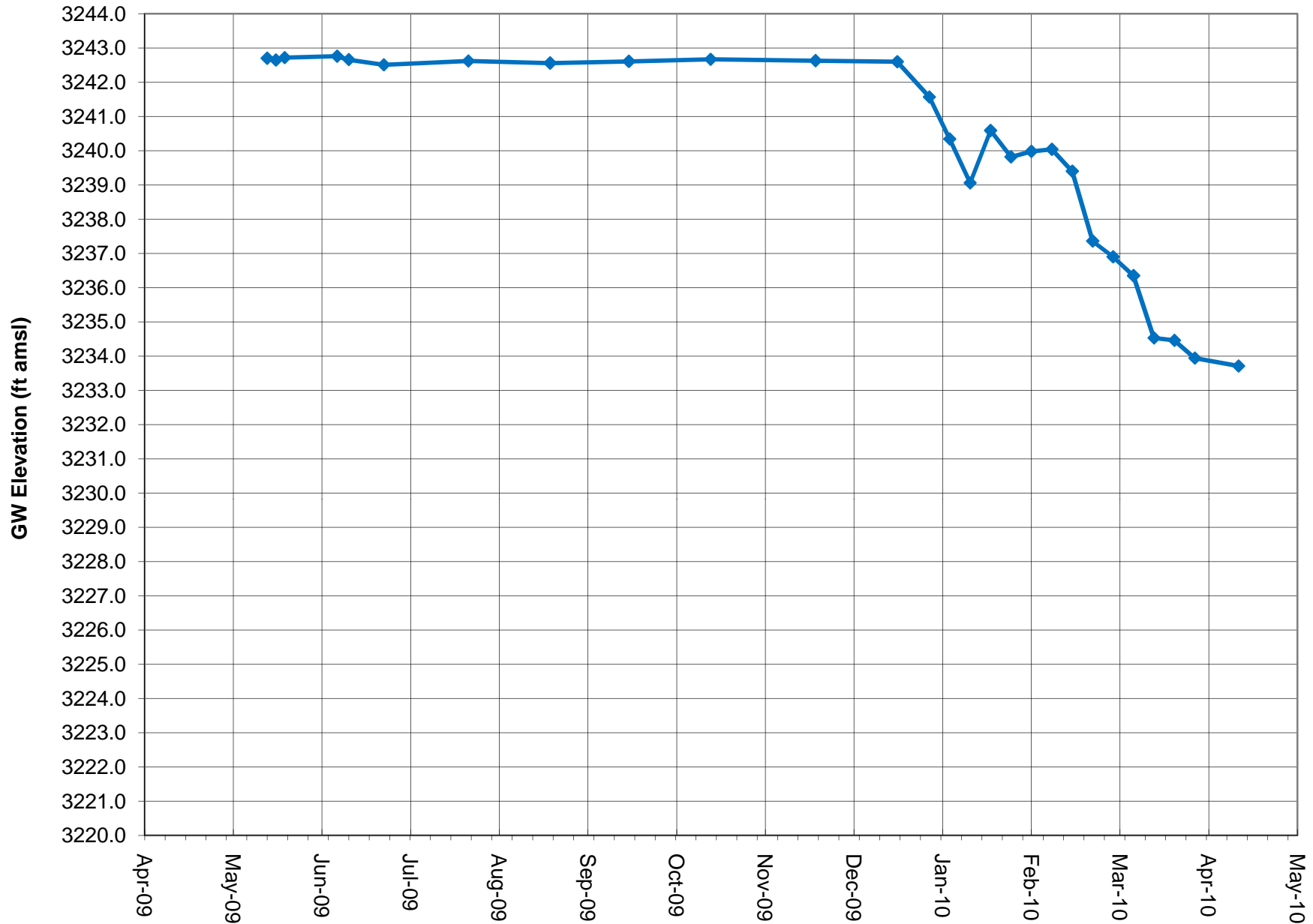
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Screened interval is 180-300 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV081 - Hay Ranch 2B Well



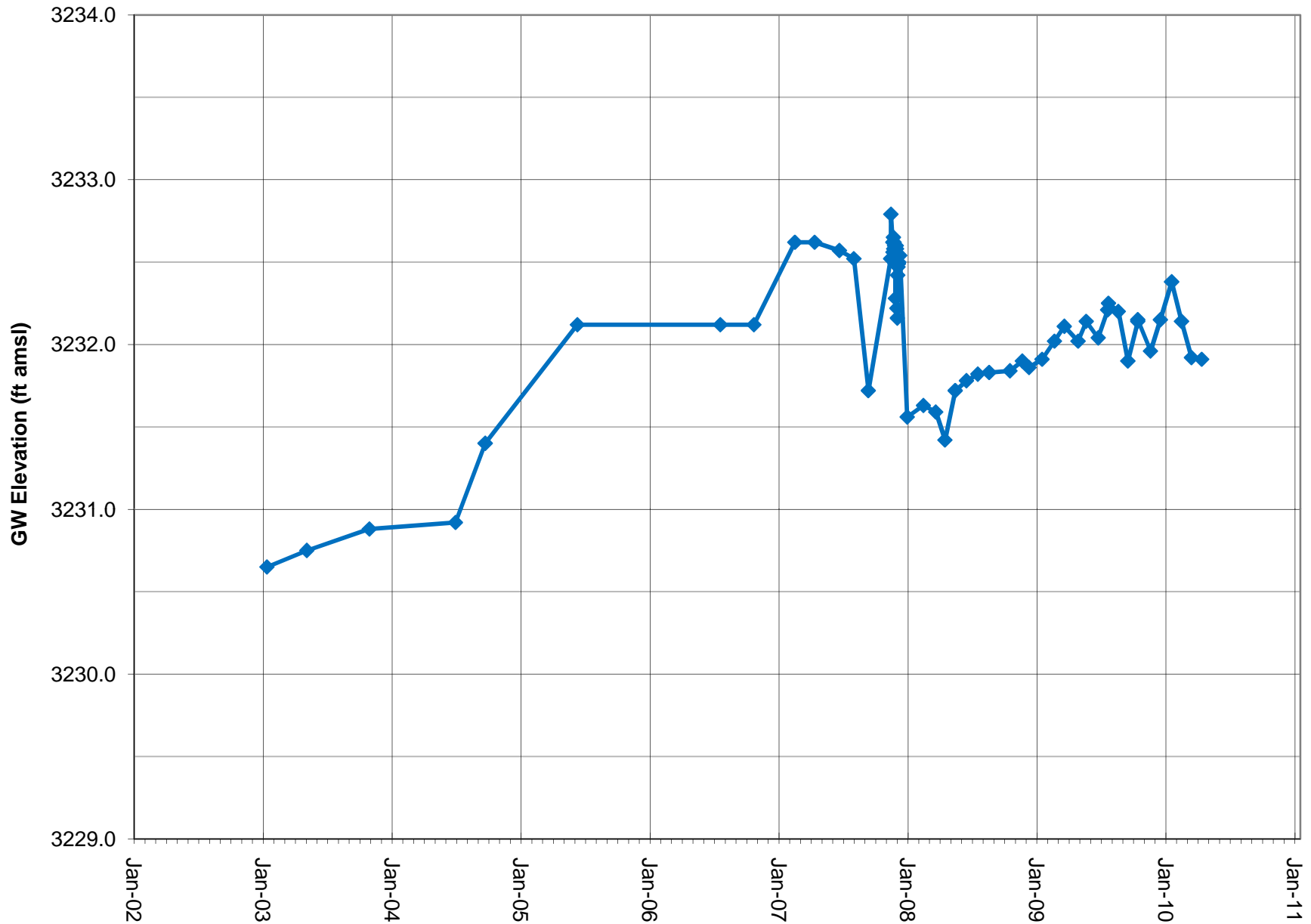
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Screened interval is 519-584 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV082 - Hay Ranch 2C Well



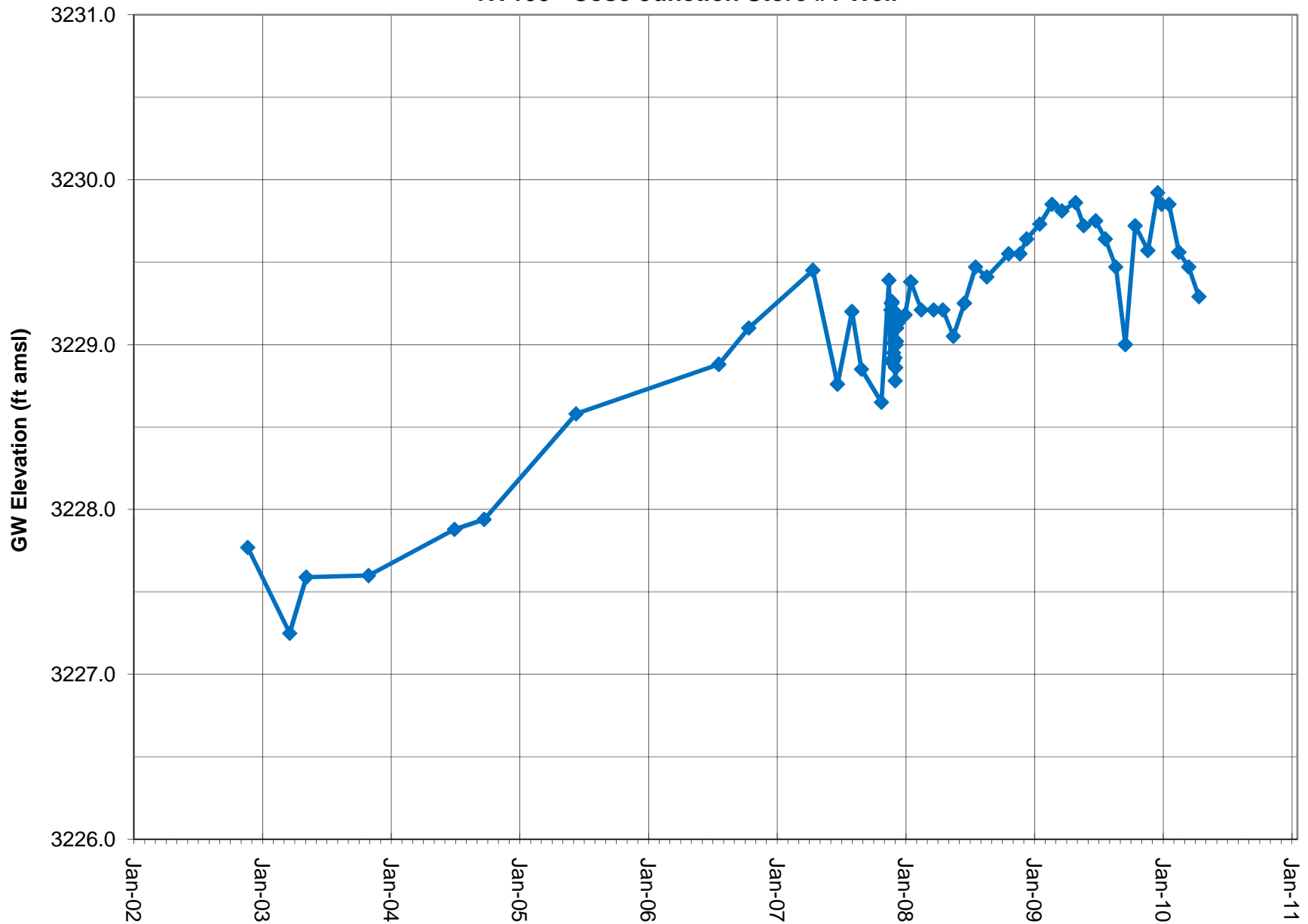
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Screened interval is 370-420 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV090 - Coso Junction Ranch Well



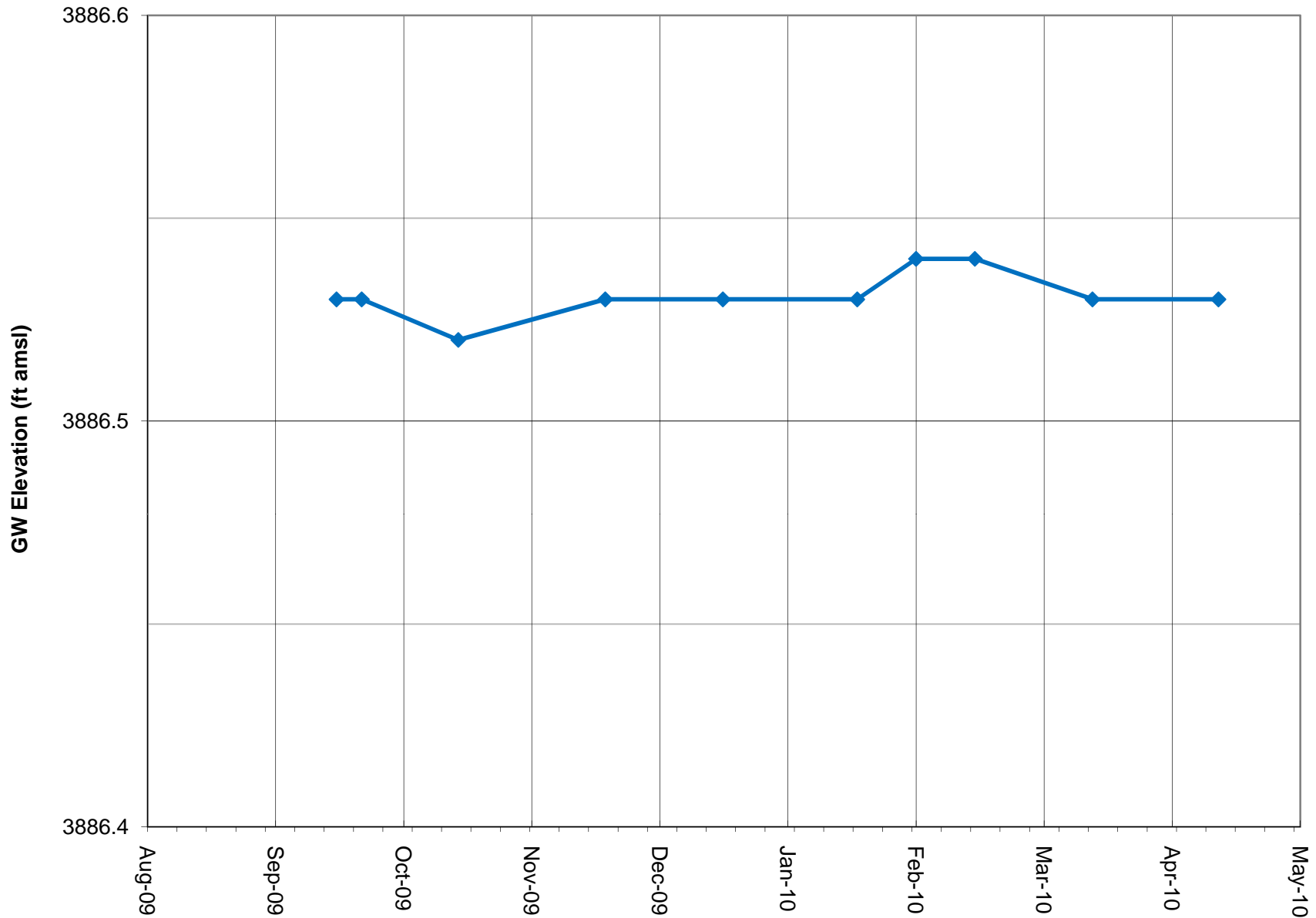
Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV100 - Coso Junction Store #1 Well



Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV110 - Davis Ranch North Well

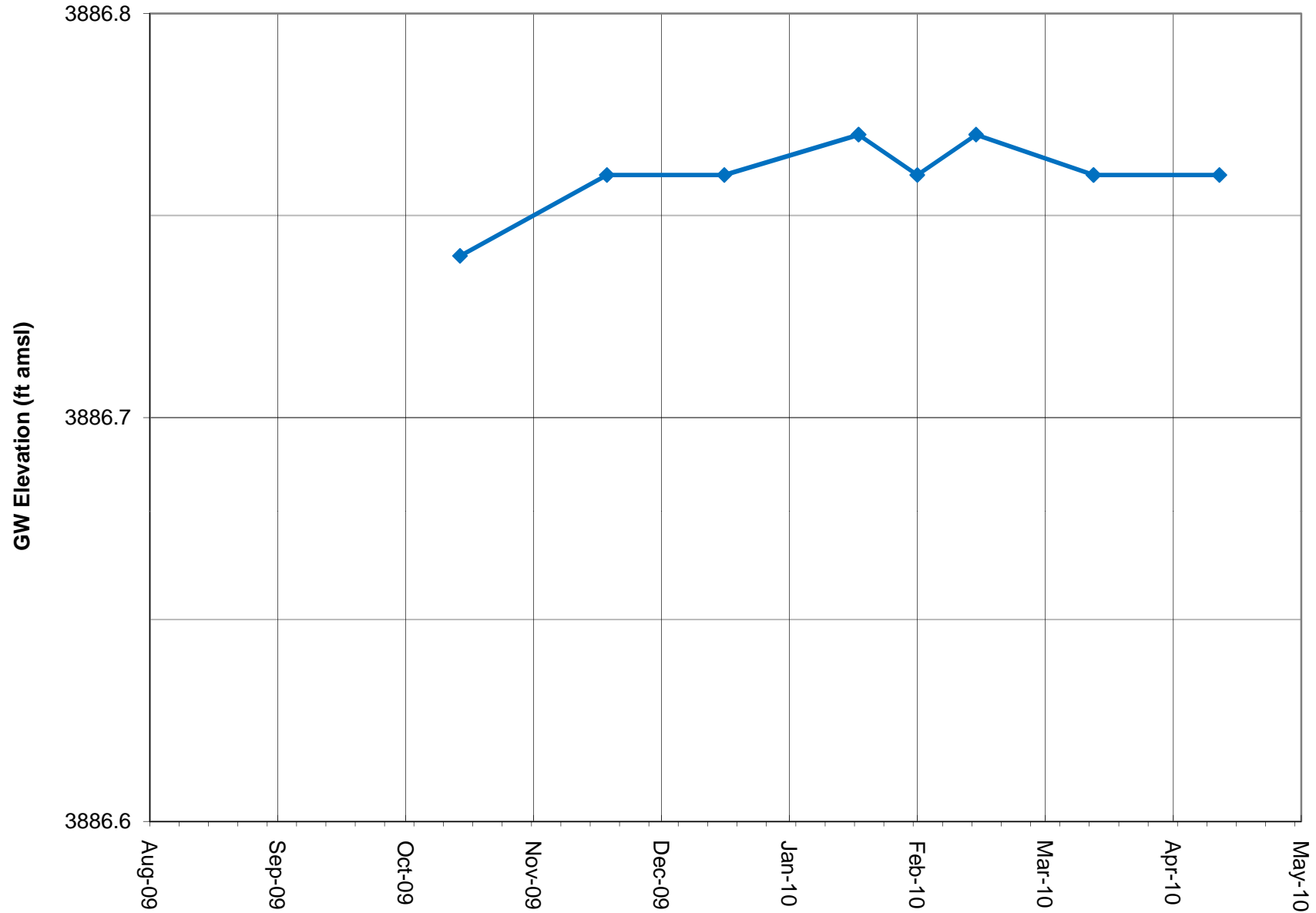


Note: Groundwater elevation data based on manual depth-to-water measurements.
DTW measured to .01 foot; GWE calculated using approximate surface elevation.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

