Appendix J. Operations

This appendix includes the evaluations and response actions that will be conducted to attempt to avoid seepage impacts due to the release of Restoration Flows.

J.1 Evaluations

Triggers determine when the SJRRP will take action through site visits and flow management. Two of these triggers are initiated by SJRRP monitoring. The third trigger allows landowner observations to initiate action from the SJRRP.

J.1.1 Flow Bench Evaluations

Flow Bench Evaluations are assessments of groundwater levels completed prior to substantial increases in releases from Friant Dam (i.e., before increasing to the next "flow bench") for the SJRRP. These allow the program to restrict flow releases as necessary to avoid material adverse groundwater seepage impacts.

Flow Bench Evaluations use data from the SJRRP surface water hydraulic models to predict groundwater levels in priority wells prior to an increase in the target Gravelly Ford flow. Flow Bench Evaluations are not done for small changes to the Friant Dam release flow made for Gravelly Ford compliance, as these do not result in a change of the target Gravelly Ford flow. A site visit, or a change in the flow increase, is triggered if the Flow Bench Evaluation predicts levels above identified thresholds in locations that have not been previously evaluated.

Reclamation uses two methods to predict groundwater levels resulting from an increase in SJR flow: (1) Groundwater Level Method and (2) Drainage Method.

J.1.1.1 Groundwater Level Method

The Groundwater Level Method adds the predicted rise in the river's water surface for a given increase in flow to the observed groundwater level and may restrict flows if the resulting groundwater level is above the threshold. Equation 1 (below) shows how the observed groundwater level is determined.

$$Field\ Depth_{Current} = D_{well} - GS_{Buffer} + LG_{Buffer} \quad (1)$$

Where:

$Field\ Depth_{Current}$	Current groundwater level depth in the field
D_{Well}	Current groundwater level depth as measured in the monitoring well
GS_{Buffer}	Ground surface buffer, or the difference in elevation between the well and the field within 750 feet of the well. This adjusts

groundwater levels for wells located up on a levee or down in a channel to match the groundwater level under the field.

LG_{Buffer} Lateral gradient buffer, to account for losing reaches where the groundwater table slopes away from the river

This method estimates the potential increase in river stage based on the stage-flow rating curves, as defined in the 1-D HEC-RAS model (Tetra Tech 2009) for a given increase in flow in the river. In most cases, the steady-state HEC-RAS model will be used. If the future increase in flow is a short duration (less than 4 days) flow pulse, the unsteady HEC-RAS model will be used to determine the projected increase in river stage. This method then assumes that the groundwater levels adjacent to the area of the rating table will increase by the same amount (i.e., a "1:1" relationship between stage and groundwater levels). This process is shown conceptually in Figure J-1.

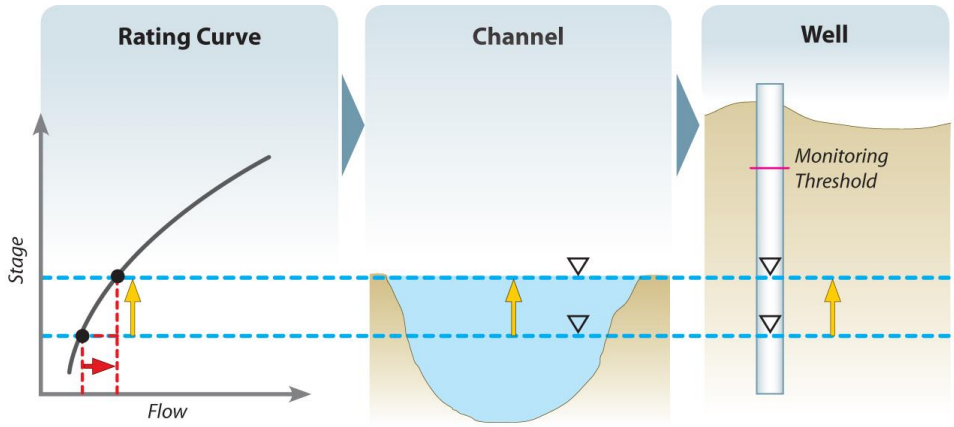

Figure J-1. Conceptual Relationship between River Stage and Groundwater Levels

Figure J-2 show the use of this method in a more realistic cross-section. Note that the numbers following several of the labels in the figure correspond to the calculation columns presented in the Flow Bench Evaluation worksheets (see example in Table J-1). Equation 2 (below) shows how the Groundwater Level Method takes the current field depth, and subtracts the predicted water surface elevation increase from the hydraulic model. Subtraction results in a shallower predicted groundwater level.

