Annual Data Deliverable Memorandum
Water Year 2020

Groundwater Level Monitoring
Ventura County, California

prepared for

Upper Ventura River Groundwater Agency

prepared by

Rincon Consultants, Inc.

January 31, 2021

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January 31, 2021
Project No: 20-10008

Bryan Bondy, Executive Director and GSP Manager
Upper Ventura River Groundwater Agency
202 West El Roblar Drive
Ojai, California 93023
Via email: bbondy@uvrgroundwater.org

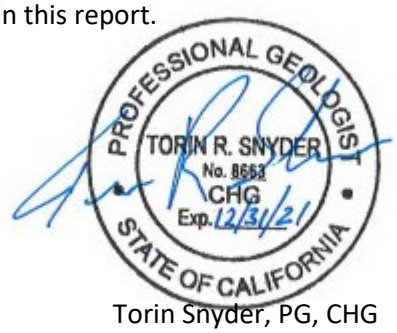
Subject: **Annual Data Deliverable Memorandum for Water Year 2020**
Upper Ventura River Groundwater Agency, Ventura County, California

Dear Mr. Bondy:

Rincon Consultants, Inc. (Rincon) has prepared the attached Annual Data Deliverable Memorandum for the 2020 Water Year (October 1, 2019 through September 30, 2020) for groundwater elevation monitoring activities performed at nine monitoring wells located within the Upper Ventura River Valley Groundwater Basin in Ventura County California. The memorandum was prepared for Upper Ventura River Groundwater Agency (UVRGA) under the supervision of a licensed California Professional Geologist and in accordance with UVRGA's *Monitoring and Data Collection Protocols and Data Quality Control Review Procedures*

We are pleased to support UVRGA on this important project and look forward to discussing any questions you may have regarding the data presented in this report.

Sincerely,
Rincon Consultants, Inc.



Kiernan Brtalik, CPSWQ, QSD/P
Senior Environmental Scientist/Project Manager

Torin Snyder, PG, CHG
Principal Hydrogeologist

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1 Introduction

The Annual Data Deliverable Memorandum for the 2020 Water Year presents data collected between October 1, 2019 and September 30, 2020 from a network of nine groundwater monitoring wells located within the Upper Ventura River Valley Groundwater Basin (Basin) in Ventura County California (Figure 1). This memorandum was prepared for Upper Ventura River Groundwater Agency (UVRGA) under the supervision of a licensed California Professional Geologist. Rincon Consultants, Inc. (Rincon) conducted monitoring activities and data collection, as well as preparation of this memorandum in accordance with the UVRGA's *Monitoring and Data Collection Protocols and Data Quality Control Review Procedures*.

The groundwater monitoring program provides groundwater level and elevation data necessary for the preparation and implementation of UVRGA's Groundwater Sustainability Plan (GSP). In early 2017, UVRGA established a monitoring network comprised of six groundwater monitoring wells located throughout the Basin. This monitoring network was expanded in November 2019 by installing two additional pressure transducers in groundwater monitoring wells located at Foster Park (MW 1 and MW 4). Additionally, in 2019, Meiners Oaks Water District (MOWD) and Ventura River Water District (VRWD) agreed to provide groundwater level data from pressure transducers maintained by the districts in their production wells MOWD # 2 and VRWD No. 5, respectively. On November 19, 2019, UVRGA removed the pressure transducer that was installed in State Well Number 04N/23W-09B01S at the owner's request.

The following section presents a groundwater monitoring well location map (Figure 1) and well information table (Table 1), as well as figures presenting groundwater level as depth-to-water (Figure 2a and 2b) and groundwater elevation as feet above mean sea level (ft. amsl) (Figure 3a and 3b). Appendices include field data sheets, raw pressure transducer data, and the processed pressure transducer data.

