

# Memo: MW-14-208 Monitoring

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*May 14, 2018*

MW-14-208 is a monitoring well located at the end of Reach 4A, right bank. The well is at a site that is known to have seepage impacts at lower flows and therefore is a priority in the Seepage Management Plan (SMP) and a current operating constraint for Restoration Flows. Groundwater levels at this site have been closely monitored weekly throughout water year 2018.

As described in the SMP, well thresholds serve as a proxy for field conditions. Field conditions are important to monitor since the field is where seepage impacts would be realized. Measurements taken at MW-14-208 suggest groundwater levels are above well threshold; however, monitoring in the adjacent field confirms that water levels are below field thresholds identified in the SMP. Two borings were drilled in the field adjacent to MW-14-208 to determine the groundwater level in relation to the field threshold. April 18, 2018 measurements in Table 1 indicate at least 1.1 ft clearance in the field before reaching the SMP field threshold of 5.5 ft; groundwater level trends have been dropping since. Table 2 indicates at least 0.5 ft clearance in the field as of May 8, 2018 when compared with soil boring 17-1; soil boring 18-1 indicates a clearance of 1.15 ft and stable trends since April.

Additional data includes EM 38 surveys completed on May 4, 2018 in the field near MW-14-208. Results indicate favorable salinity and soil moisture conditions for the current cotton crop that was recently planted (see attachment).

Given the confirmation of field monitoring indicating groundwater levels below field thresholds in conjunction with decreasing well measurements in MW-14-208, additional field monitoring can be curbed. Weekly measurements at the groundwater monitoring well will continue, but additional field measurements are not deemed necessary unless well measurements indicate increasing groundwater levels beyond the known clearance as of the last field monitoring or if Restoration Flows are increased.

**Table 1.** Summary of groundwater conditions observed near SJRRP Monitor Well MW-14-208 on April 18, 2018. Surface water flows were approximately 120 cfs at this time.

<b>Gage/Well</b>	<b>Water Surface ELEV (Ft, NAVD88)</b>	<b>Depth to GW from Land Surface (Ft)</b>	<b>SMP Threshold Depth (Ft)</b>	<b>Allows Groundwater Drainage?</b>	<b>7 DAY Trend?</b>
Menefee Staff Gage	98.60			YES	Falling
SWA Staff Gage	97.33			YES	Falling
MW-208	99.88	5.62	6.50	YES	Falling
Soil Boring 17-1		6.60	5.50	YES	Falling
Soil Boring 18-1		6.65	5.50	YES	Falling
MW-167	90.33	16.37		YES	Falling (GW Pumping)

**Table 2.** Summary of groundwater conditions observed near SJRRP Monitor Well MW-14-208 on May 8, 2018. Surface water flows were approximately 127 cfs at this time.

<b>Gage/Well</b>	<b>Water Surface ELEV (Ft, NAVD88)</b>	<b>Depth to GW from Land Surface (Ft)</b>	<b>SMP Threshold Depth (Ft)</b>	<b>Allows Groundwater Drainage?</b>	<b>7 DAY Trend?</b>
Menefee Staff Gage	98.70			YES	Slight Rise
SWA Staff Gage	97.50			YES	Slight Rise
MW-208	99.35	6.15	6.50	YES	Falling
Soil Boring 17-1		>6.0	5.50	YES	Falling
Soil Boring 18-1		6.65	5.50	YES	Stable
MW-167	90.22	16.48		YES	Falling (GW Pumping)

**San Joaquin River Seepage Management Program**

Well or Boring# menfb3 Sampler: brummer lee Date: 5/4/2018  
 location wgs84 37.09912 120.57665 wp450jb Landform recent alluvium over basin NRCS Map Unit columbia  
 Location Notes 100 feet east of mw208  
 Topography nearly level Vegetation & Conditon young cotton ,just emerged  
 Irrigation System Type: gravity / drip Irrigation Quadrant 5//5  
 Avg EM Measurements; EM<sub>v</sub> 65 EM<sub>H</sub> 52 EM Calibration Site: EM<sub>v</sub>          Emh           
 Root depth inches          Soil Temperature, °C (2") 26.7 (16") 25.6  
 ave ECe 0-36in 2.20 dS/m

**PROFILE DESCRIPTION AND LABORATORY DATA**

Sample No.	Depth (Inches)	USDA Texture	% Clay	% Sand	Color	Reaction to HCL <sup>1</sup>	Moisture Content <sup>2</sup>	Mottles	pH Paste	ECe dS/m	Sat. %	Notes:
	0-14	lt loam	10	50	grbr		m-vm	none				very friable
	14-26	sil	22	20	dkgray		vm	none				friable
	26-60	fsl	9	65	grbr		vm	none				very friable,sl in spots
	60-62	sand	2	93	lt gray		wet	none				single grained, loose
	62-70	lt sicl	28	20	olgray		wet	few				firm
	70-84	lt cl	29	35	olgray		w-sat	few				firm, common carbonates
	0-2									2.04		middle of bed
	0-2									3.42		bed shoulder
	0-2									2.32		bottom of furrow
	14-16									3.42		ha boring
	40-42									1.01		ha boring
	82-84									3.91		ha boring

<sup>1</sup> Lime content; HCL reaction 0 none; + slight; ++ moderate +++ strong

<sup>2</sup> Soil moist: nearly dry=nd; slightly moist = sm; moist = m; very moist= vm; wet = w; saturated=S;

Field capacity will be considered very moist. Wet will be considered capillary fringe conditions.

**Site Remarks:**

Numeric values indicate percent moisture by weight.

river flow about 130 cfs; river water specific conductance 330;  
 capillary fringe zone about 55-74 inches; water table 6.55 after 10 minutes  
 water table depth 6.1 feet after 30 minutes;; all measurements from top of bed;  
 Ece values estimated from Eca readings and soil texture using a graph from USDA  
 top of beds appear to have been scraped into furrows during planting or just prior to emergence;  
 salinity levels are favorable for cotton; all em38 readings were from furrow bottoms;

<b>EM38 Measurements:</b>					
EM <sub>v</sub>	EM <sub>H</sub>	Ece	EM <sub>v</sub>	EM <sub>H</sub>	
77	66	3.93	62	44	
93	66	2.99	36	42	
80	51	1.48	25	19	
74	53	2.06	48	65	
71	59	3.13	77	61	
74	57	2.65	67	49	