$$Field\ Depth_{Predicted} = Field\ Depth_{Current} - WSEL_{Max\ Increase} \quad (2)$$

Where:

$Field\ Depth_{Predicted}$ Predicted groundwater level depth in the field

$WSEL_{Max\ Increase}$ Maximum water surface elevation increase due to the increase in river flows evaluated

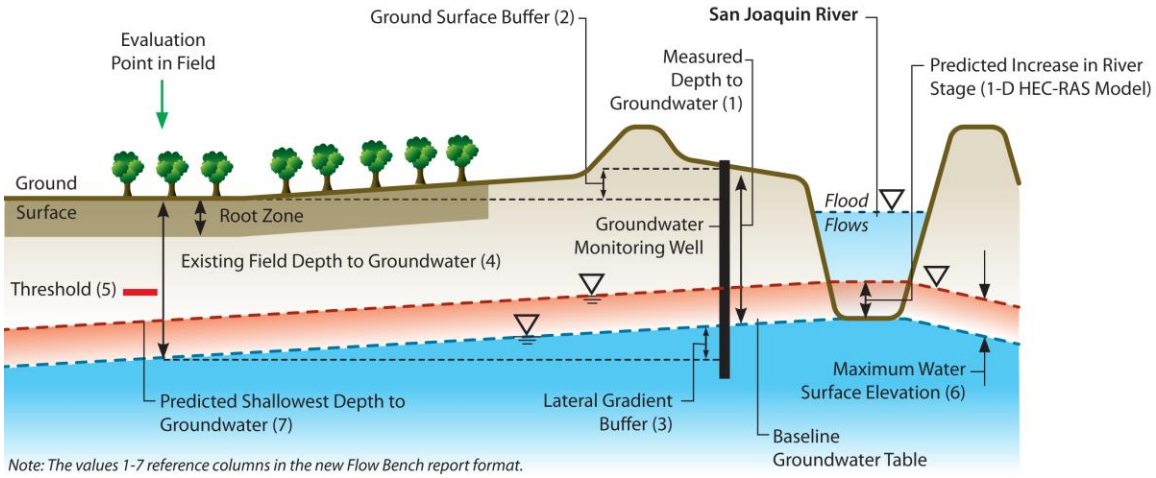

Figure J-2. Observed Groundwater Level Method

Table J-1. Example Groundwater Level Method (also known as Increase in Stage Method)

Column ID (Figure J-2)	Well	1	2	3	4	5	6
	Reach	2A	2A	2A	2A	2B	2B
1	**Measured Groundwater Depth in Well (feet bgs)**	8.5	8.7	12	6	15.7	9.4
2	**Ground Surface Buffer (feet)**	-3.7	-3.5	-6.1	-1.7	-7.9	-3.7
3	**Lateral Gradient Buffer (feet)**	2.5	3.3	4.6	2.4	5.5	3
4	**Field GW Depth (feet bgs)**	7.3	8.6	10.5	6.7	13.3	8.7
6	**Maximum Predicted WSEL Increase (feet)**	0.9	0.9	1.3	1.3	1.4	1.4
7	**Predicted Shallowest GW Depth (feet bgs)**	6.3	7.6	9.2	5.4	11.9	7.3
5	**Field Threshold (feet bgs)**	5	7	7	4.5	10	7
	Acceptable?	Yes	Yes	Yes	Yes	Yes	Yes

bgs = below ground surface
GW = groundwater
WSEL = water surface elevation

J.1.1.2 Drainage Method

The second method checks whether the proposed increase in SJR flows will allow drainage, proving useful when non-SJRRP factors, such as irrigation events, influence groundwater levels. The Drainage Method uses the same type of relationships (i.e., rating curves) as in the Groundwater Level Method to estimate the predicted water surface elevation in the river from the 1-D HEC-RAS model (Tetra Tech 2009). The Drainage Method (Figure J-3) then uses the predicted water surface elevation and compares this to the elevation of the threshold. If the predicted water surface elevation is more than 0.3 feet below the threshold elevation it is assumed that drainage from the field to the river will still be able to occur given the increased flow in the river. If the predicted water surface elevation is above the threshold elevation or within 0.3 feet of the threshold elevation, then drainage cannot occur with certainty and the proposed flow increase could cause increased seepage from the river toward the field. Similar to Figure J-2, the numbers following several of the labels in Figure J-3 correspond to the calculation columns presented in the Flow Bench Evaluation worksheets (Example in Table J-2).