Figure 1 Groundwater Monitoring Well Locations

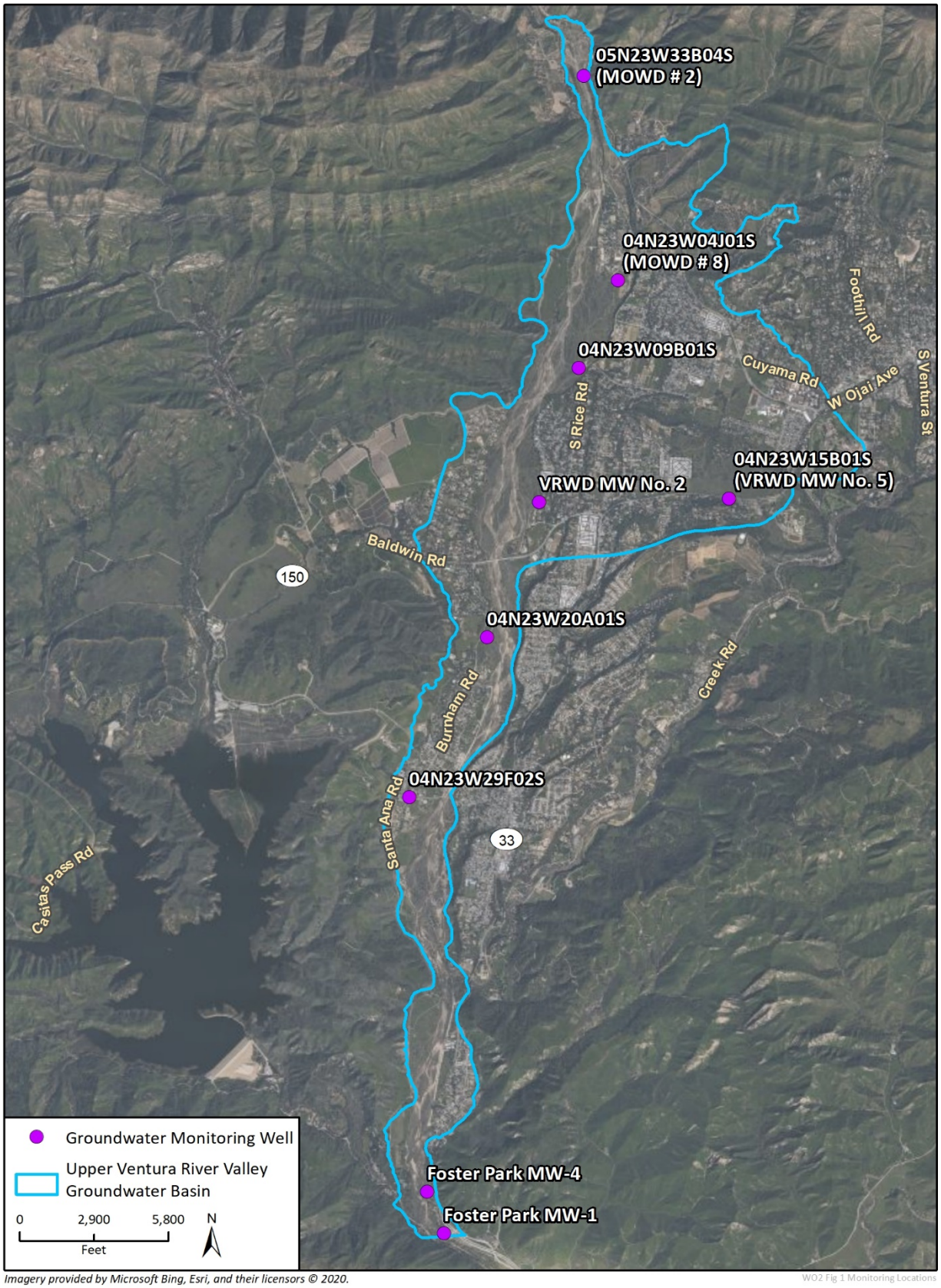


Table 1 Groundwater Monitoring Well Information

State Well Number	Other Name	Owner	Use	Data Source	Reference Point Elevation (ft. amsl)	Coordinates (NAD 83)
05N23W33B04S	MOWD # 2	MOWD	Municipal	MOWD Transducer or Manual Measurements	816.54	34.4771809, -119.291636
04N23W04J01S	MOWD # 8	MOWD	Municipal	UVRGA Transducer	713.00	34.4552614, -119.2868565
04N23W09B01S	N/A	Private	Agricultural	UVRGA Transducer	662.30	34.445844, -119.291794
N/A	VRWD MW No. 2	VRWD	Monitoring	UVRGA Transducer	565.11	34.431363, -119.296737
04N23W15B01S	VRWD MW No. 5	VRWD	Monitoring	VRWD Transducer	686.73	34.4320185, -119.2721482
04N23W20A01S	N/A	Private	Agricultural	UVRGA Transducer	488.89	34.4168, -119.303224
04N23W29F02S	N/A	Private	Domestic/Agricultural	UVRGA Transducer	396.00	34.399551, -119.312975
N/A	Foster Park MW-1	City of Ventura	Municipal	UVRGA Transducer	226.01	34.3527778, -119.3077778
N/A	Foster Park MW-4	City of Ventura	Municipal	UVRGA Transducer	240.84	34.3572222, -119.310