TEAM
ENGINEERING & MANAGEMENT, INC.
Bishop and Mammoth Lakes, California

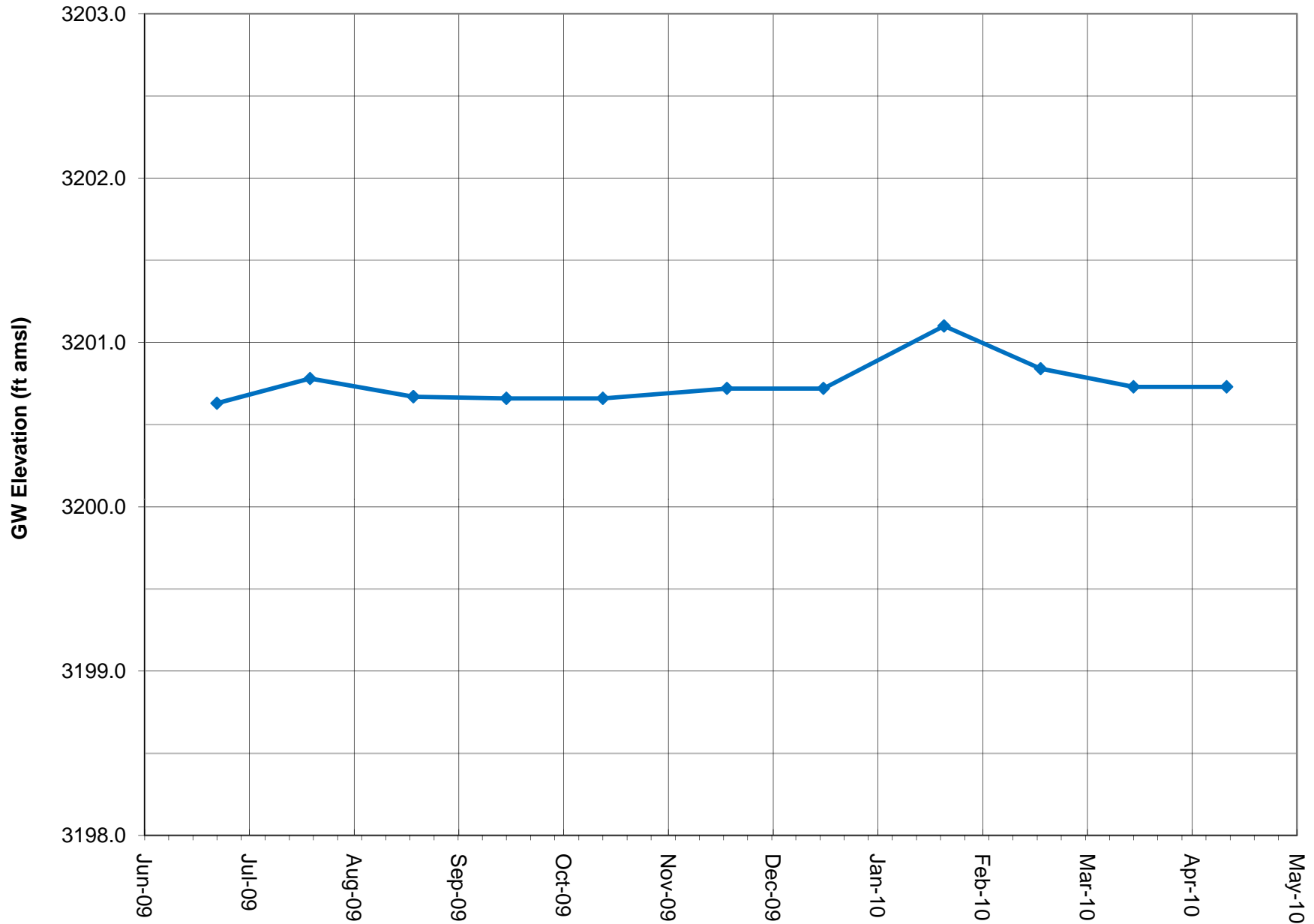
4/23/2010

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV111 - Davis Ranch South Well



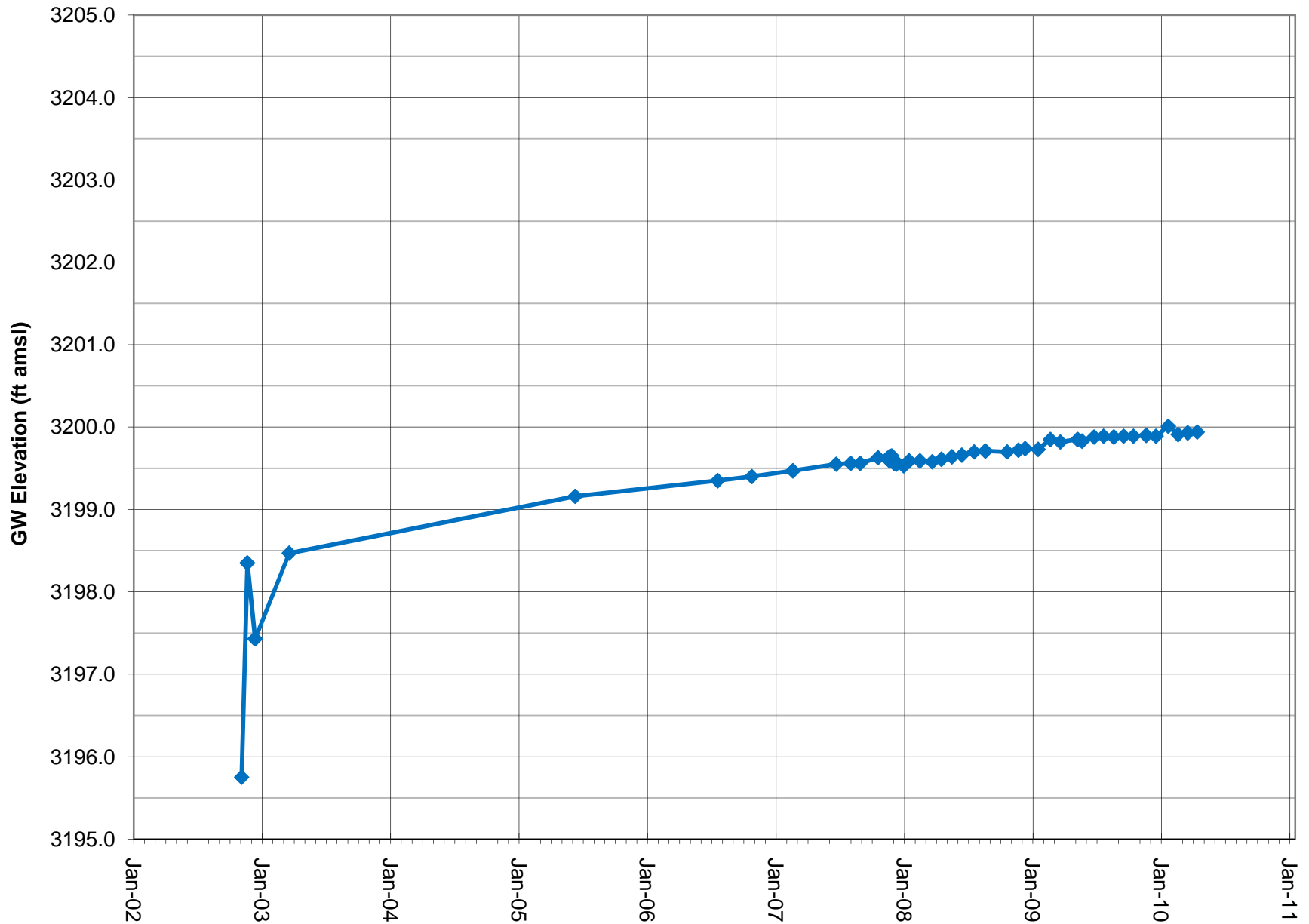
Note: Groundwater elevation data based on manual depth-to-water measurements.
DTW measured to .01 foot; GWE calculated using approximate surface elevation.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV120 - Red Hill Well



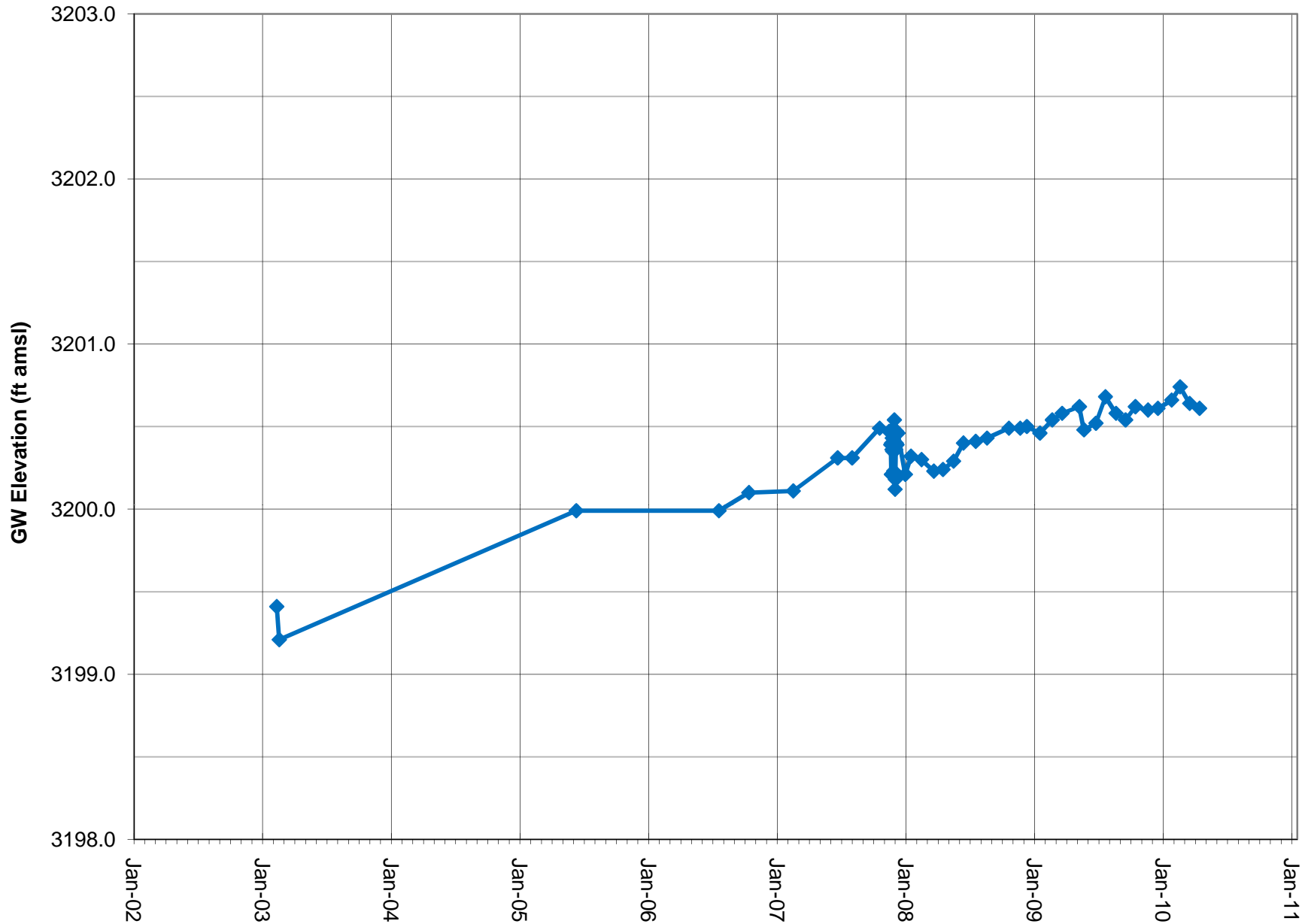
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV130 - G-36 Well



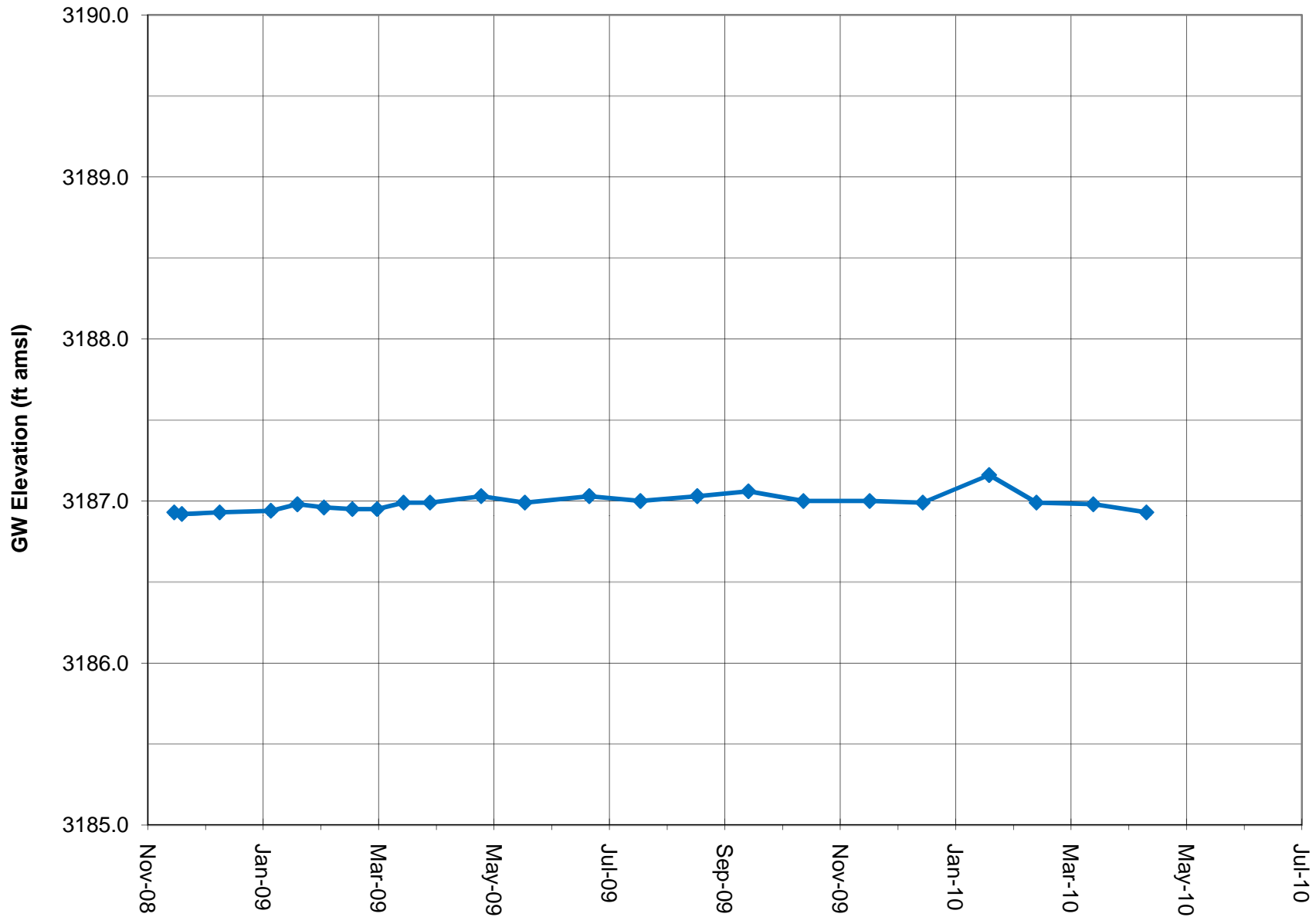
Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV140 - Lego Well



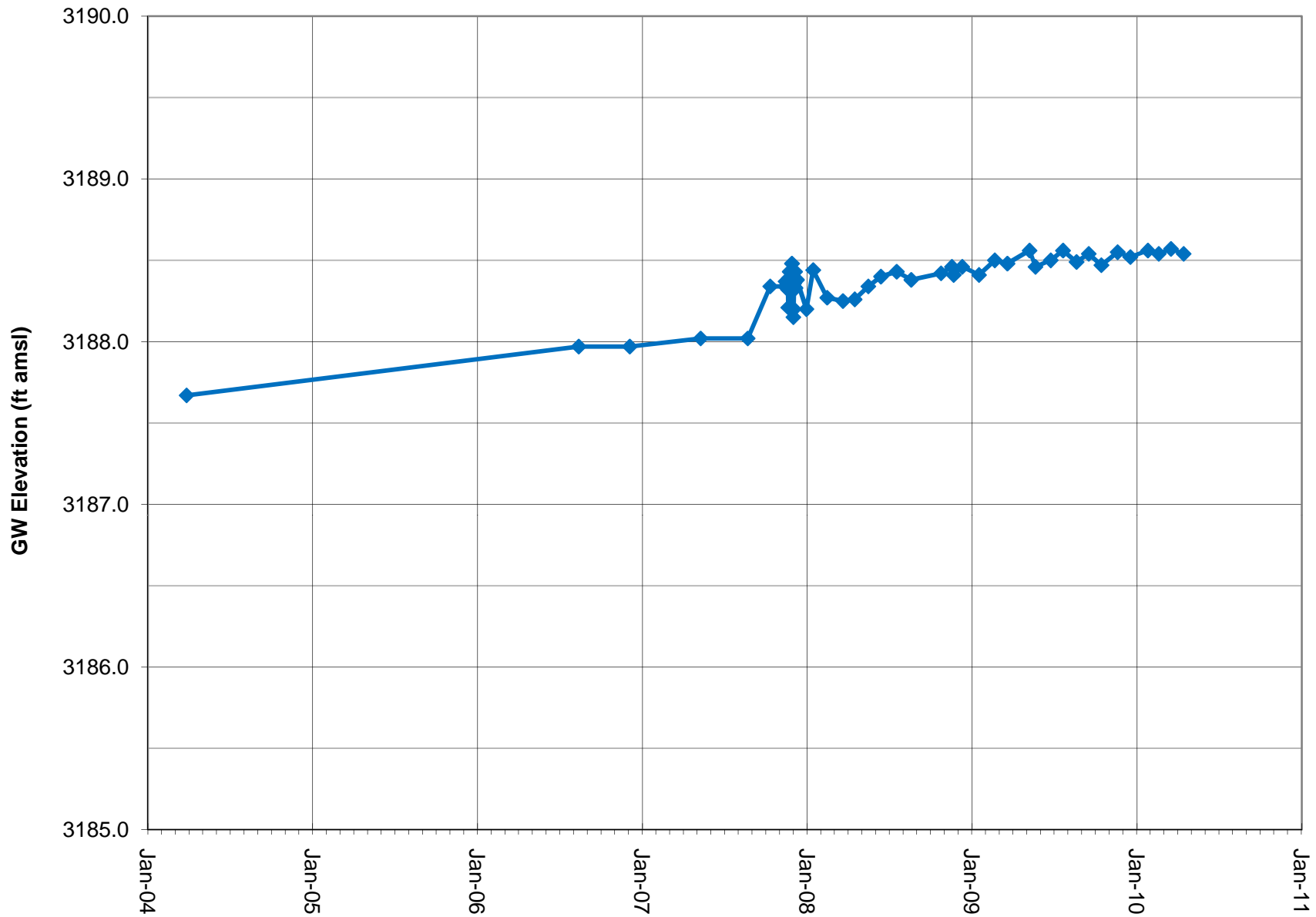
Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV150 - Cinder Road Well