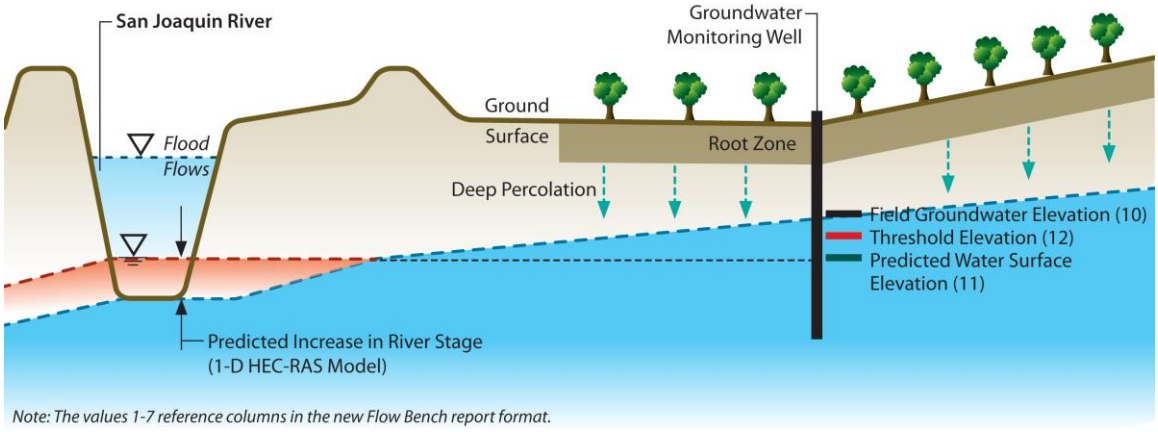

Figure J-3. Drainage Method

Table J-2. Drainage Method

Column ID (Figure J-3)		10	11	12	
Well	**Reach**	**Existing Field GW Elevation (feet)**	**Predicted WSEL (feet)**	**Threshold Elevation (feet)**	**Drainage Method Comment**
8	4A	98.6	98.0	98.4	Acceptable
9	4B1	95.0	94.2	95.1	Acceptable
10	4B1	95.3	92.7	92.8	Does not allow drainage

bgs = below ground surface
GW = groundwater
WSEL = water surface elevation

Example Flow Bench Evaluations are included as attachments to this appendix. Flow Bench Evaluations are posted on the SJRRP website (restoresjr.net) on the *Flow Schedule* page, in the Restoration Flows dropdown menu (www.restoresjr.net/restoration-flows/flow-schedule).

J.1.2 Daily Flow Evaluations

Daily Flow Evaluations check real-time and measured groundwater levels. If current groundwater levels in priority wells are above identified thresholds, this triggers a site visit. See the example Daily Flow Evaluation attached to this Appendix.

Daily Flow Evaluations are posted on the SJRRP website (restoresjr.net) on the *Groundwater Monitoring* page

J.1.4 Seepage Hotline

Landowners may report seepage concerns such as tile drains running, waterlogging, levee boils or piping to the Seepage Hotline. A Seepage Hotline call triggers a site visit. See the template Seepage Hotline Intake Form attached to this appendix.

Seepage Hotline calls are posted on the SJRRP website (restoresjr.net) on the *Restoration Flows* page.

J.2 Site Visit and Response Actions

J.2.1 Site Visit

The SJRRP conducts site visits when triggered by any of the items above. Hand-auger holes to quickly measure groundwater levels and other types of monitoring done at a site visit determine the response action. See the template Site Visit Form attached to this appendix.

J.2.2 Response Actions

Response actions may include releases as planned, increased monitoring, adjustment of the link between groundwater levels and river stage, adjustment of the threshold, evaluation for a seepage project, or any of several flow response actions. See the template Response Action Form attached to this appendix.