MOWD – Meiners Oaks Water District
UVRGA – Upper Ventura River Groundwater Agency
VRWD – Ventura River Water District
N/A – Not Available
ft. amsl – Feet Above Mean Sea Level
NAD 88 – North American Datum of 1983

2 Monitoring Data Summary

Field monitoring activities were conducted on October 9, 2019, February 5 and 7, 2020, and March 4, 2020 by Kear Groundwater, and on October 30, 2020 and November 5, 2020 by Rincon. During these events, manual depth-to-water measurements were collected and pressure transducer data were downloaded. Field data sheets are provided as Appendix A and raw pressure transducer data is provided as Appendix B. Processed data, including a compilation of raw pressure transducer level data are provided as Appendix C. This appendix includes a metadata and Quality Assurance and Quality Control (QA/QC) worksheet to summarize the processed data file deliverable, raw data processing activities, and QA/QC considerations. In addition, Rincon compiled historical data recorded at the nine groundwater monitoring wells to provide a centralized dataset for future data deliverables and record keeping.

Pressure transducer data recorded by Solinst Leveloggers were exported to Microsoft Excel to process groundwater level and elevation. Groundwater level was calculated by subtracting raw pressure transducer level data from the effective logger depth for each pressure transducer.[1] Groundwater elevation was calculated by subtracting the groundwater level from the reference point elevation at the top of well casing, which was provided by UVRGA. Groundwater level data provides insight into how groundwater changes in relation to the land surface, whereas elevation data can provide insight into the direction of groundwater flow. Groundwater level is presented in Figure 2a and Figure 2b, and groundwater elevation is presented in Figure 3a and Figure 3b. For presentation purposes, these figures present monitoring wells located north and south of Baldwin Road.

Groundwater levels during the 2020 Water Year were generally higher during the spring and summer, with levels closest to the surface occurring between April and May in most wells. These groundwater levels followed a similar trend in the 2018 and 2019 Water Years (Kear Groundwater, 2020).

2.1 Quality Assurance and Control Observations

The following provides a summary of specific QA/QC observations for the 2020 Water Year that were identified during the preparation of this data deliverable.

Barometric Compensation

We understand that the effect of barometric fluctuations on groundwater levels may not be of significance in these groundwater monitoring wells. For example, the barometric pressure recorded at State Well 04N23W29F02S and Foster Park MW-4 between September 2018 and November 2020 ranges from 14.3 pounds per square inch (psi) to 14.8 psi, with an average of approximately 14.5 psi. Considering these minor fluctuations around approximately one standard atmosphere, data were not compensated for barometric pressure. This was noted in the 2018 report (Kear Groundwater, 2018) and the processed data file included in the 2020 report (Kear Groundwater,

[1] This effective logger depth is developed using raw pressure transducer level data (including both water pressure and atmospheric pressure) and manual depth to water measurements.

2018) does not present data compensation. For purposes of consistency, Rincon followed previous data processing procedures and did not compensate for barometric fluctuations.

Pressure Transducer Above Water Table

Data recorded by the pressure transducer installed at State Well 04N23W09B01S between October 9, 2019 and February 4, 2020 indicate that the pressure transducer was either removed from the monitoring well or suspended above the water table. As reflected in the figures below and in the processed data (Appendix C), Rincon excluded groundwater level and elevation data recorded during this period. Raw pressure transducer level data is included in Appendix C.