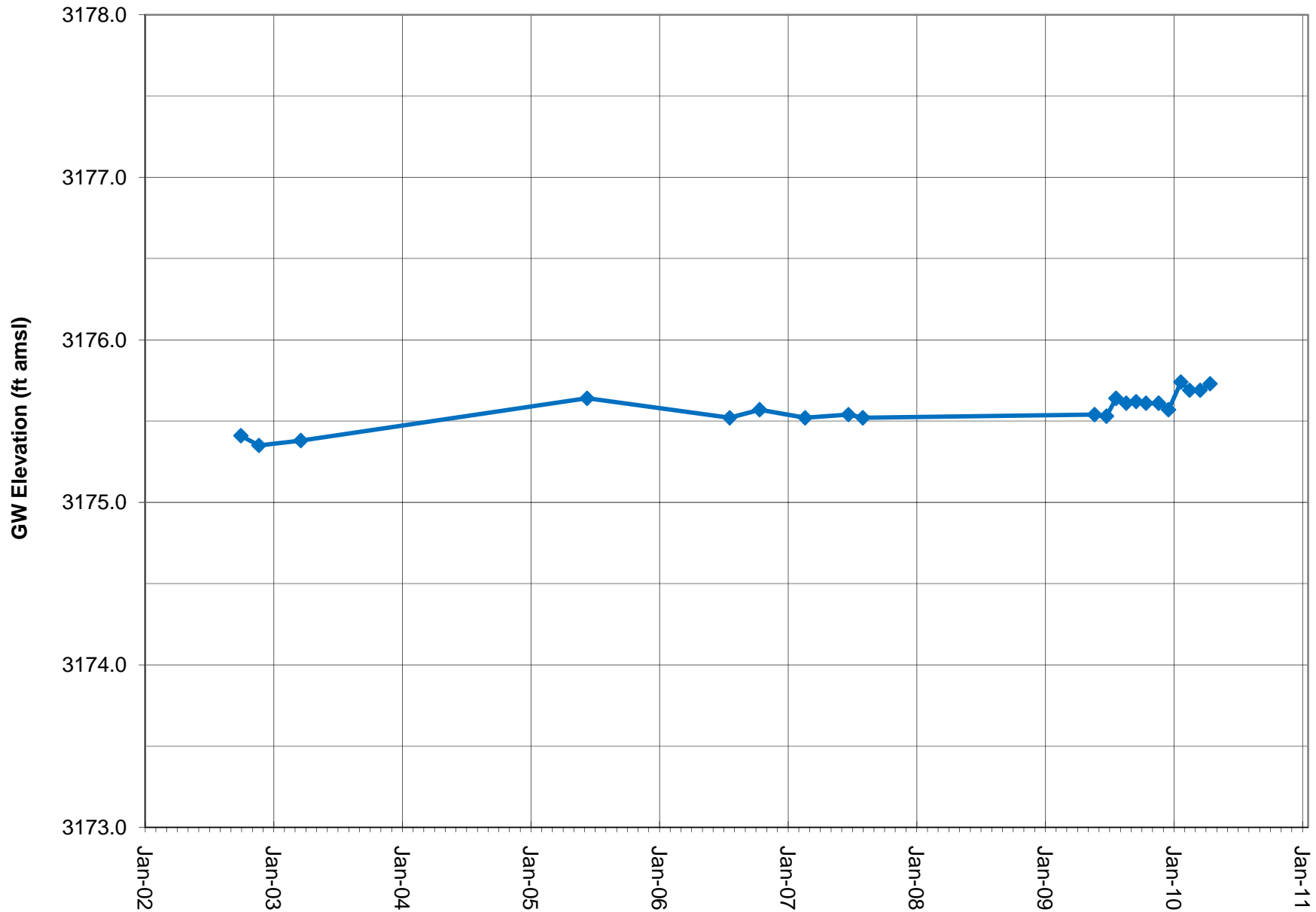
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV160 - 18-28 GTH Well



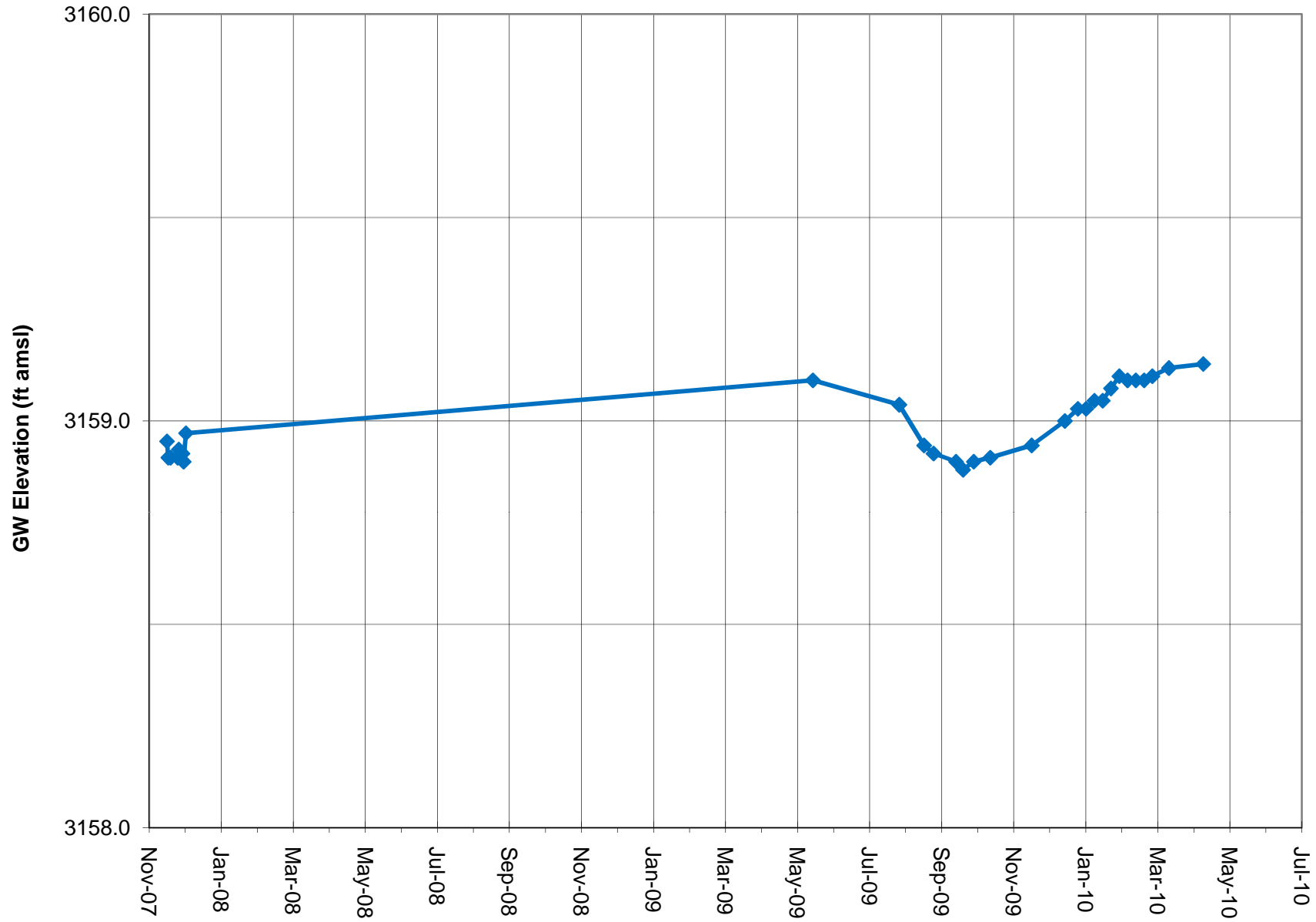
Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV170 - Fossil Falls Well



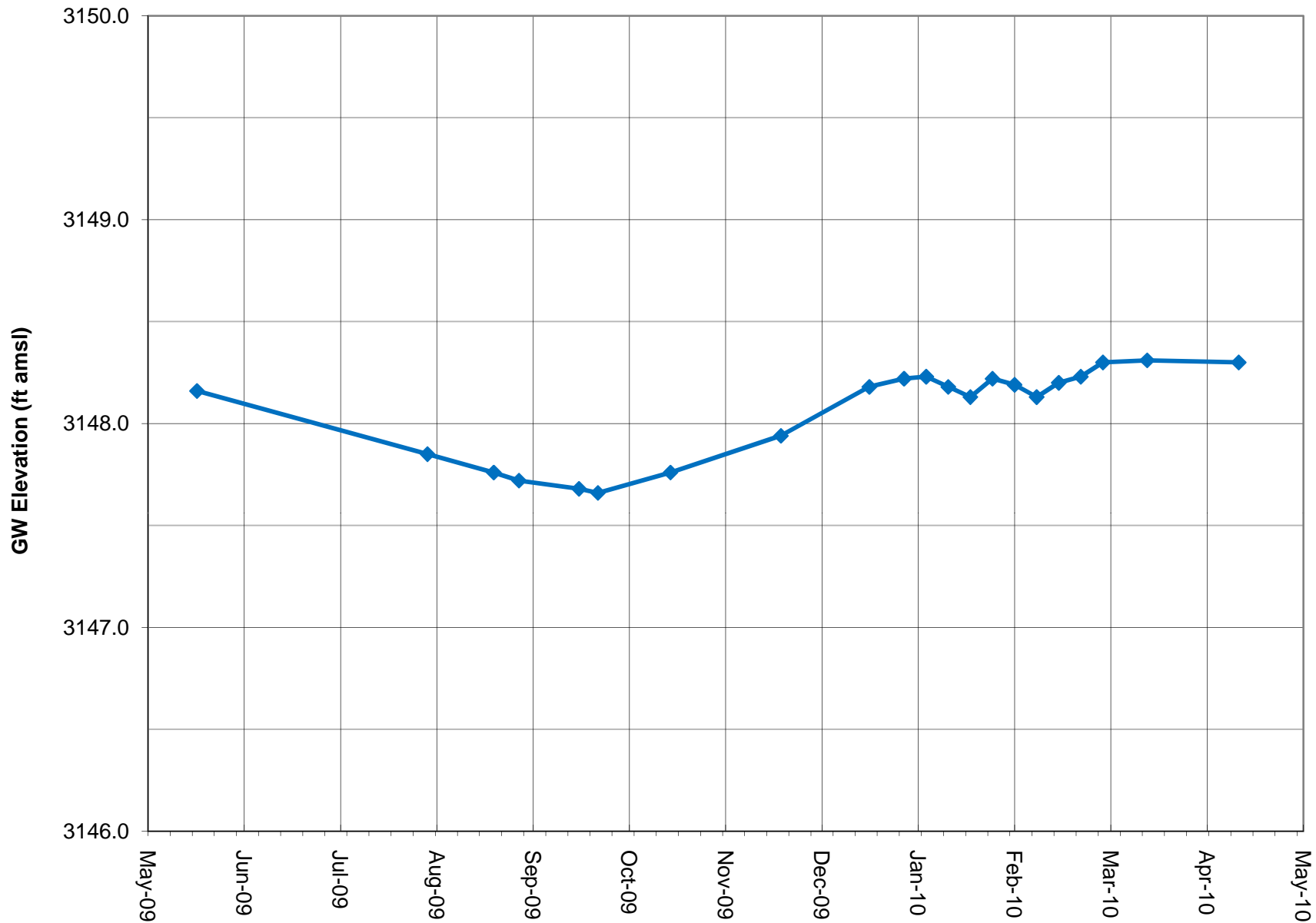
Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual) RV180 - Little Lake Ranch North Well



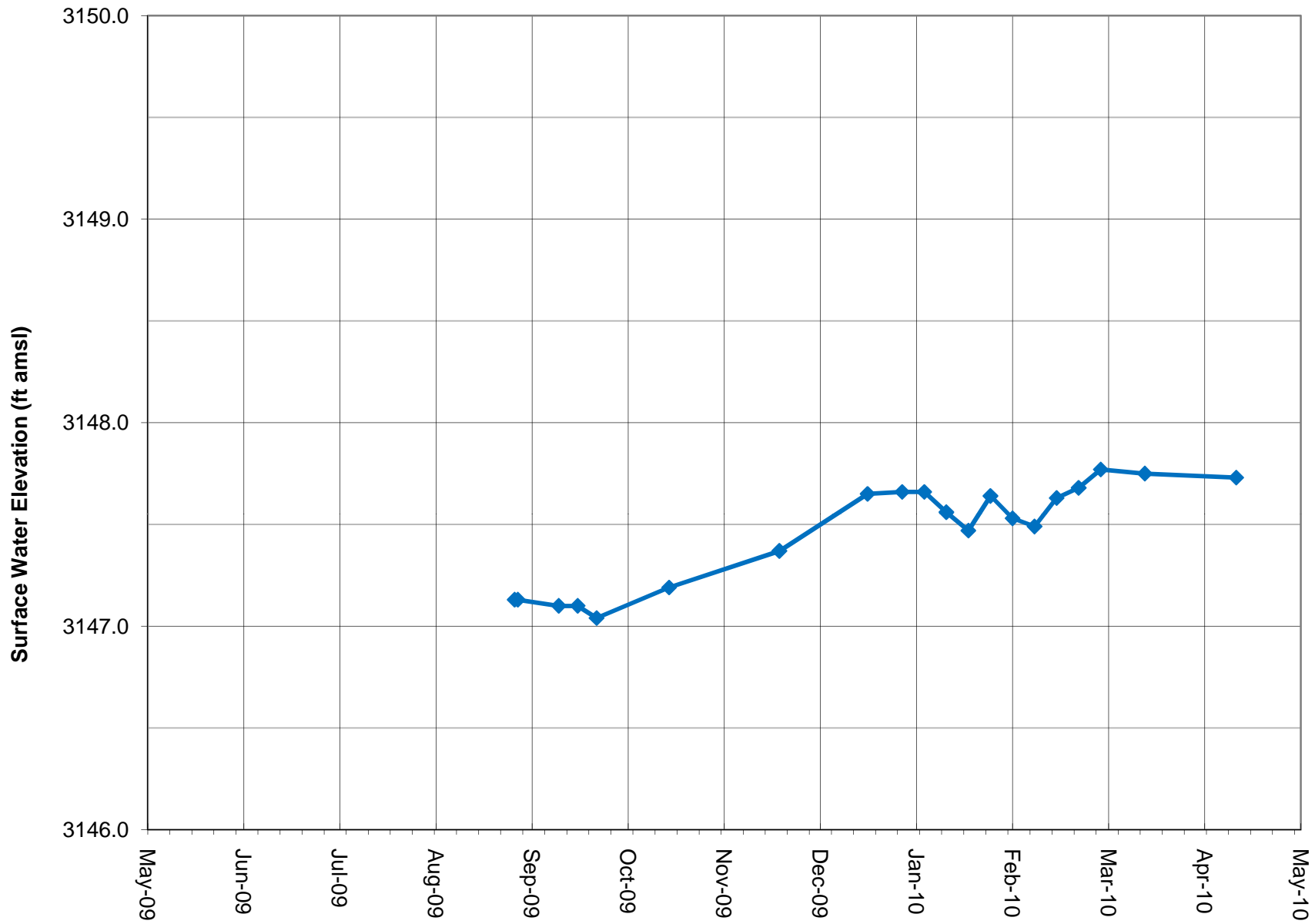
Note: Groundwater elevation data based on manual depth-to-water measurements.
Coso Operating Co. conducted a pump test on the Hay Ranch South Well in fourth quarter 2007.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV210 - Little Lake Ranch Dock Well



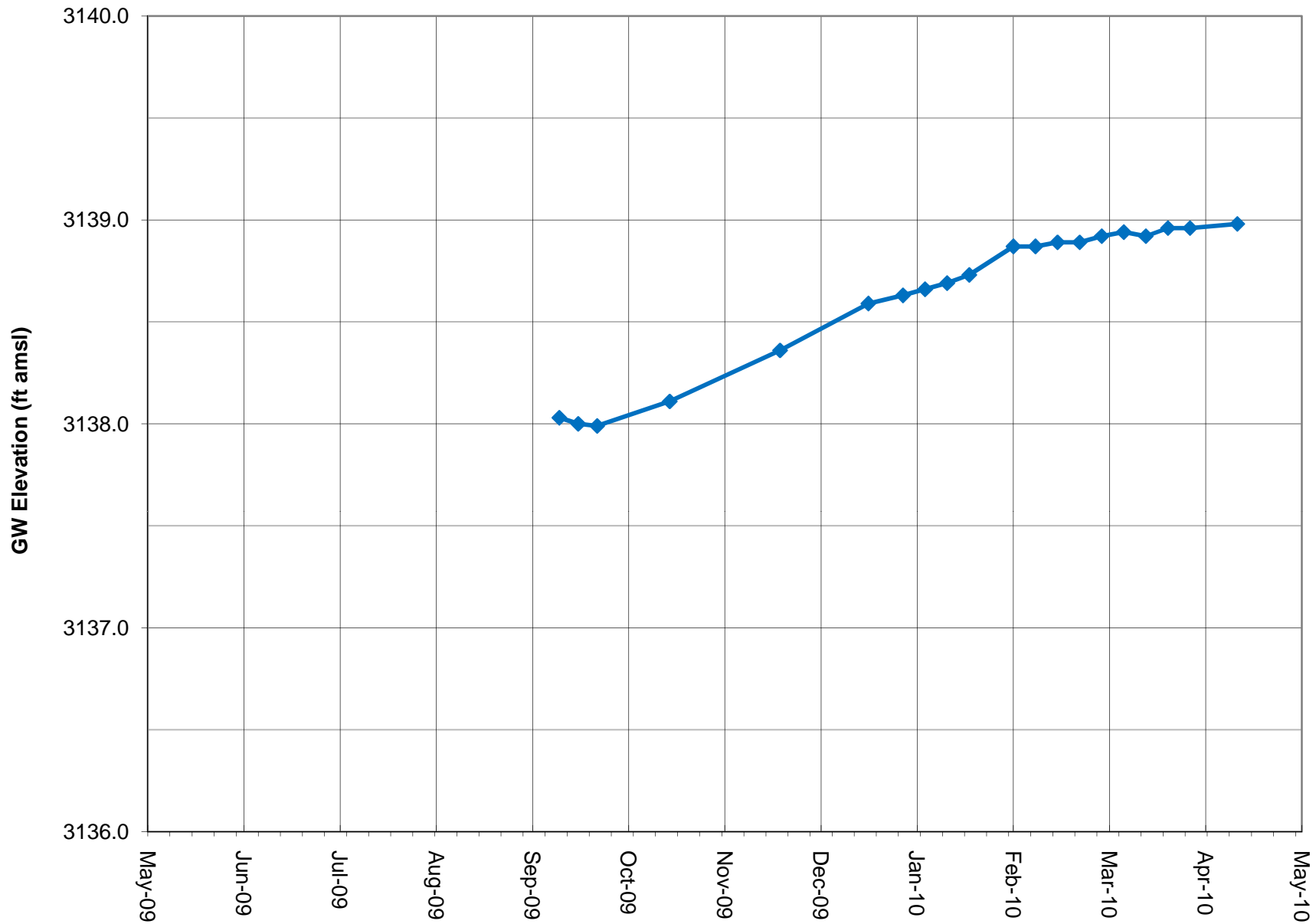
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV220 - LLR Stilling Well (lake surface)