J.3 Transitions from Flood Flows to Restoration Flows

Flood control releases from Friant Dam are not subject to seepage thresholds. While flood flows and Restoration Flows are not released simultaneously from Friant Dam, Restoration Flow releases may directly follow flood control releases. In these cases, groundwater levels are anticipated to be above seepage thresholds in many locations as a result of flood control releases.

Reclamation will evaluate transitions between flood flows and Restoration Flows first using the Groundwater Level Method (as described in Section J.1.1.1) to determine if the predicted stage change between the flood release and the proposed Restoration Flow release would result in groundwater levels below the groundwater level thresholds defined in Appendix H of the SMP for critical wells. Consistent with this method, if the groundwater level is predicted to fall to acceptable levels, then the suggested Restoration Flow schedule is deemed permissible.

In cases where data loggers have been removed from wells due to overland flooding, the Drainage Method will be used. Following the procedures outlined in Section J.1.1.2, Reclamation

will then evaluate wells based on the Drainage Method to ensure that groundwater levels in wells that are over the groundwater level thresholds are able to drain into the SJR.

Groundwater drainage will take time, and will result in a lag between a flow decrease in the San Joaquin River and a corresponding decrease in a monitoring well. When transitioning from flood flows to Restoration Flows, real-time wells will be monitored daily to confirm that groundwater levels continue to drop as groundwater drains to the lower river stage. Should groundwater levels in monitoring wells plateau at a level above seepage thresholds or begin to rise, Reclamation will conduct a Flow Bench Evaluation to reevaluate the current flow releases, and will respond as discussed in Section J.2.2 if groundwater levels are determined to exceed thresholds.

Attachment 1 to Appendix J

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Example Flow Bench Evaluations

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DRAFT SJRRP Flow Bench Evaluation

March 21, 2013

The Restoration Administrator, as of March 20, 2013, recommends increasing releases from Friant Dam for Interim Flows and riparian diversions to 700 cfs on March 22, 2013. To date, groundwater levels in monitoring wells adjacent to the Eastside Bypass (ESBP) continue to restrict flows below Sack Dam to 0 cfs. The combined release from Friant Dam, including Interim Flow and riparian releases, will be increased to 700 cfs on March 22, 2013 at noon.

As of March 21, 2013:

1. Channel conveyance: Flow rates are below known conveyance thresholds.

2. Operations Conference Call: At the weekly call, water district operators raised concerns regarding the amount of exchangeable demand available in Mendota Pool.

3. Seepage Hotline Calls: The seepage hotline has received no calls in Water Year 2013.

4. Real-Time Wells: Groundwater monitoring well levels are below thresholds. These wells do not restrict releases.

5. Priority Wells: Weekly groundwater measurements in priority wells, Table 2, indicate the groundwater level is above the threshold in MW-10-95. This restricts releases below Sack Dam at this time.

6. Flow Stabilization: Flows have stabilized.

7. Projected Groundwater Level Increases: Projected groundwater levels indicate levels may rise above the threshold in one well, based on the proposed increase in flow (Table 4) and groundwater measurements made the week ending March 16, 2013.

8. Levees: The LSJLD has not identified any concerns.

9. Water Districts: The San Joaquin River Exchange Contractors Water Authority (SJRECWA) and member agencies have not identified any concerns other than the lack of exchangeable demand in Mendota Pool, described in part 2 above.

Analysis

Priority well MW-10-95 (Reach 4B, ESBP) measurements show depths to groundwater at 2.3 feet above the threshold. No water from the San Joaquin River currently reaches the ESBP. The projected water surface elevation in the ESBP adjacent to this well with 10 cfs in the channel is 92.7 feet above sea level. The threshold elevation in MW-10-95 is 92.8 feet above sea level. This does not provide enough of a gradient (0.1 feet) to allow groundwater levels to drain below the threshold. This well restricts releases past Sack Dam to 0 cfs at this time.