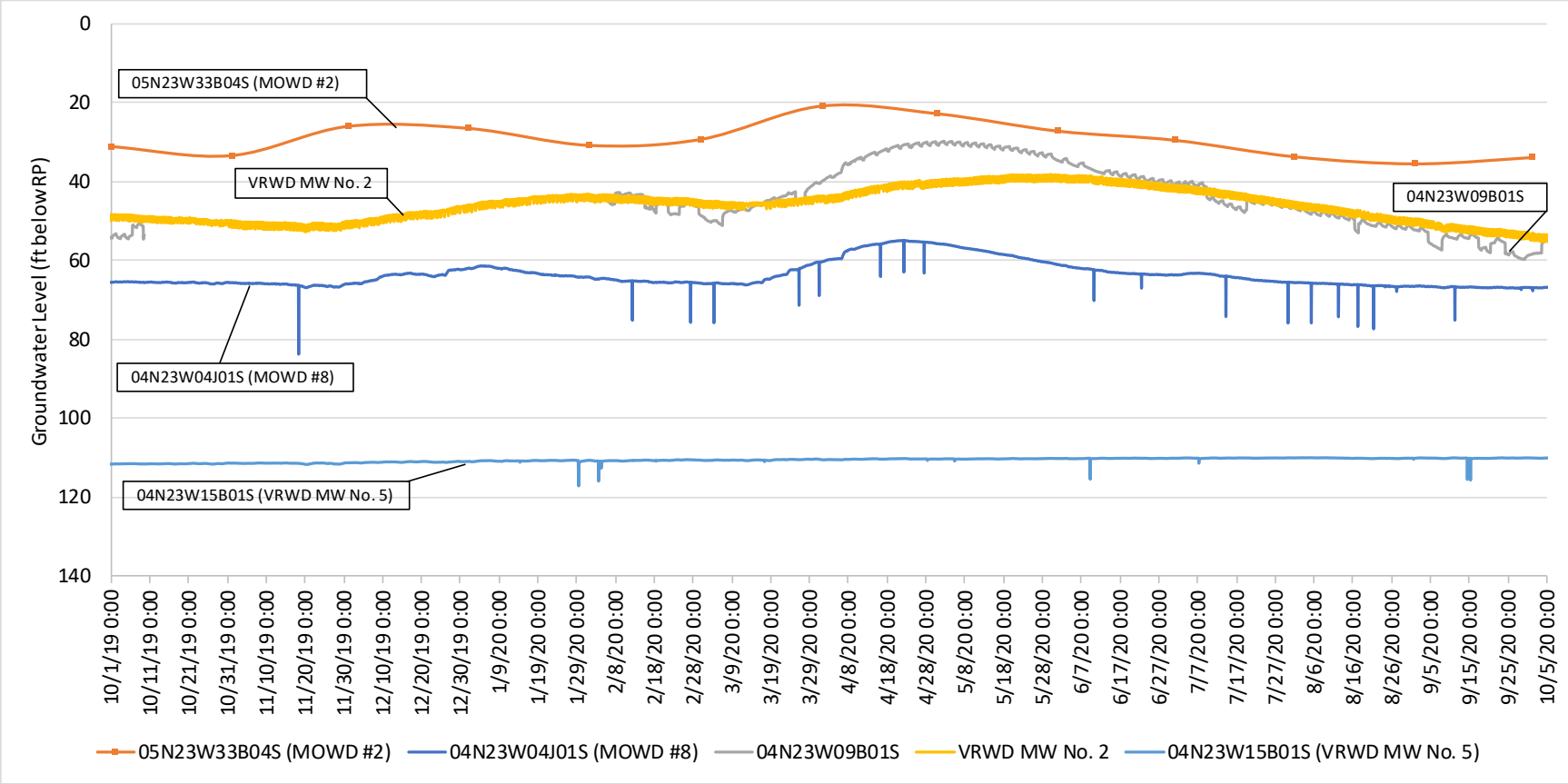
Data Availability for MOWD #2

Due to staff changes at MOWD, continuous pressure transducer data for State Well 05N23W33B04S (MOWD #2) is not included in this report. Monthly manual depth-to-water measurement data were provided by MOWD and have been used in-lieu of the continuous pressure transducer data. As such, the data presented in the figures below reflect these manual measurements. Further, because dates were not provided by MOWD these data are presented by using the first day of each month.