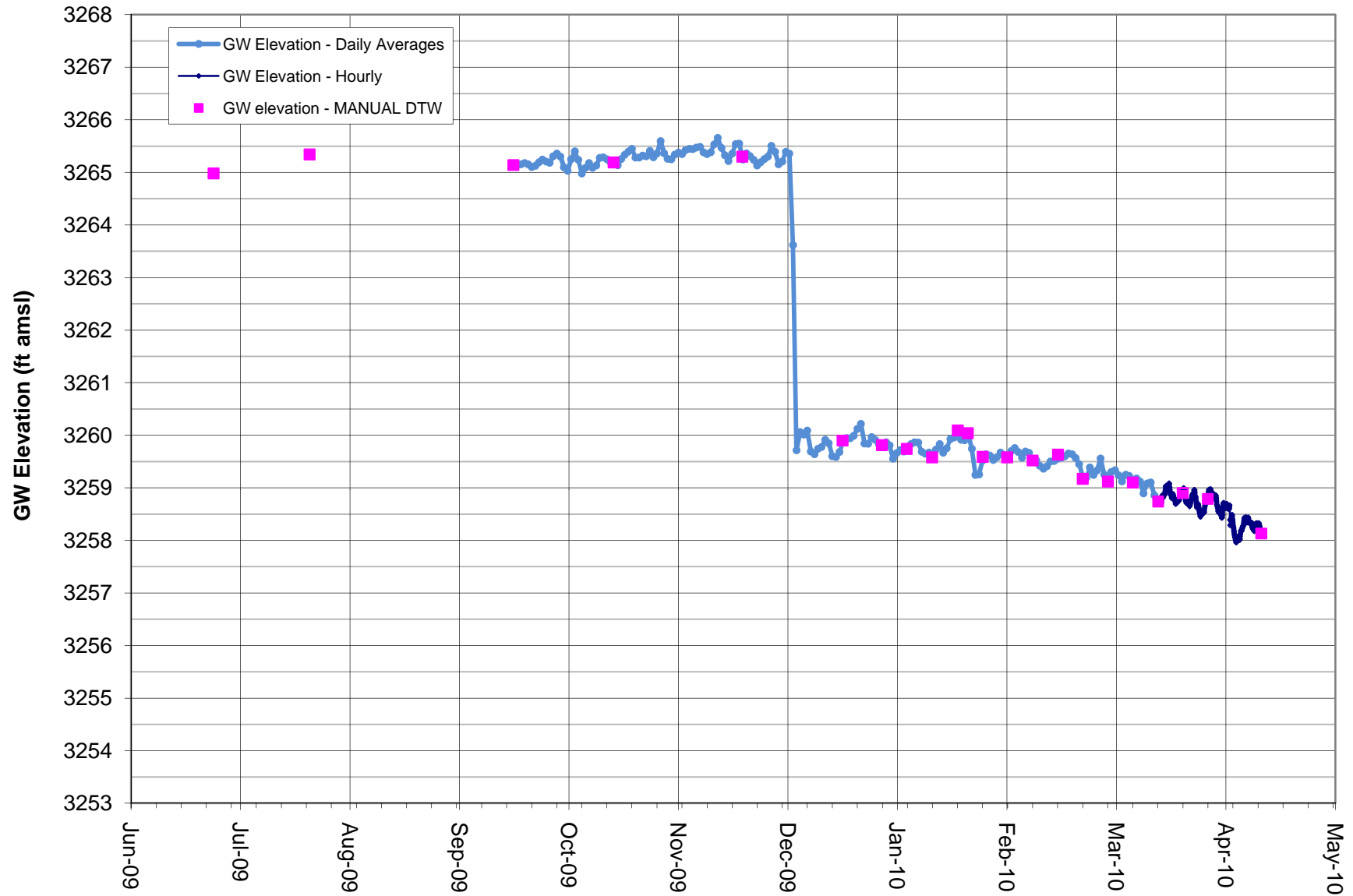
Note: Surface water elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Long-Term (Manual)
RV260 - Little Lake Ranch Hotel Well



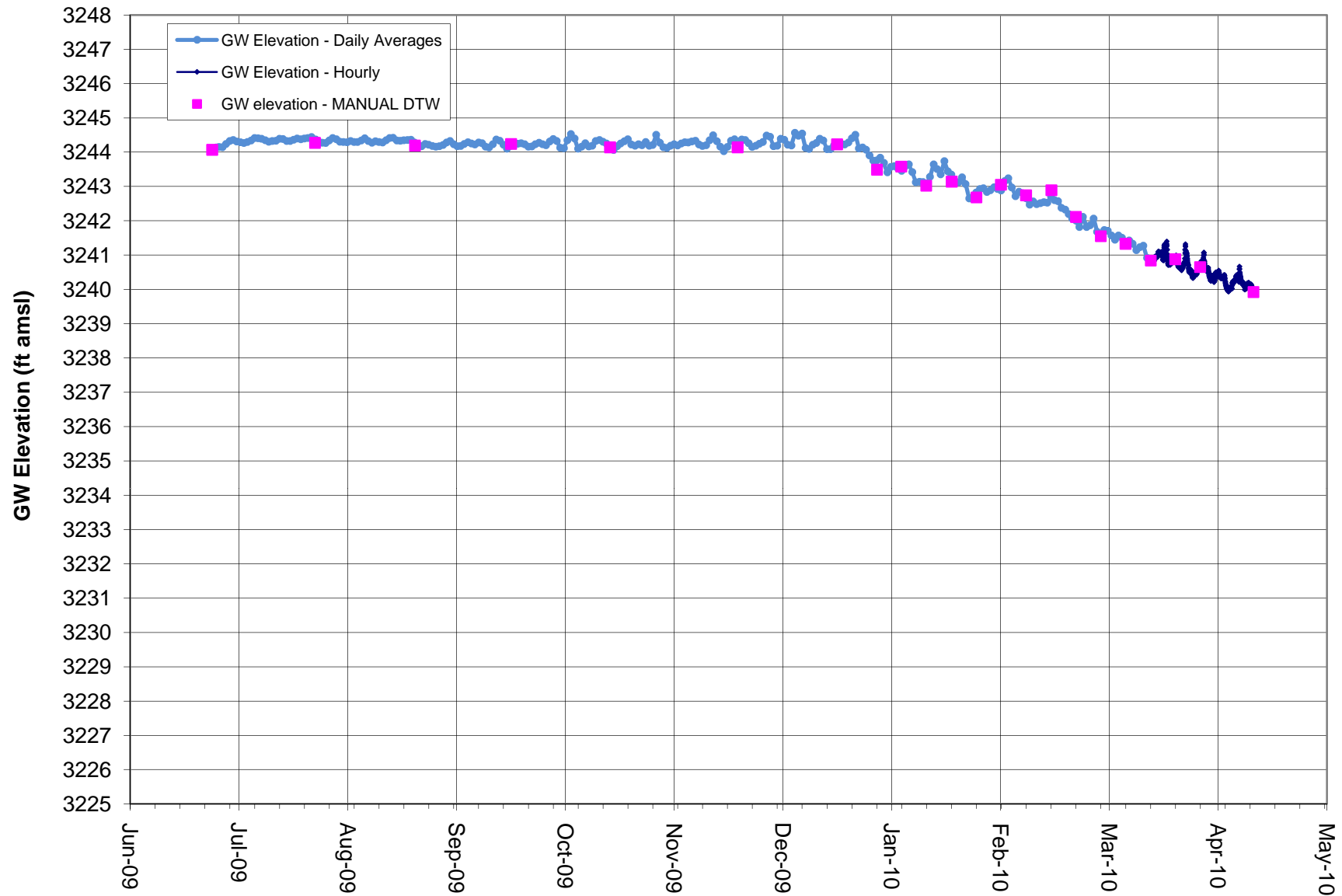
Note: Groundwater elevation data based on manual depth-to-water measurements. Lines between data points are approximations.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV030 - Cal Pumice Well



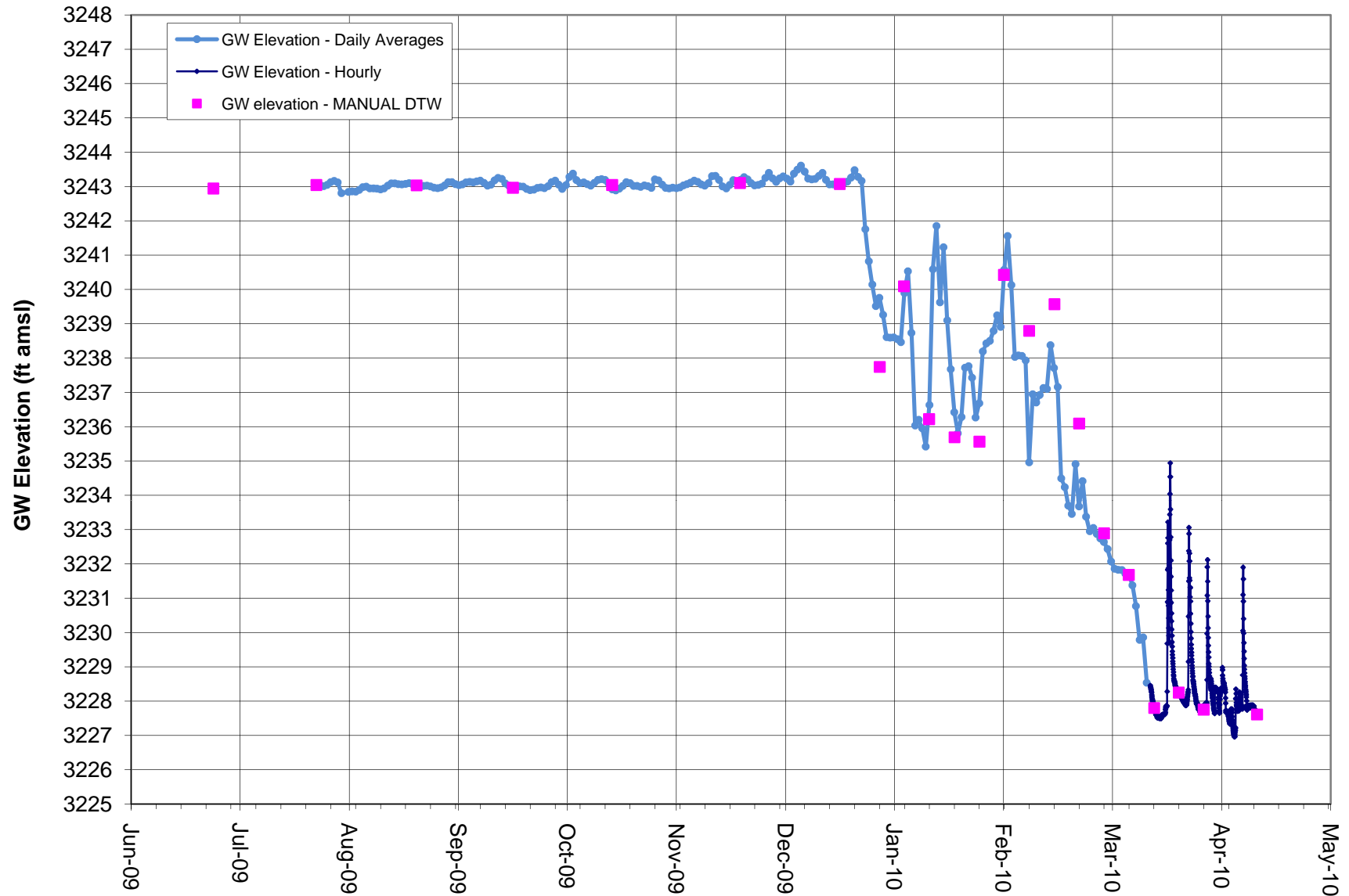
Note: Transducer data adjusted by BaroTroll and correlated to Manual DTW.
The 12/3/09 GWE decrease was confirmed by in-well PT and manual DTW.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV060 - HR 1A Well



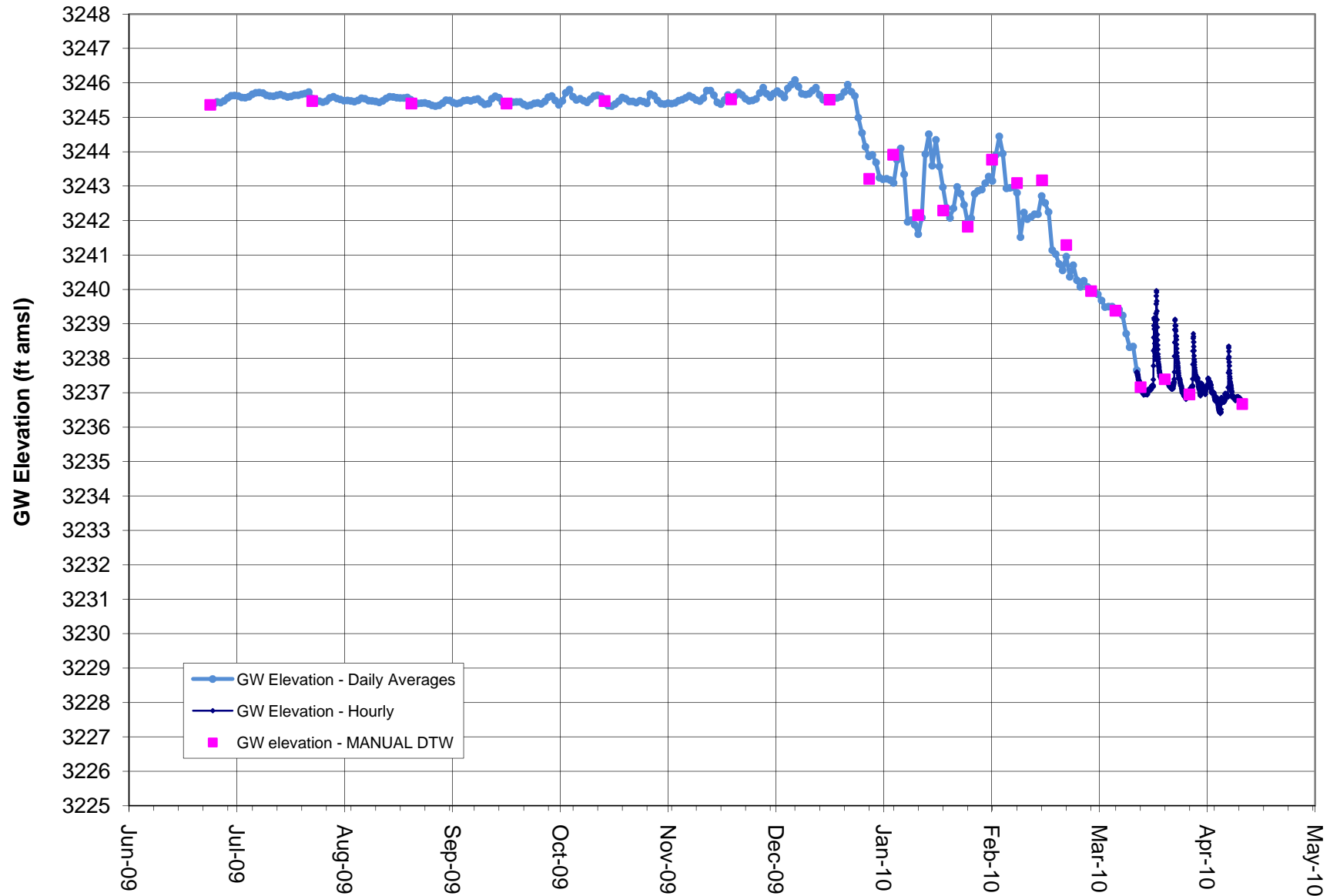
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
 Screened interval 170-260 feet.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV061 - HR 1B Well



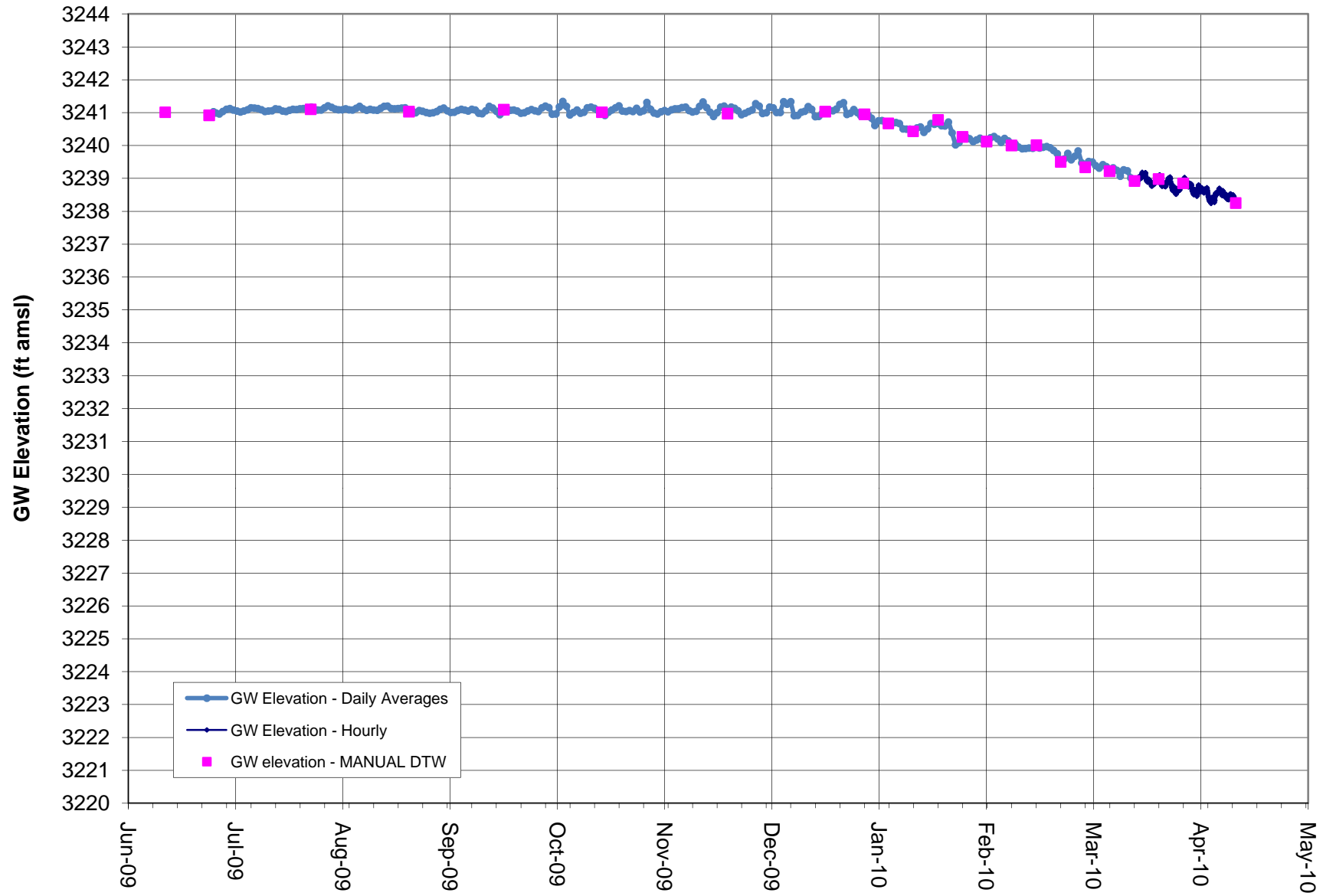
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
Screened interval 490-540 feet.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV062 - HR 1C Well