Data

Table 1 shows the groundwater depth in seven realtime wells as of March 21, 2013 and manual measurements from field staff as reported in the weekly groundwater report with a publish date of March 21, 2013. Reclamation publishes the weekly groundwater report with manual measurements via electronic well sounder and recent flow data on the SJRRP website at: http://www.restoresjr.net/flows/Groundwater/Groundwater.html. To calculate field depths, Reclamation adds ground surface buffers and lateral gradient buffers to measured groundwater depths in the well. A negative ground surface buffer indicates the well is above the field. See Figure 1 for a visual depiction and Equation 1 for a mathematical one.

$$Field\ Depth_{Current} = Dwell + GW_{Buffer} + LG_{Buffer} \quad (1)$$

Table 2 shows the anticipated flow rates used to evaluate future groundwater depths. Reclamation calculated losses from Friant Dam to the Mendota Pool based on the long-term pattern established by Exhibit B.

Table 1: Well Data

Column ID		1	2	3	4	5	
Well	**Reach**	**Measured Groundwater Depth in Well (feet bgs)**	**Ground Surface Buffer (feet)**	**Lateral Gradient Buffer (feet)**	**Field GW Depth (feet bgs)**	**Field Threshold (feet bgs)**	**Comment**
FA-9	2A	8.5	-3.7	2.5	7.3	5.0	Acceptable
MW-09-47	2A	8.7	-3.5	3.3	8.6	7.0	Acceptable
MA-4	2A	12.0	-6.1	4.6	10.5	7.0	Acceptable
MW-09-49B	2A	6.0	-1.7	2.4	6.7	4.5	Acceptable
MW-09-54B	2B	15.7	-7.9	5.5	13.3	10.0	Acceptable
MW-09-55B	2B	9.4	-3.7	3.0	8.7	7.0	Acceptable
PZ-09-R2B-1	2B	-	-1.3	0.0	-	5.0	-
PZ-09-R2B-2	2B	8.6	-3.9	0.0	4.7	4.5	Acceptable
PZ-09-R3-5	3	11.1	-1.2	0.0	10.0	5.0	Acceptable
PZ-09-R3-6	3	10.0	-1.5	0.0	8.5	4.0	Acceptable
PZ-09-R3-7	3	8.9	-0.7	0.0	8.2	3.5	Acceptable
MW-10-75	3	10.9	-0.5	0.2	10.6	6.3	Acceptable
MW-11-130	4A	7.8	0.0	0.0	7.8	5.0	Acceptable
MW-09-87B	4A	Dry	-1.9	1.0	-	4.2	-
MW-10-89	4A	14.1	-3.4	0.0	10.7	7.6	Acceptable
MW-10-92	4A	7.4	-2.6	0.0	4.8	5.0	Above Threshold
MW-10-90	4B1	6.3	0.8	0.0	7.0	7.0	Acceptable
MW-10-94	4B1	7.7	0.0	1.0	8.6	7.0	Acceptable
MW-10-95	4B1	2.7	-2.2	1.0	1.5	5.0	Above Threshold
MW-11-142	4B1	5.4	0.0	0.0	5.4	4.0	Acceptable

bgs = below ground surface
GW = groundwater

Table 2: Anticipated Change in Flows

Reach	Recent Flows (cfs)	Projected Flows for Evaluation (cfs)
Reach 1	350	700
Reach 2A	225	575
Reach 2B	145	475
Reach 3	120	130
Reach 4A	0	10
Reach 4B1 (ESBP)	0	10

Table 3 shows the current and maximum rise in groundwater based on estimated changes in river stage and the conceptual model shown in Figures 1 and 2. Field depths are calculated by taking the most recent measurements from Table 1, adding the ground surface and the lateral gradient buffer, and subtracting the maximum predicted stage increase, as shown below in Equation 2.

$$Field\ Depth_{Predicted} = Field\ Depth_{Current} - WSEL_{Max\ Increase} \quad (2)$$

See Figure 4 for the locations of these monitoring wells and the rating curves (Figure 5 through 19) for each of the key wells from the Mussetter Engineering, Inc., 2008 San Joaquin HEC-RAS Model Documentation Technical Memorandum prepared for California Dept. of Water Resources, Fresno, California, June 2. These rating curves are used to determine the maximum predicted increase in water surface elevation, as shown in Figure 1.