Reference Point Elevation Update

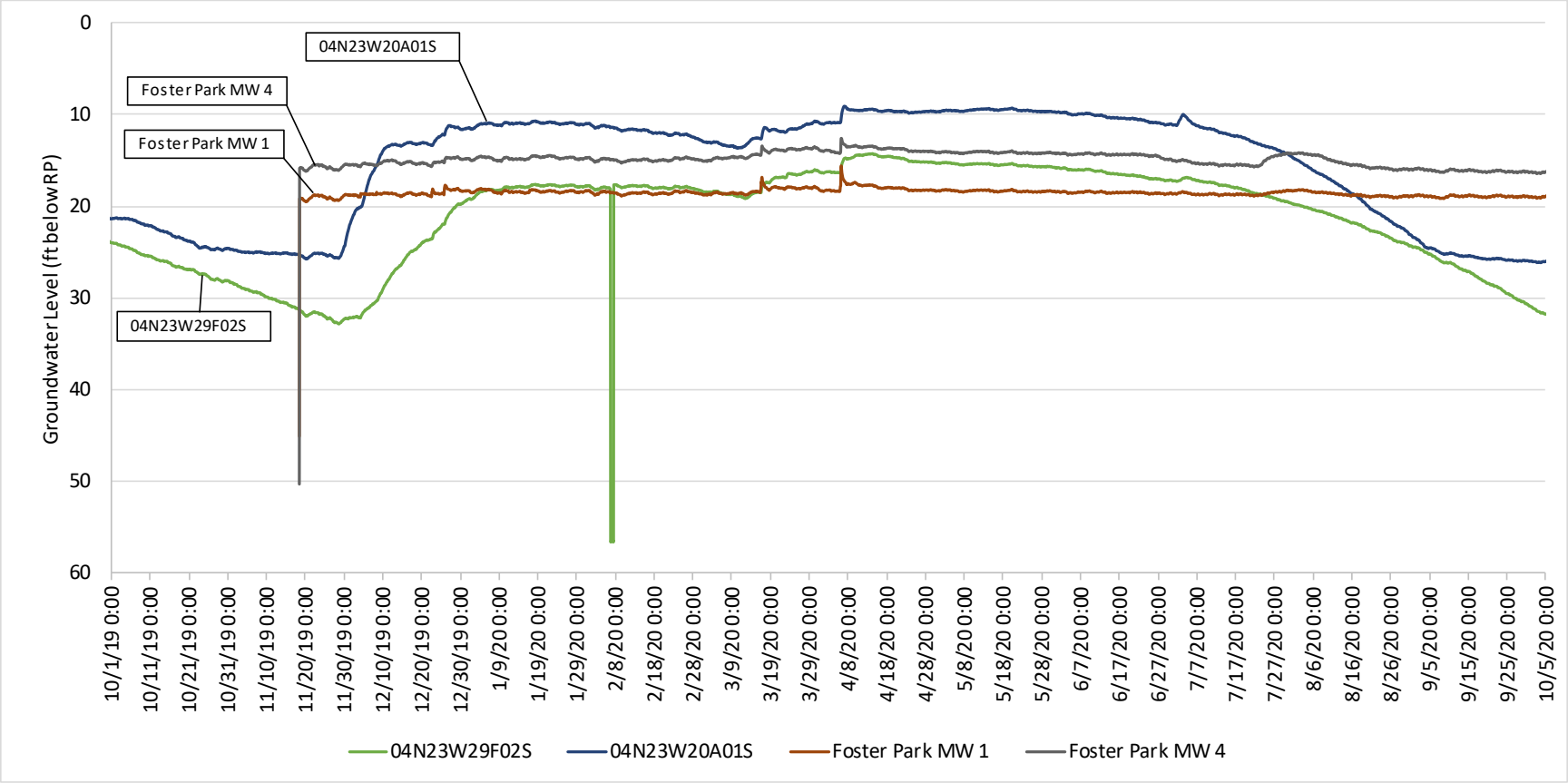
Finally, the reference point elevation for VRWD MW No. 2 was updated as of October 15, 2020. Therefore, the figures and processed data present groundwater elevation using this value. In addition, this reference point elevation has been applied to groundwater elevation calculations for historical data records in Appendix C.

Figure 2a Groundwater Level Below Land Surface (north of Baldwin Road)