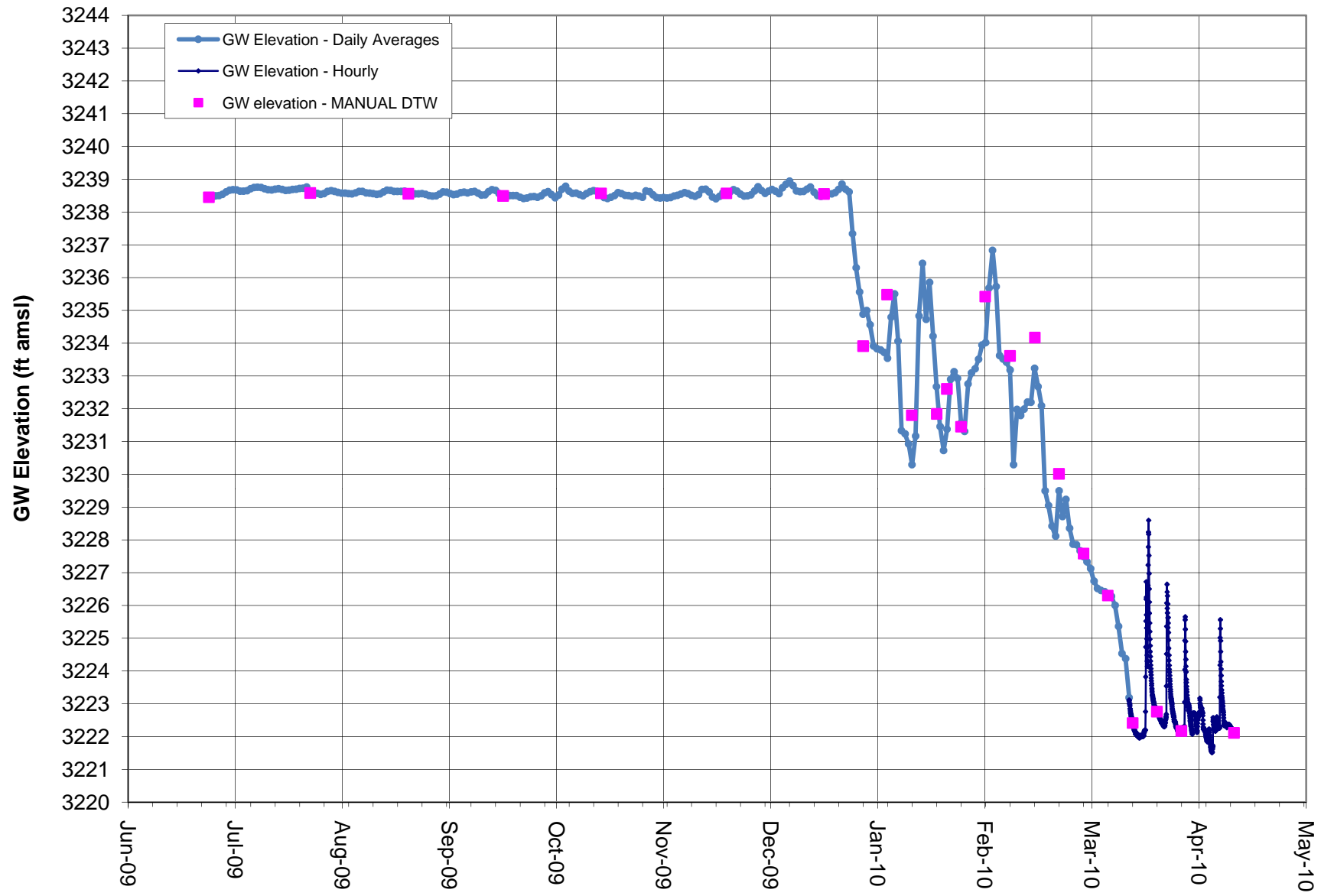
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
 Screened interval 340-405 feet.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV080 - HR 2A Well



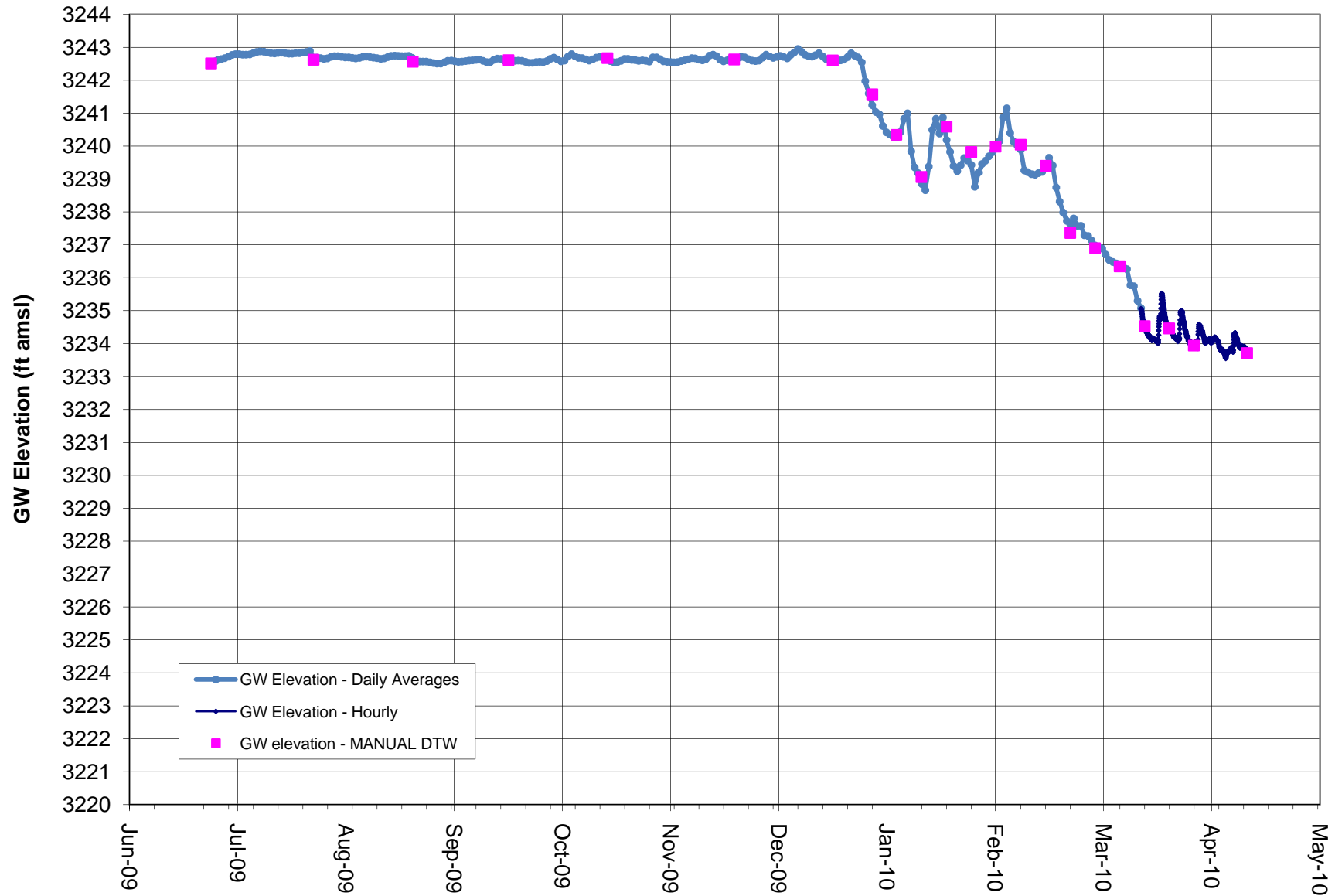
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
 Screened interval 180-300 feet.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV081 - HR 2B Well



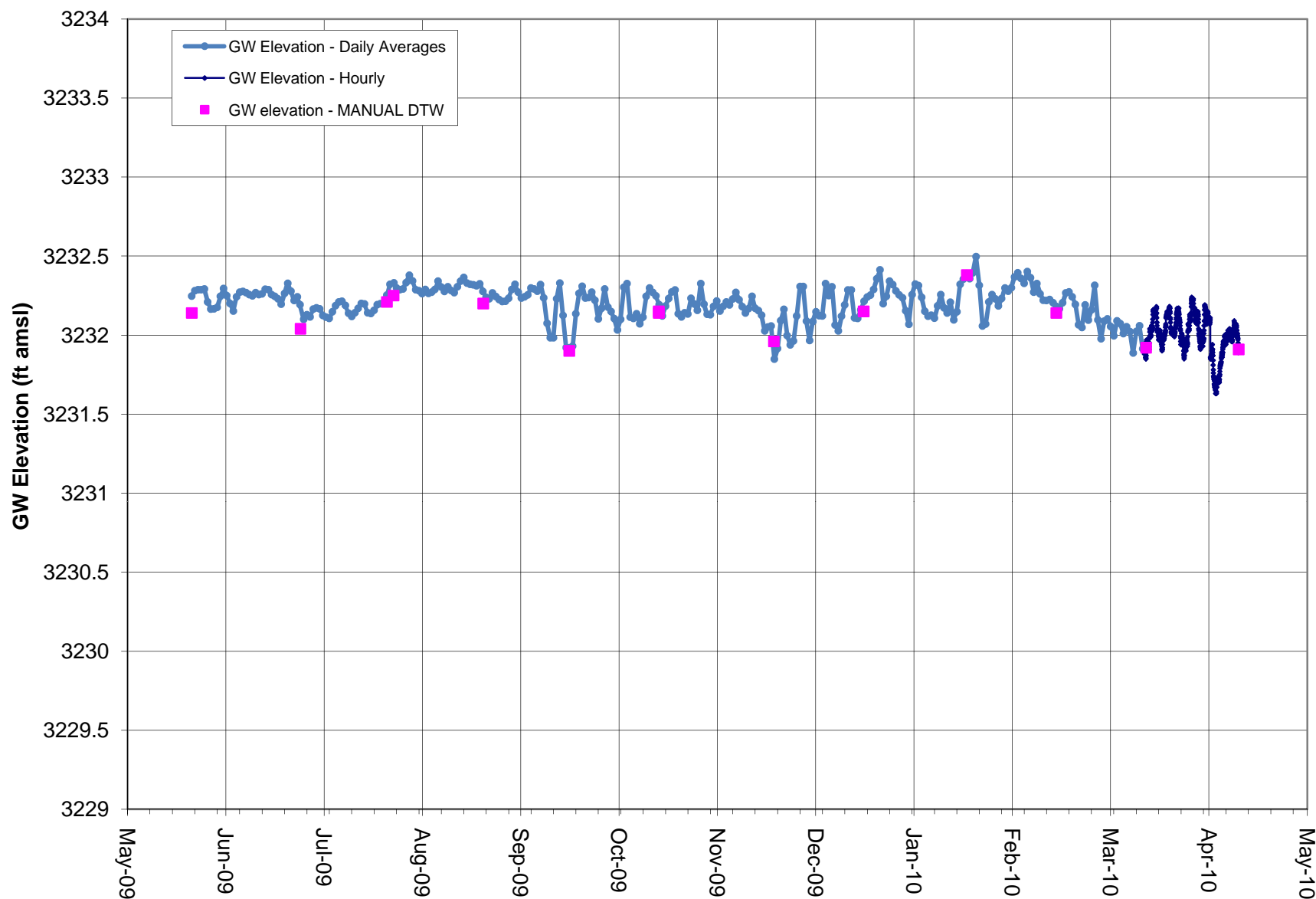
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
 Screened interval 519-584 feet.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV082 - HR 2C Well



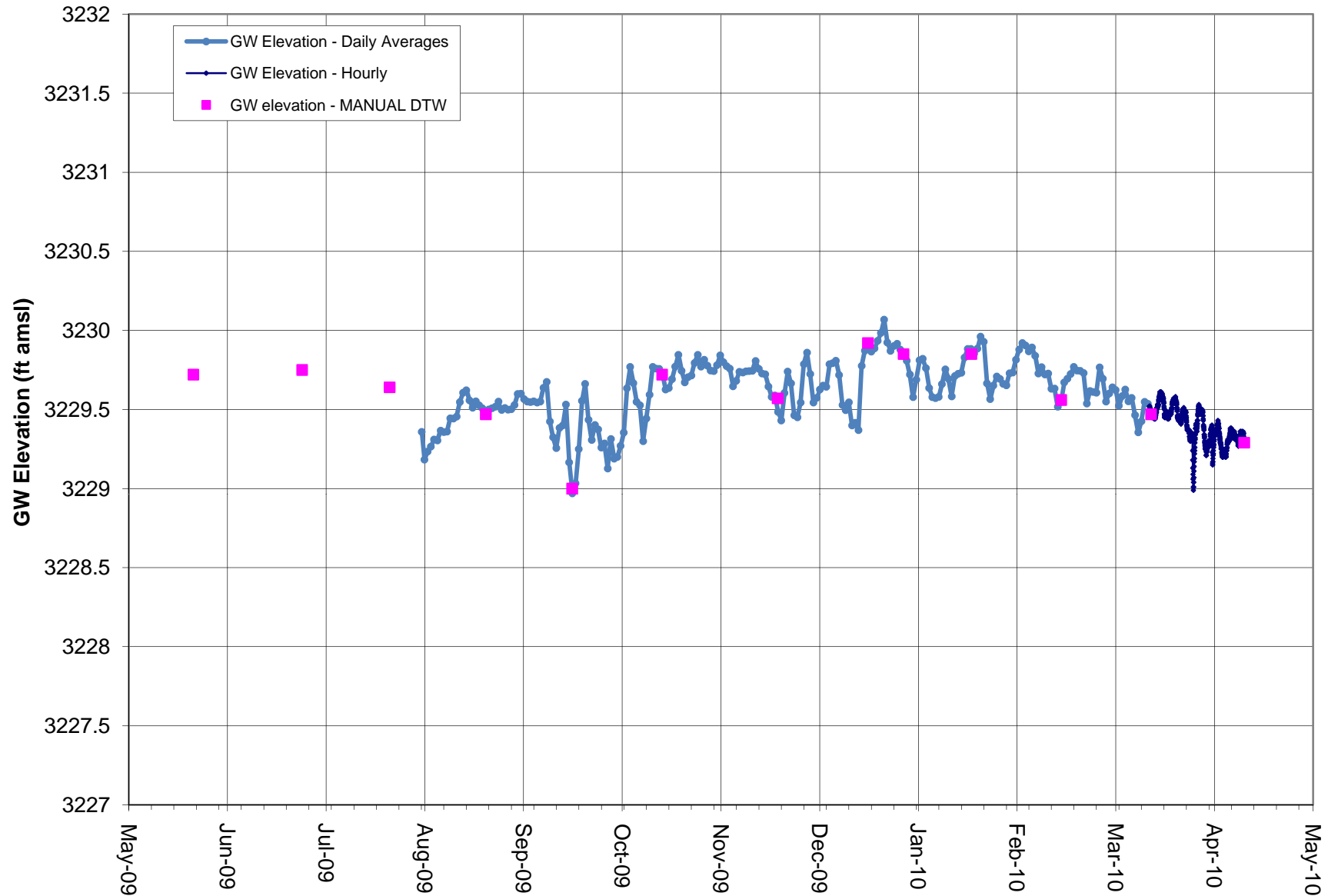
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
 Screened interval 370-420 feet.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV090 - Coso Junction Ranch Well



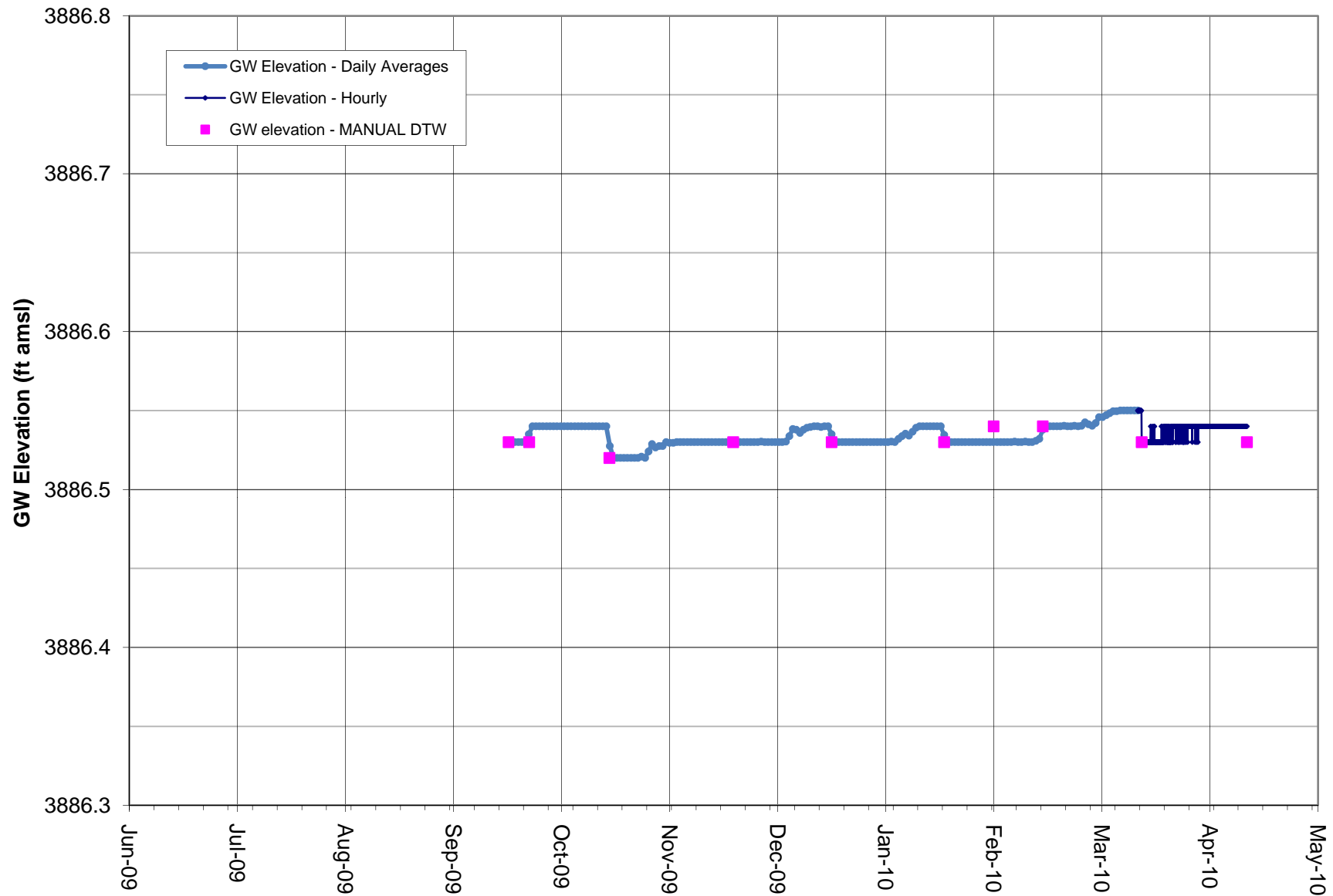
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV100- Coso Junction Store#1 Well