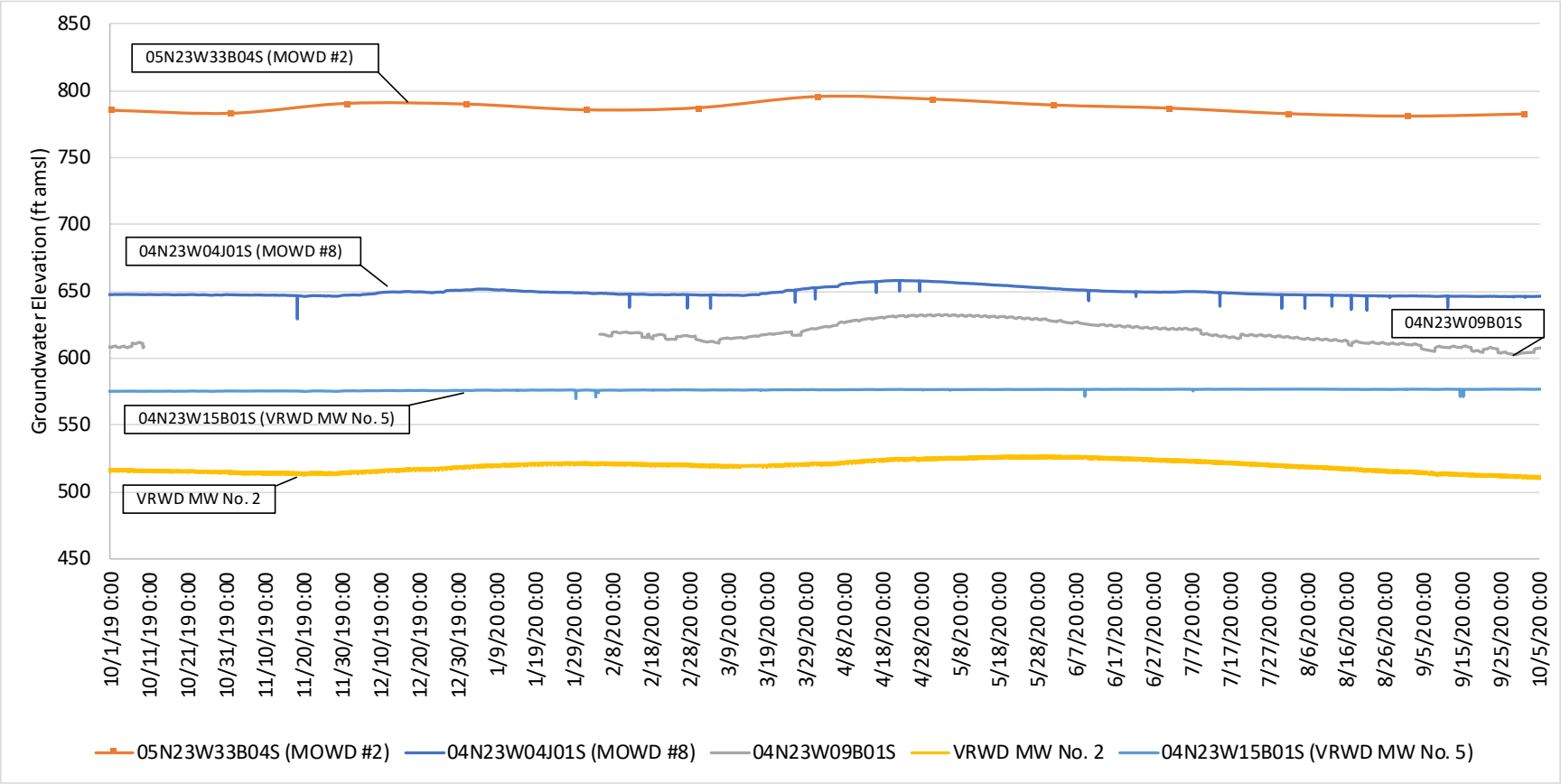
Notes:
To present depth to water relative to the monitoring well's reference point (RP) at ground surface, the y-axis is presented in reverse order.
Continuous pressure transducer data for State Well 05N23W33B04S (MOWD #2) was not available for this report. MOWD provided manual groundwater level measurements.
Data recorded at State Well 04N23W09B01S for the time period between October 9, 2020 and February 4, 2020 are not displayed as records indicate the pressure transducer was removed or suspended above the water table.

Figure 3b Groundwater Level Below Land Surface (south of Baldwin Road)