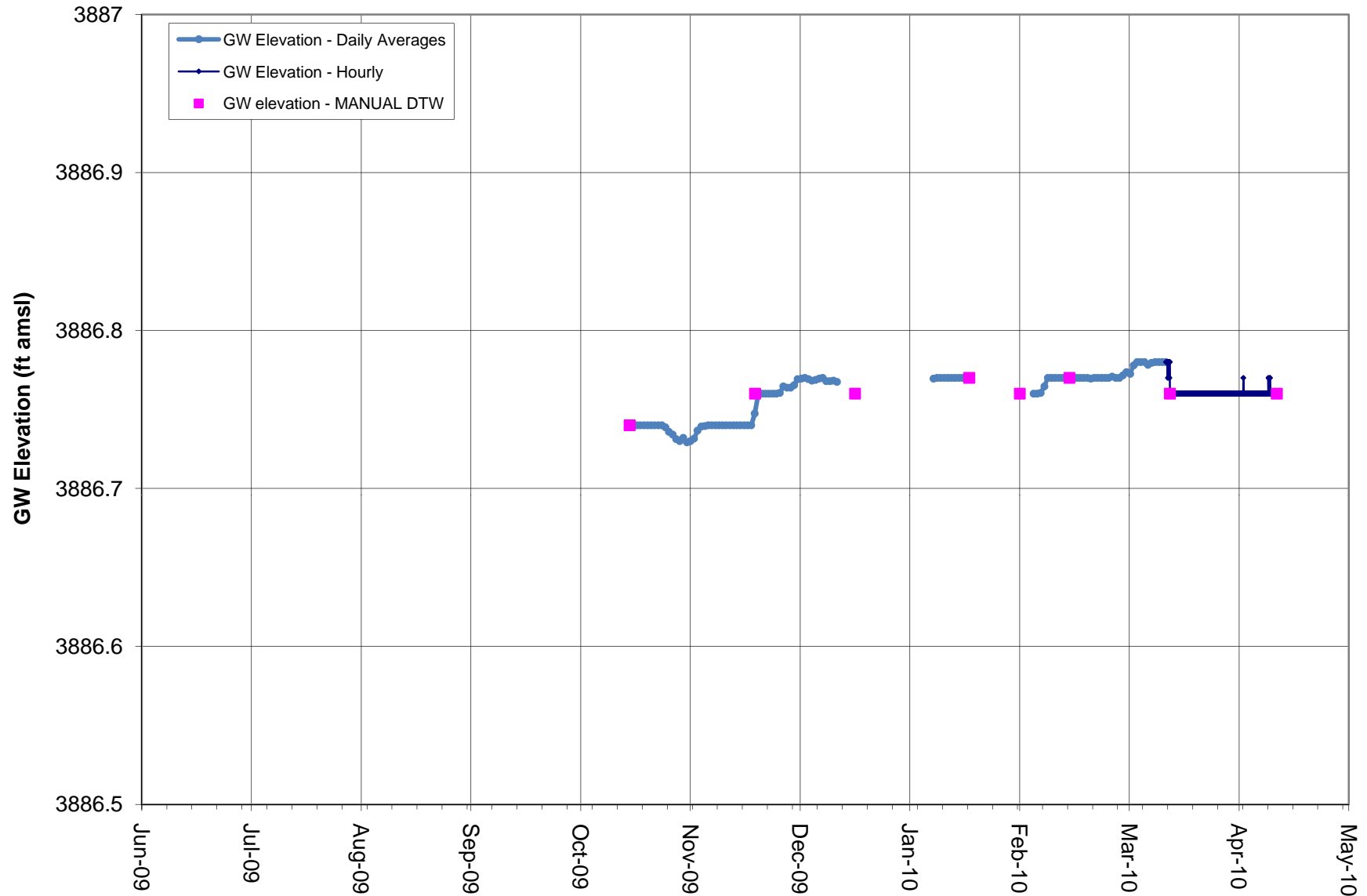
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV110 - Davis Ranch North Well



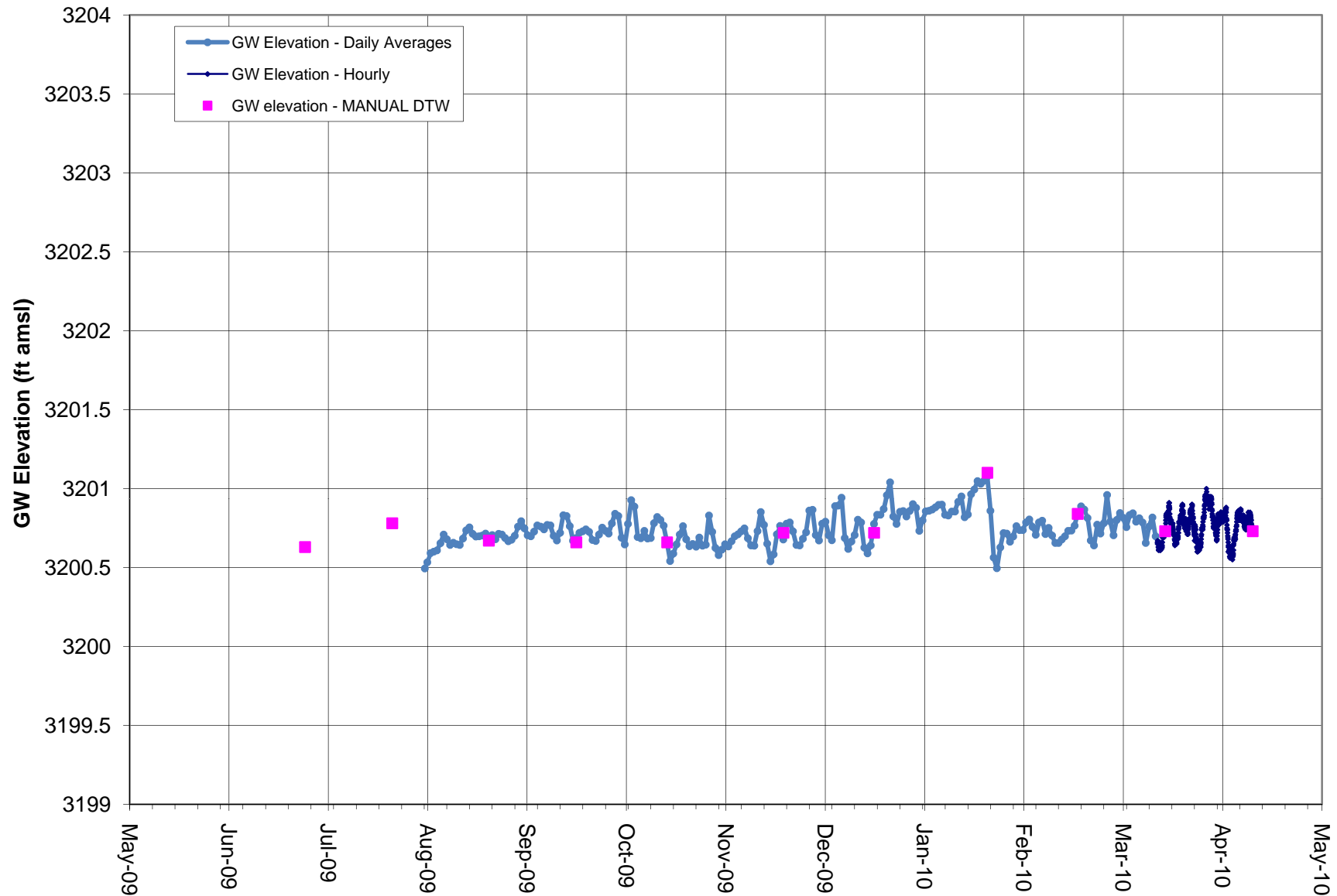
Note: Vented transducer data correlated to Manual DTW measurements.
DTW measured to .01 foot; GWE calculated using approximate surface elevation.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV111 - Davis Ranch South Well



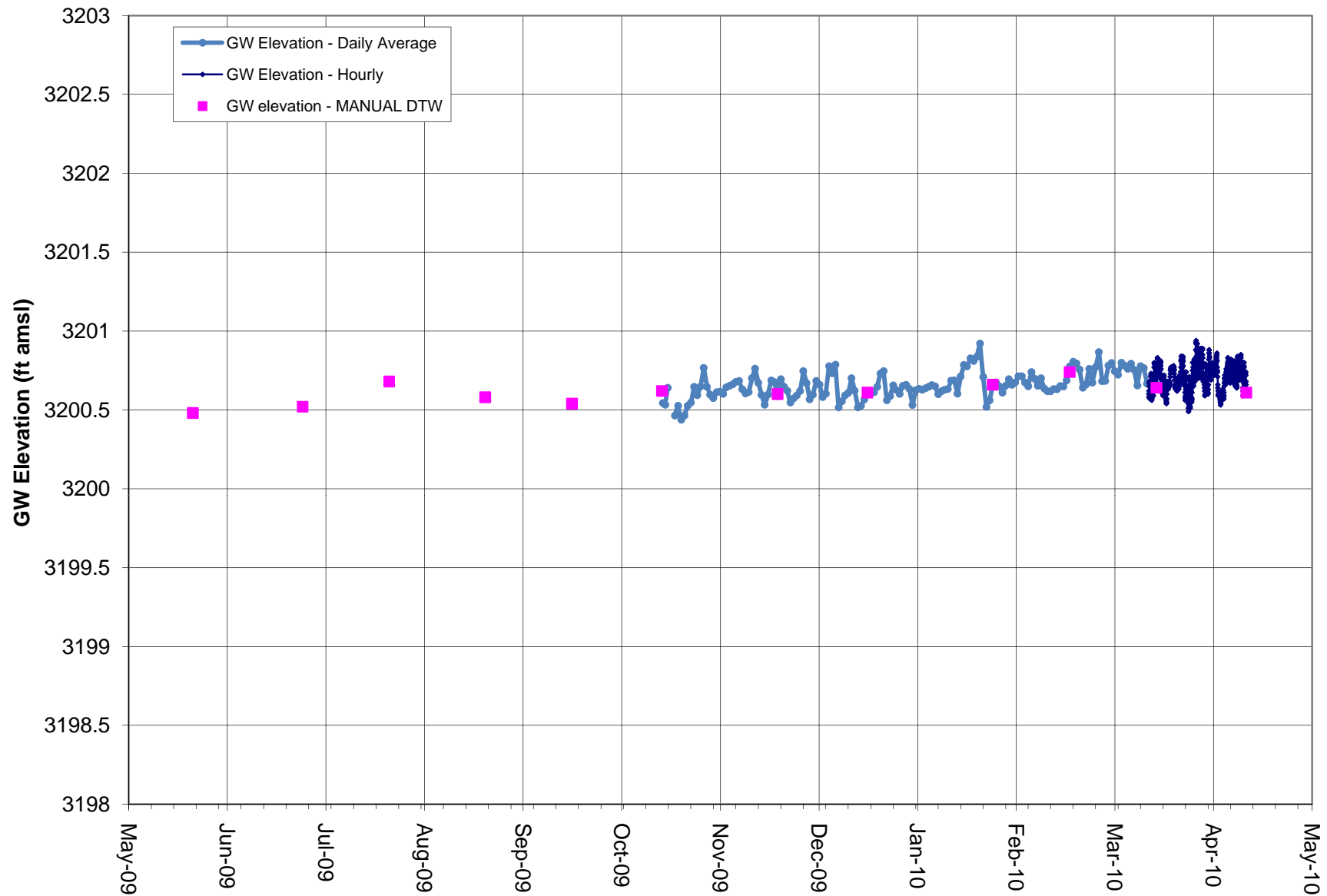
Note: Vented transducer data correlated to Manual DTW measurements.
 PT experienced technical difficulties from 12/09 to 1/10 and was replaced in 2/10.
 Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV120 - Red Hill Well



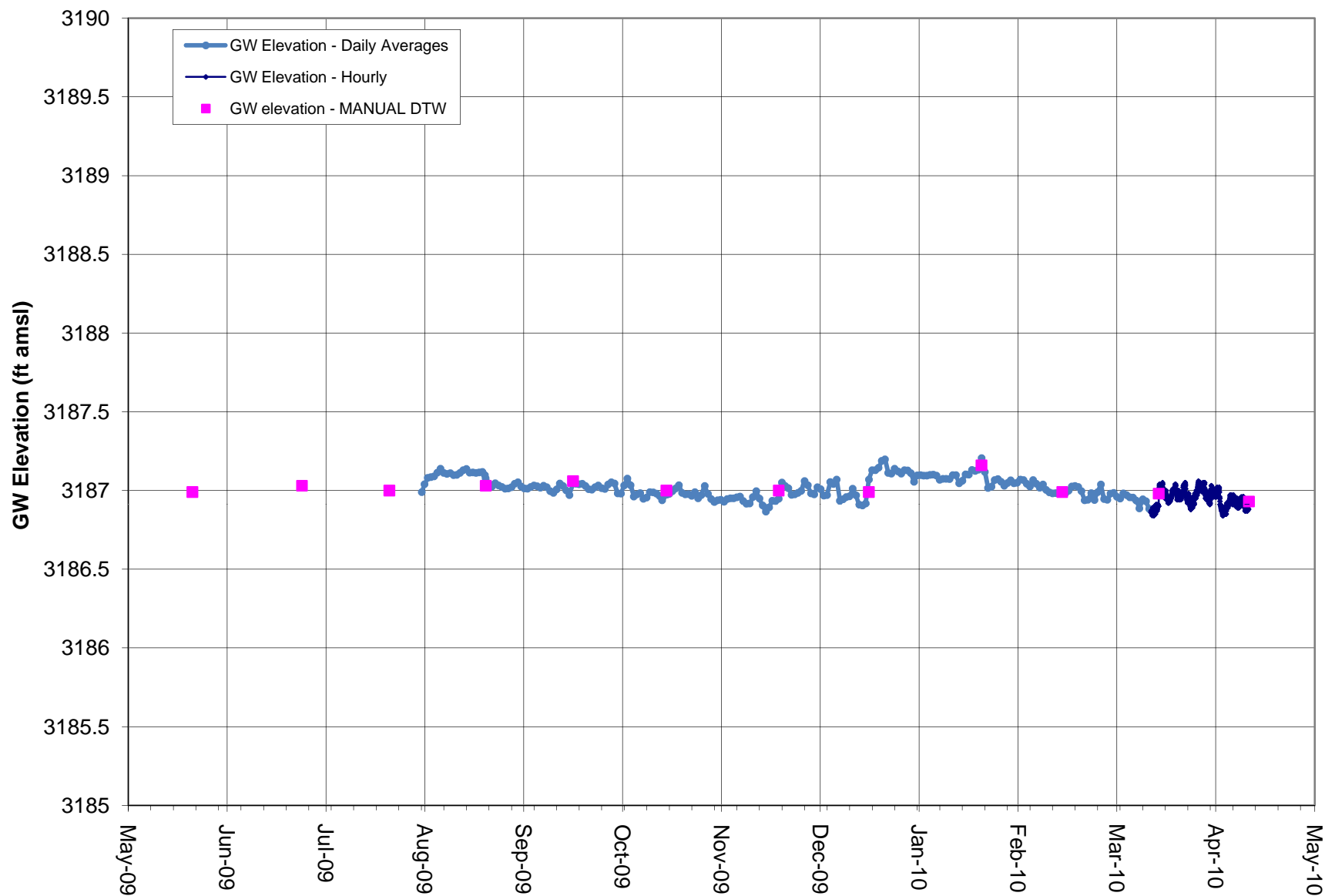
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV140 - Lego Well



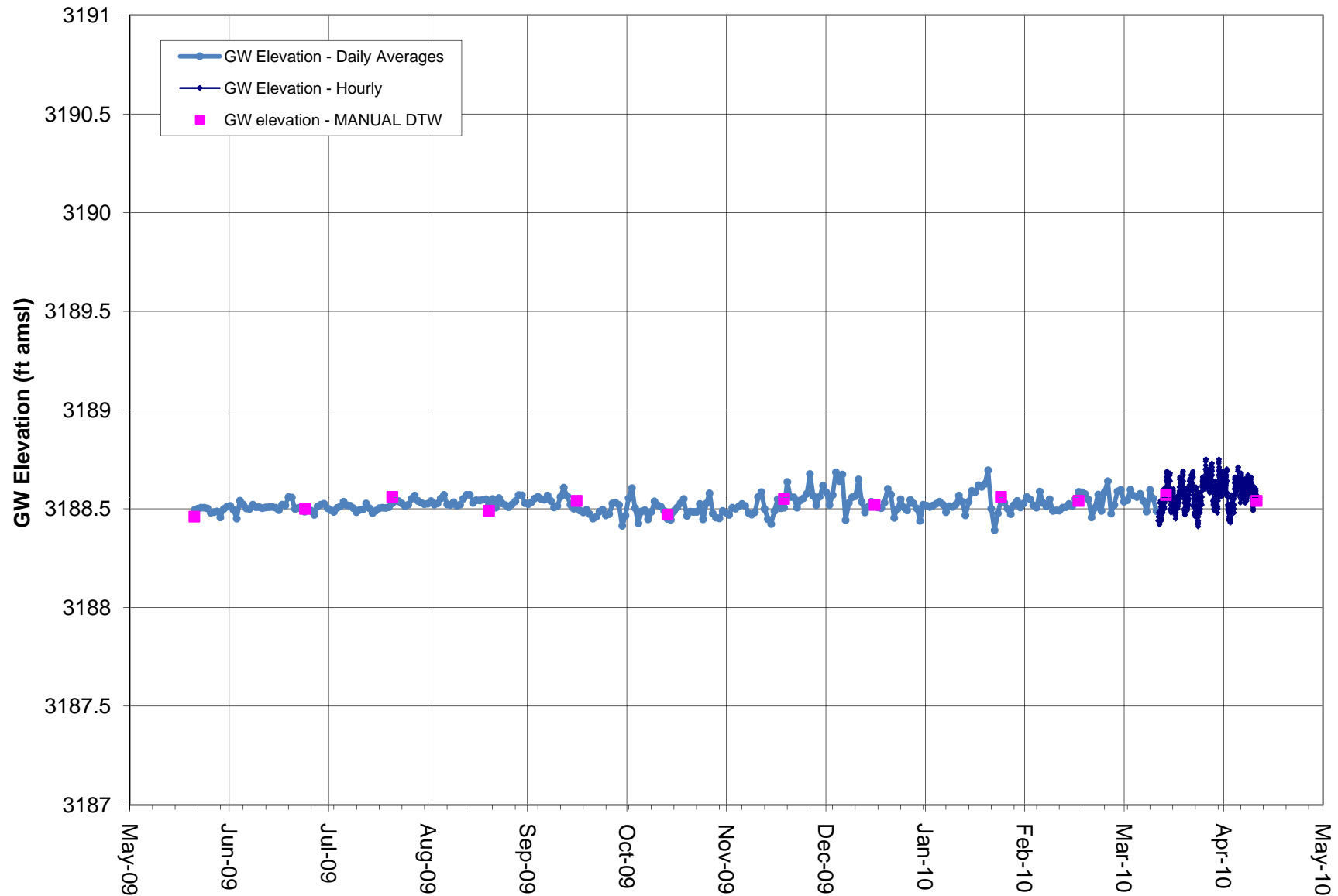
Note: Transducer data adjusted by BaroTroll and correlated to Manual DTW .
Data from 10/17/09 is omitted as PT slipped less than 1 foot.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV150 - Cinder Road Well



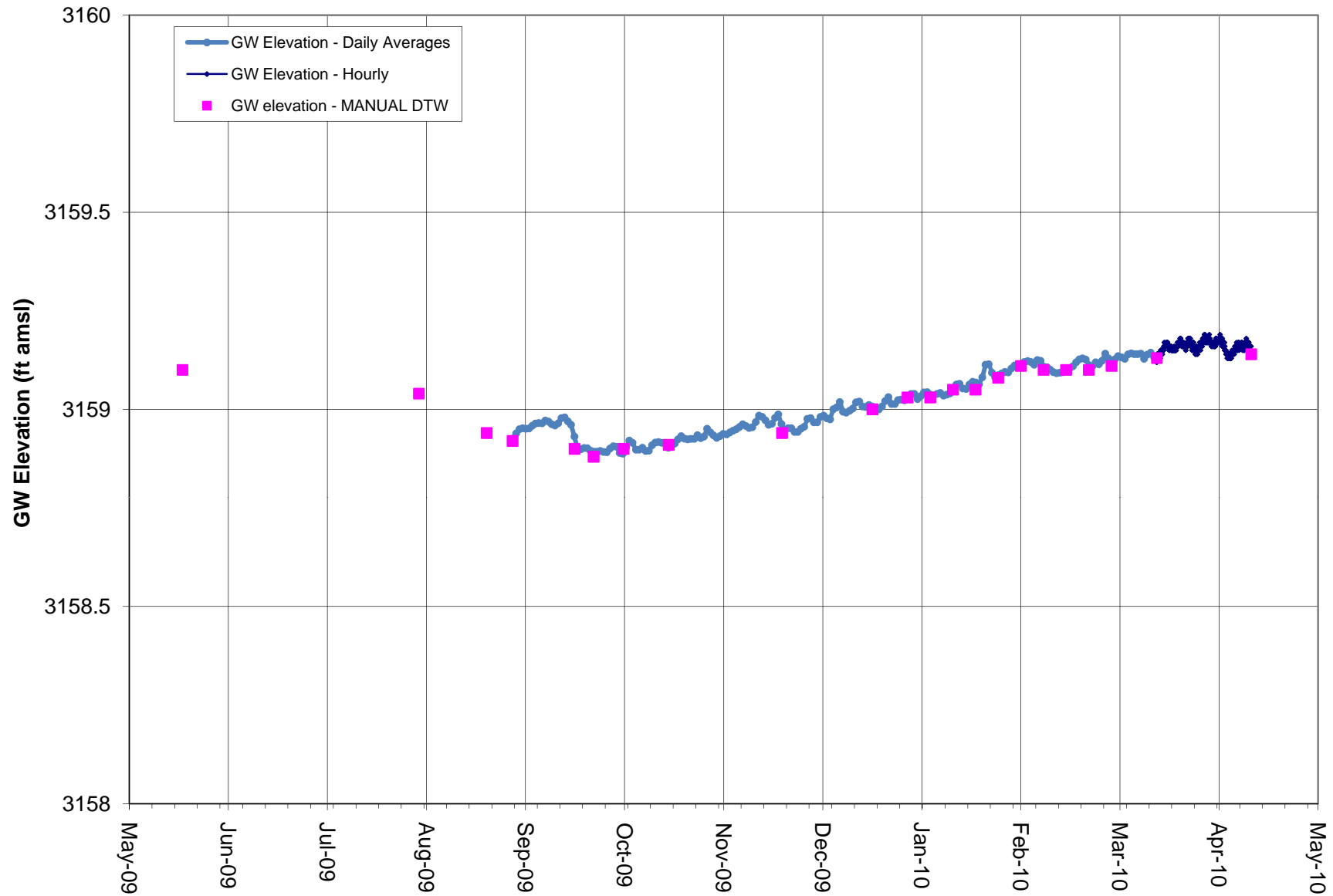
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV160 - 18-28 GTH Well



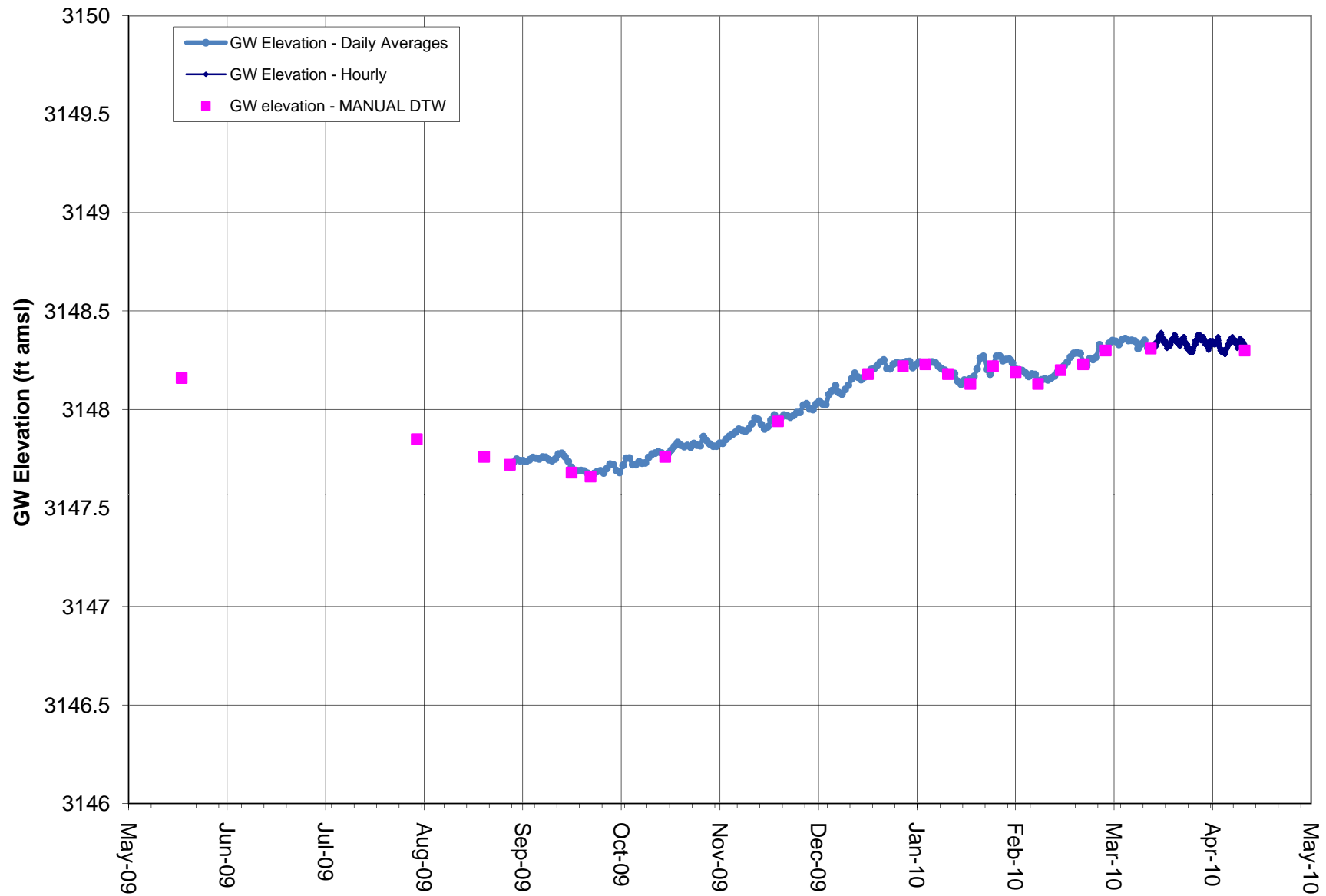
Note: Transducer data (absolute pressure) adjusted by data logged from BaroTroll and correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV180 - Little Lake Ranch North Well



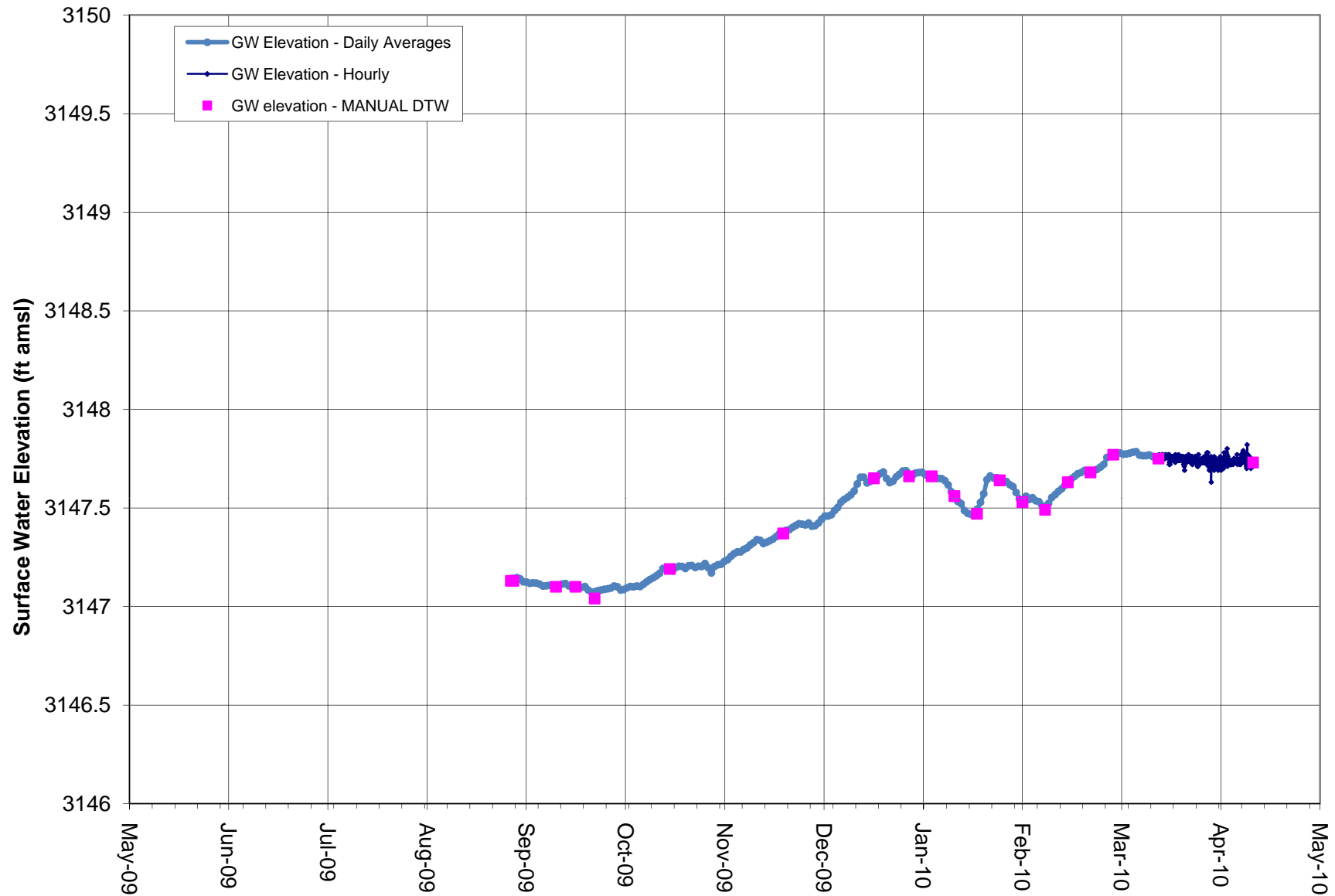
Note: Vented transducer data correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV210 - Little Lake Ranch Dock Well



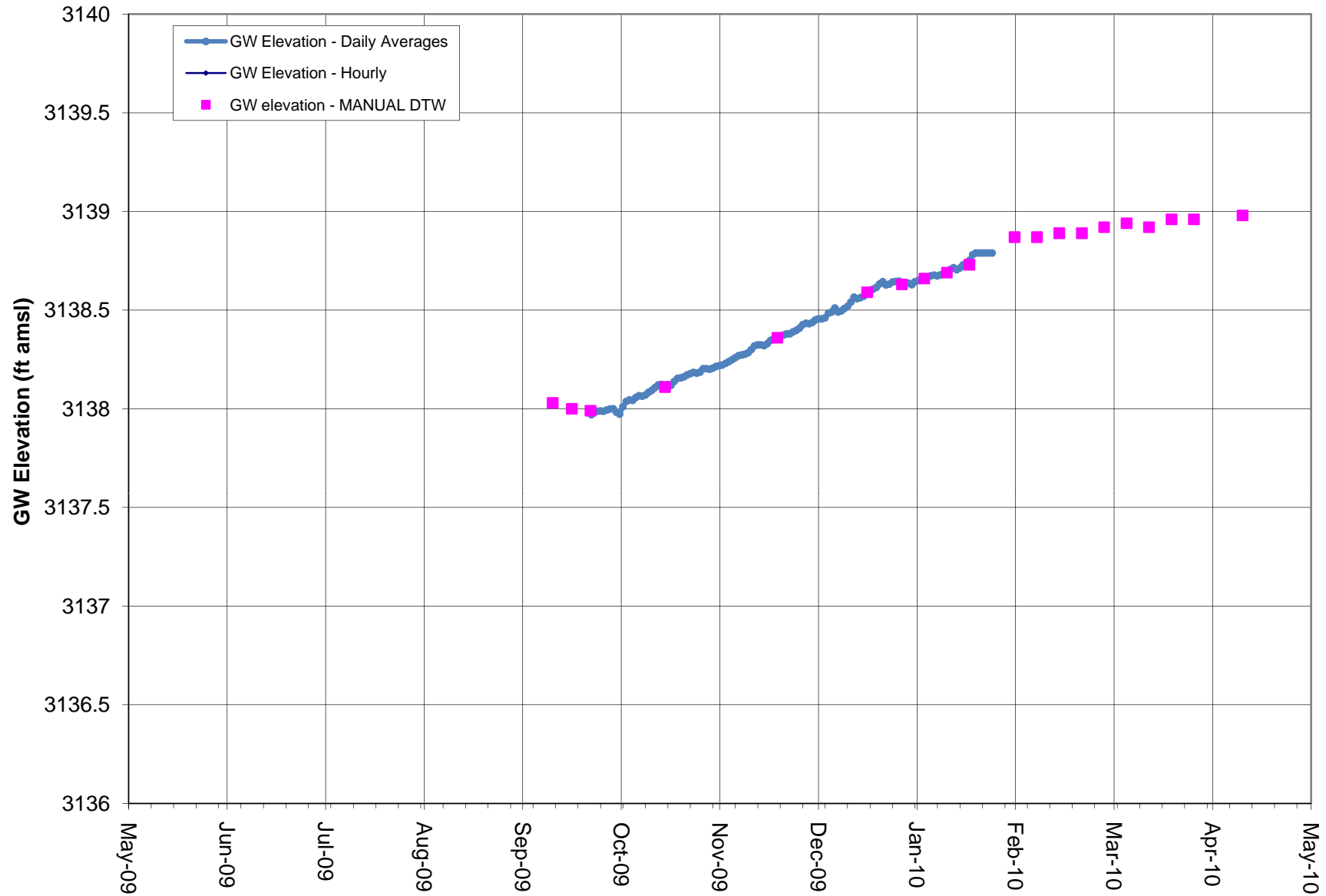
Note: Vented transducer data correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV220 - Little Lake Ranch Stilling Well (lake surface)



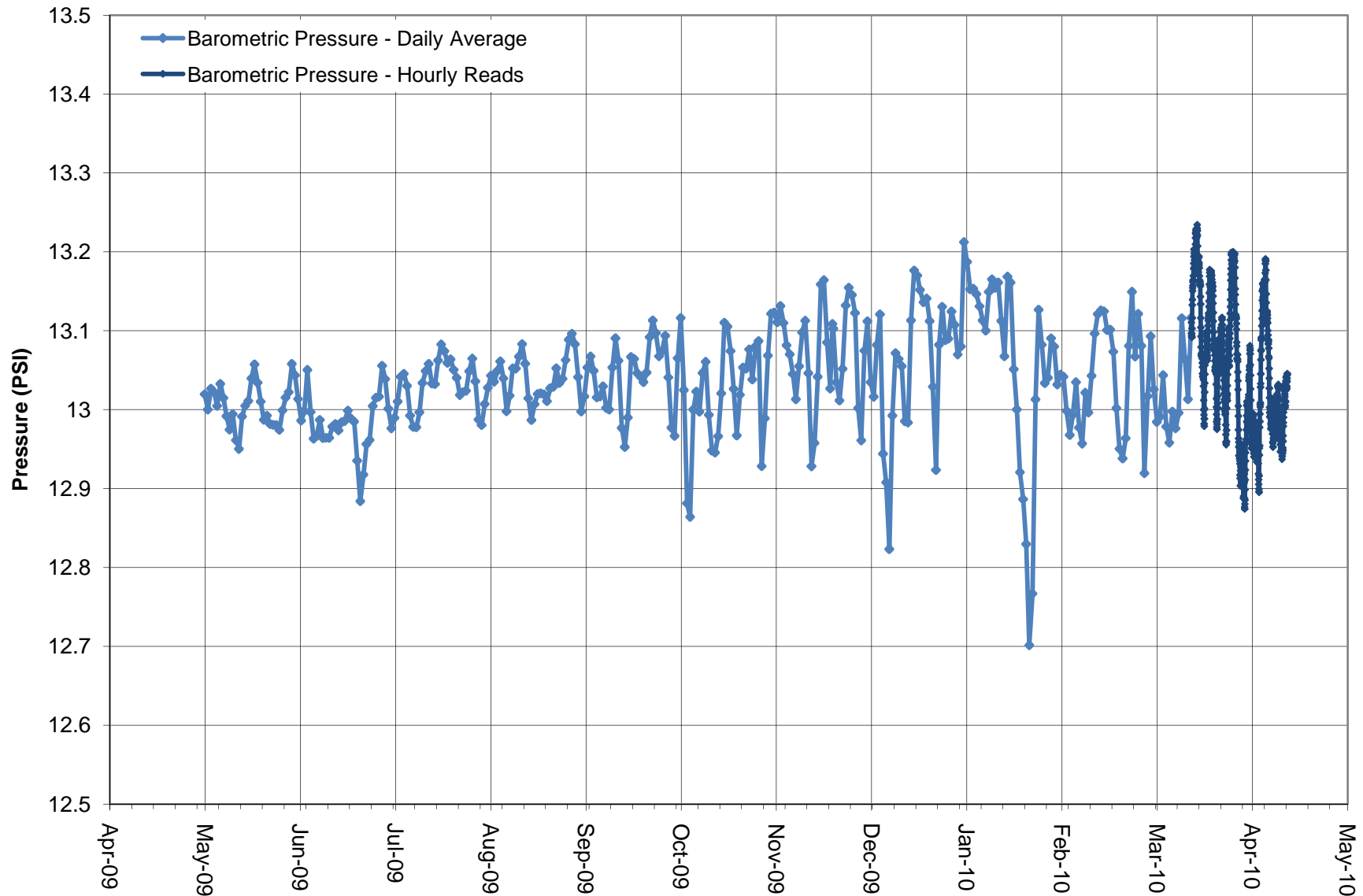
Note: Vented transducer data correlated to Manual DTW measurements. Represents surface water elevation of Little Lake.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