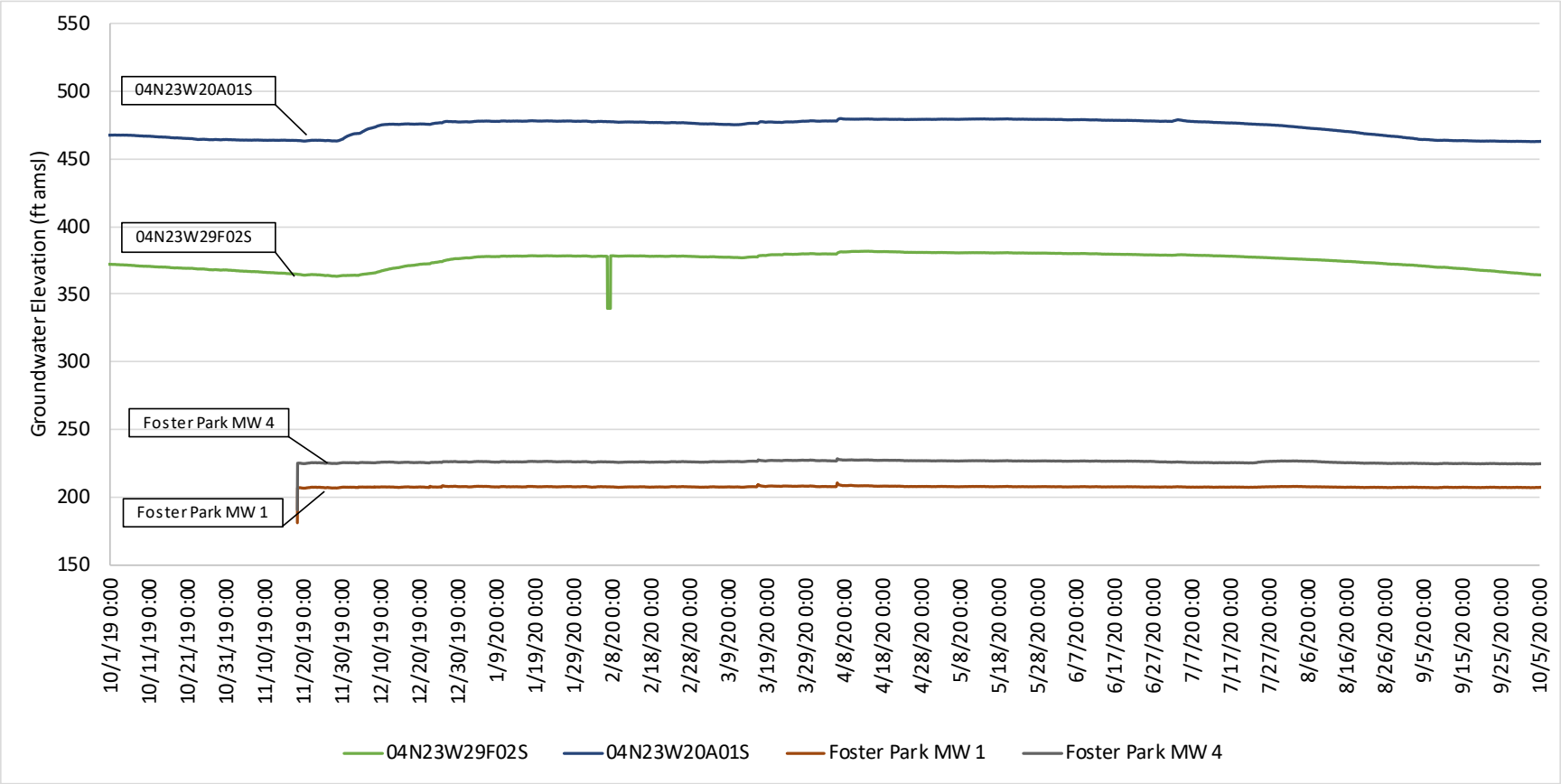
Notes:
To present depth to water relative to the monitoring well's reference point (RP) at ground surface, the y-axis is presented in reverse order.
Monitoring at the Foster Park groundwater monitoring wells (MW 1 and MW 4) was initiated on November 18, 2019.

Figure 4a Groundwater Elevation (north of Baldwin Road)



Notes:
Continuous pressure transducer data for State Well 05N23W33B04S (MOWD #2) was not available for this report. MOWD provided manual groundwater level measurements.
Data recorded at State Well 04N23W09B01S for the time period between October 9, 2020 and February 4, 2020 are not displayed as records indicate the pressure transducer was removed or suspended above the water table.

Figure 5b Groundwater Elevation (south of Baldwin Road)



Notes:
Monitoring at the Foster Park groundwater monitoring wells was initiated on November 18, 2019.

3 References

UVRGA Monitoring and Data Collection Protocols, Updated and Adopted November 13, 2018.

Kear Groundwater, 2018, *Report of Groundwater Level and Temperature data, spring 2017 to summer 2018 Upper Ventura River Groundwater Basin Ventura County, California.* September 30, 2018.

Kear Groundwater, 2020, *Report of Groundwater Level and Temperature Data, Spring 2017 to September 2019, Upper Ventura River Groundwater Basin, Ventura County, California.* January 31, 2020.