GROUNDWATER ELEVATION DATA - Transducer RV260 - Little Lake Ranch Hotel Well



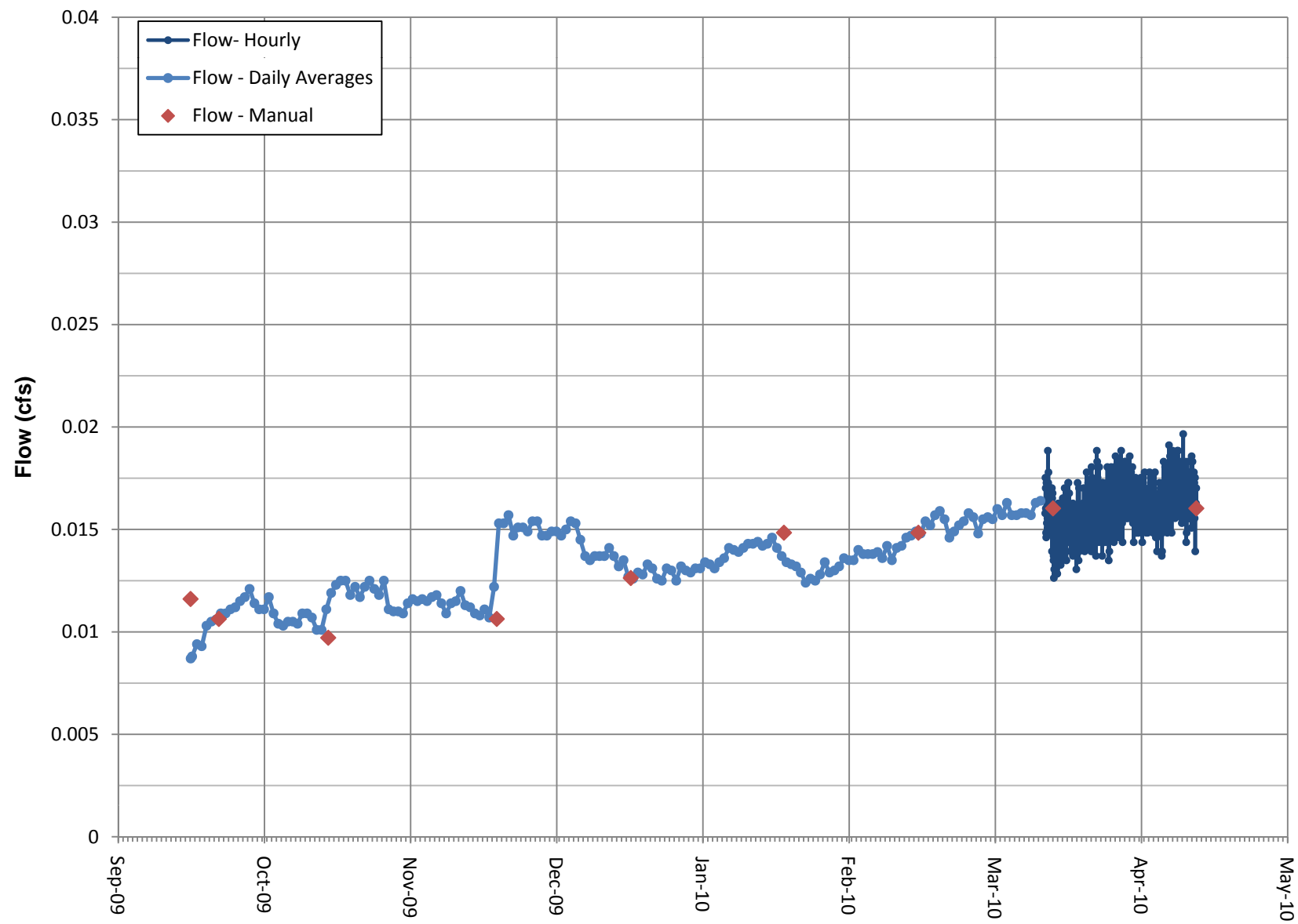
Note: Vented transducer data correlated to Manual DTW measurements.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

BAROMETRIC PRESSURE as Logged by BaroTroll



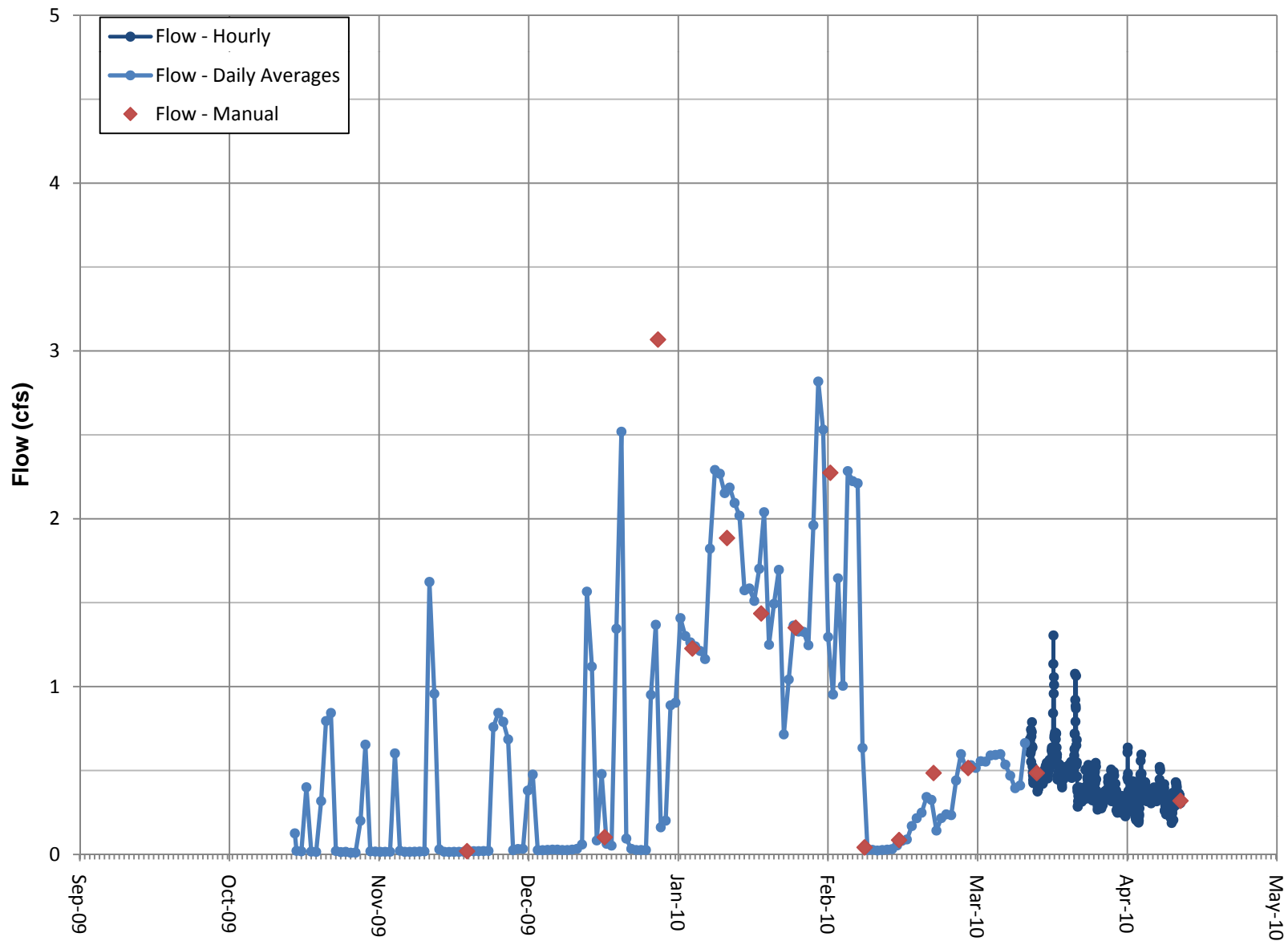
Note: BaroTroll located in well casing of well HR-2B. Records atmospheric pressure.
Significant pressure dip in January 2010 caused by large storm.

Surface Flow- Transducer RV 112- Davis Ranch South Flow



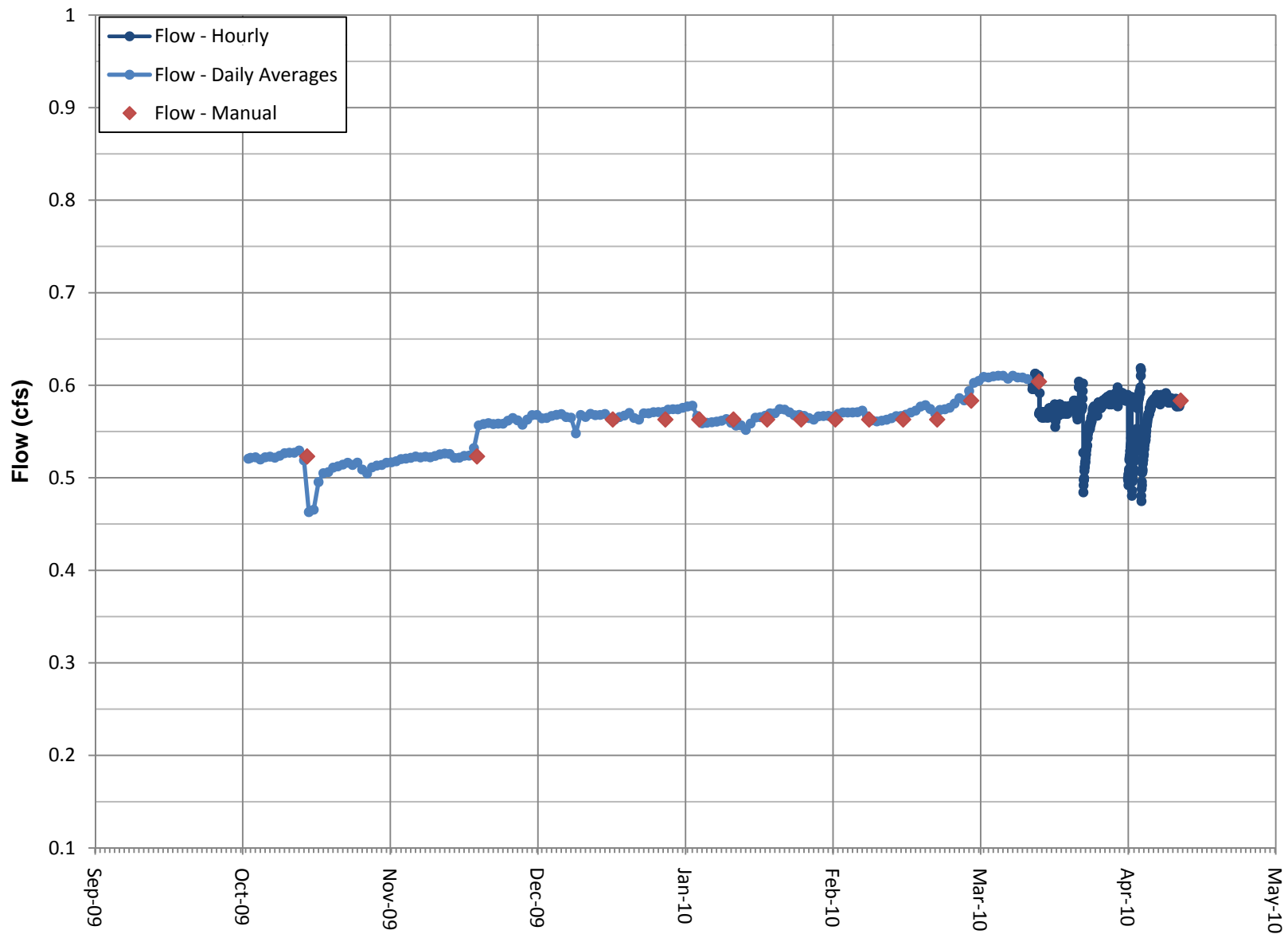
Note: Davis Ranch South Flow captures flow from the Davis Ranch South Well.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

Surface Flow- Transducer RV 230- Little Lake Outflow



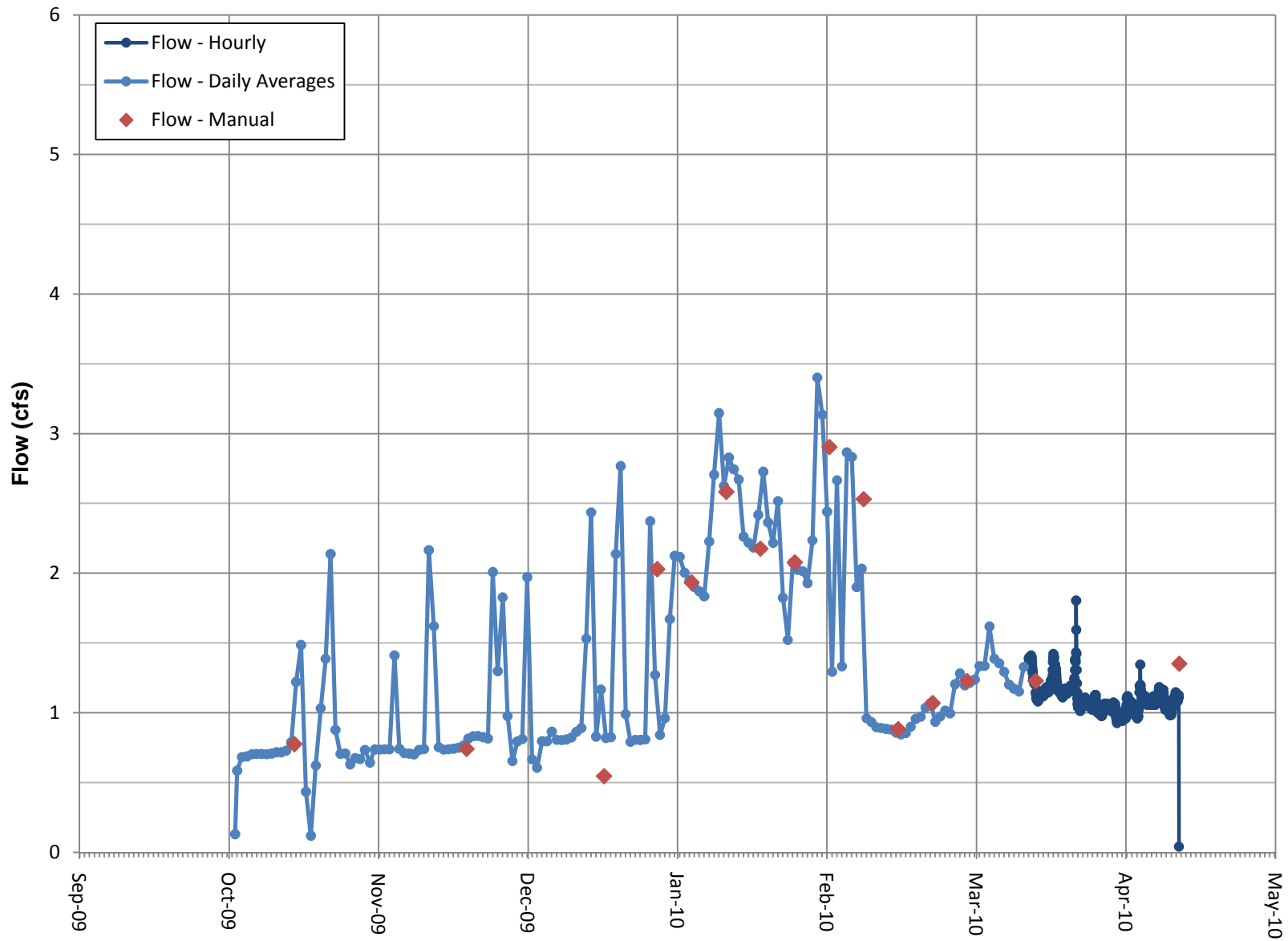
Note: Flows through Little Lake Outflow are influenced by natural and water management processes at Little Lakes Ranch. Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

Surface Flow- Transducer RV 240- Coso Springs



Note: Coso Springs is an artesian spring.
Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

Surface Flow- Transducer RV 245- North Culvert



Note: Flows through North Culvert are influenced by natural and water management processes at Little Lakes Ranch. Coso Operating Co. initiated the Hay Ranch Project on 12/25/09.

Hay Ranch Project Groundwater Pumping To Date

HAY RANCH SOUTH PRODUCTION WELL

Date: 12/25/2009 Totalizer Initial Read (gallons): 741,800,000
 Date: 04/13/2010 Totalizer Recent Read (gallons): 932,626,000

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
40172	12/25/09	0	-	0.0	0.0	0	0.0
40175	12/28/09	3.5	2,902,000	8.9	3.5	2,902,000	8.9
40182	1/4/10	10.5	9,469,000	29.1	7.0	6,567,000	20.2
40189	1/11/10	17.5	18,101,000	55.5	7.0	8,632,000	26.5
40196	1/18/10	24.5	24,009,000	73.7	7.0	5,908,000	18.1
40199	1/21/10	27.5	28,463,000	87.3	3.0	4,454,000	13.7
40203	1/25/10	31.5	33,589,000	103.1	4.0	5,126,000	15.7
40210	2/1/10	38.5	40,633,000	124.7	7.0	7,044,000	21.6
40217	2/8/10	45.5	46,049,000	141.3	7.0	5,416,000	16.6
40224	2/15/10	52.5	55,035,000	168.9	7.0	8,986,000	27.6
40227	2/18/10	55.5	59,004,000	181.1	3.0	3,969,000	12.2
40231	2/22/10	59.5	67,248,000	206.4	4.0	8,244,000	25.3
40238	3/1/10	66.5	81,177,000	249.1	7.0	13,929,000	42.7
40245	3/8/10	73.5	96,304,000	295.5	7.0	15,127,000	46.4
40252	3/15/10	80.5	114,238,000	350.6	7.0	17,934,000	55.0
40254	3/17/10	82.5	120,024,000	368.3	2.0	5,786,000	17.8
40259	3/22/10	87.5	132,704,000	407.3	5.0	12,680,000	38.9
40266	3/29/10	96.5	151,531,000	465.0	7.0	18,827,000	57.8
40281	4/13/10	109.5	190,826,000	585.6	15.0	39,295,000	120.6

Data based on manual reads by TEAM of the Hay Ranch South Production Well Totalizer
 Hay Ranch Project pumping initiated on 12/25/09