Appendix A: Field Data Sheets

Upper Ventura River
GROUNDWATER AGENCY
SUSTAINABLE MANAGEMENT

GROUNDWATER LEVEL MEASUREMENT FIELD DATA SHEET

A	B	C	D	E	F	G	H
WELL ID *Researched*	DATE *Record*	TIME *Record*	RPE (FT AMSL) *Researched*	RPH (FT AGL) *Measured*	DTW (FT) *Measured*	GWE (FT AMSL) *D-F*	NOTES
CASITAS MHP	1/25/18	230PM			45.86		
VEGA	1/25/18	295PM			64.27*		offset, corrected in dataset
1000 Buenaventura	1/25/18	300PM			45.01*		offset, corrected in dataset
VRWD MW2	1/25/18	311PM			69.96		
Grandview 9B1	1/25/18	400PM			58.55		
MOWD 8	1/25/18	500PM			67.06		
CASITAS MHP	7/25/18	101SAM			44.35		
VEGA	7/26/18	245PM			53.22*		offset, corrected in dataset
1000 Buenaventura	7/26/18	320PM			45.18*		offset, corrected in dataset
VRWD MW2	7/26/18	215PM			69.96		
MOWD 8	7/26/18	130PM			66.87		
Grandview 9B1	7/26/18	350PM			53.08		
CASITAS MHP	9/21/18	1:00PM			45.89		
1000 Buenaventura	9/21/18	10:30AM			27.63		
VEGA	9/21/18	10:55AM			47.59		CABLE REPLACED
MOWD 8	10/9/19	350P			65.58		Data Downloaded
GRANDVIEW	10/9/19	312P			53.42		Data Downloaded
VRWD MW2	10/9/19	1:27P			51.21		Data Downloaded
BUENAVENTURA	10/9/19	1:05P			22.15		Data Downloaded
VEGA	10/9/19	12:49P			25.79		Data Downloaded
CMHP	10/9/19	12:22P			47.48		Data Downloaded

Upper Ventura River
GROUNDWATER AGENCY
SUSTAINABLE MANAGEMENT

GROUNDWATER LEVEL MEASUREMENT FIELD DATA SHEET

A	B	C	D	E	F	G	H
WELL ID	DATE	TIME	RPE (FT AMSL)	RPH (FT AGL)	DTW (FT)	GWE (FT AMSL)	NOTES
Researched	Record	Record	Researched	Measured	Measured	D-F	
CASTAIC MHP	5/4/17	200	290	3.00	22.97	267.03	Set logger @ 50/1
MWD 8	5/11/17	335	714	6.00	46.00	668.00	Set logger @ 102ft
Grankow 3B1	5/12/17	500PM	661	3.00	20.75	640.25	Set logger @ 90ft.
FOSTER PK N	2/5/20	11:28A		2.86	14.89		
FOSTER PK S	2/5/20	11:50A		2.19	13.90		
GRAN. MCGOV	2/5/20	1:05P			53.37'		PUMPING
VEGA	2/7/20	1:03P		2.05	18.82		
BUNKHAM	3/4/20	2:10PM		0.74	11.34		
GRANKOW	3/4/20			4.16			PUMPING
VEGA	3/4/20	1:28PM			16.57		
FOSTER S	3/4/20	2:00PM			19.86		
FOSTER N	3/4/20	3:21P			15.19		

Appendix A – Groundwater Level Field Form

Upper Ventura River GROUNDWATER AGENCY SUSTAINABLE MANAGEMENT

GROUNDWATER LEVEL MEASUREMENT FIELD DATA SHEET

A	B	C	D	E	F	G	H
Well ID	**DATE**	**TIME**	**RPE (ft amsl)**	**RPH (ft agl)**	**DTW (ft)**	**GWE (ft amsl)**	**Notes**
Researched	*Record*	*Record*	*Researched*	*Measured*	*Measured*	*D-F*	
04N23W09B01S	10/30/2020	11:50	662.3		50.67	611.63	
MOWD #8	10/30/2020	13:53	713		67.34	645.66	
VRWD MW No. 2	10/30/2020	14:58	565.11		58.65	506.46	
04N23W20A01S	10/30/2020	15:25	488.89		26.74	462.15	Solinst equipment failure
04N23W29F02S	10/30/2020	16:04	396		38.52	357.48	
Foster Park MW-1	11/5/2020	10:48	226.01		16.57	209.44	
Foster Park MW-4	11/5/2020	11:08	240.84		14.3	226.54	

Appendix B: Raw Pressure Transducer Data

(Provided Electronically)

Appendix C: Processed Pressure Transducer Data

(Provided Electronically)