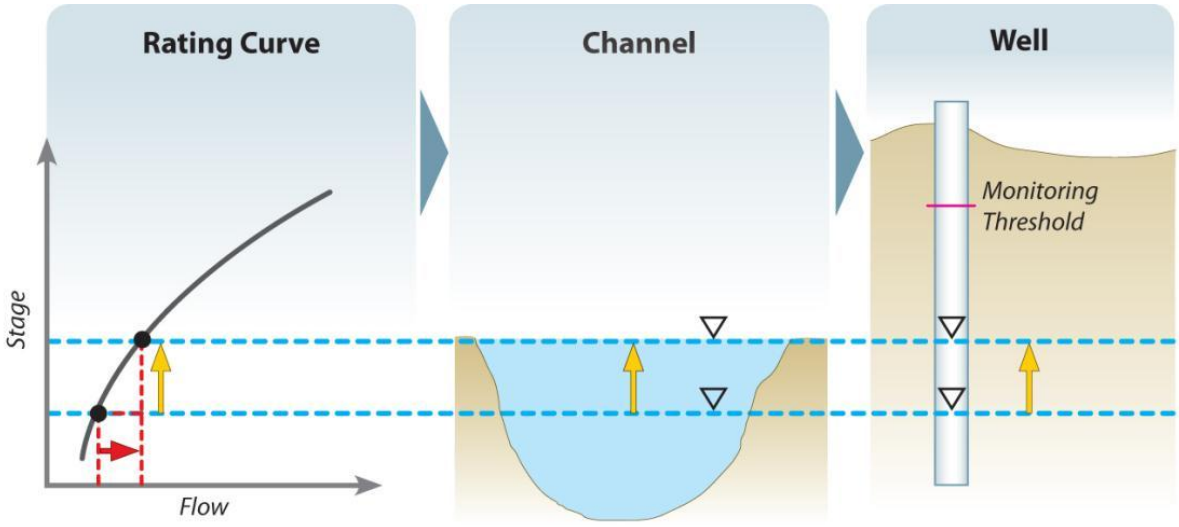

Figure 1: Conceptual Model of 1:1 Relationship between River Stage and Groundwater Level

Table 3: Predicted Groundwater Levels for Key Wells – Increase in Stage Method

Column ID		1	2	3	4	6	7	5	
Well	**Reach**	**Measured Groundwater Depth in Well (feet bgs)**	**Ground Surface Buffer (feet)**	**Lateral Gradient Buffer (feet)**	**Field GW Depth (feet bgs)**	**Maximum Predicted WSEL Increase (feet)**	**Predicted Shallowest GW Depth (feet bgs)**	**Field Threshold (feet bgs)**	**Comment**
FA-9	2A	8.5	-3.7	2.5	7.3	0.9	6.3	5.0	Acceptable
MW-09-47	2A	8.7	-3.5	3.3	8.6	0.9	7.6	7.0	Acceptable
MA-4	2A	12.0	-6.1	4.6	10.5	1.3	9.2	7.0	Acceptable
MW-09-49B	2A	6.0	-1.7	2.4	6.7	1.3	5.4	4.5	Acceptable
MW-09-54B	2B	15.7	-7.9	5.5	13.3	1.4	11.9	10.0	Acceptable
MW-09-55B	2B	9.4	-3.7	3.0	8.7	1.4	7.3	7.0	Acceptable
PZ-09-R2B-1	2B	-	-1.3	0.0	-	0.1	-	5.0	-
PZ-09-R2B-2	2B	8.6	-3.9	0.0	4.7	0.0	-	4.5	Acceptable
PZ-09-R3-5	3	11.1	-1.2	0.0	10.0	0.1	9.9	5.0	Acceptable
PZ-09-R3-6	3	10.0	-1.5	0.0	8.5	0.1	8.5	4.0	Acceptable
PZ-09-R3-7	3	8.9	-0.7	0.0	8.2	0.1	8.1	3.5	Acceptable
MW-10-75	3	10.9	-0.5	0.2	10.6	0.1	10.5	6.3	Acceptable
MW-11-130	4A	7.8	0.0	0.0	7.8	0.1	7.8	5.0	Acceptable
MW-09-87B	4A	Dry	-1.9	1.0	-	0.2	-	4.2	-
MW-10-89	4A	14.1	-3.4	0.0	10.7	0.9	9.8	7.6	Acceptable
MW-10-94	4B1	7.7	0.0	1.0	8.6	0.3	8.3	7.0	Acceptable
MW-11-142	4B1	5.4	0.0	0.0	5.4	0.0	5.4	4.0	Acceptable

bgs = below ground surface
GW = groundwater
WSEL = water surface elevation

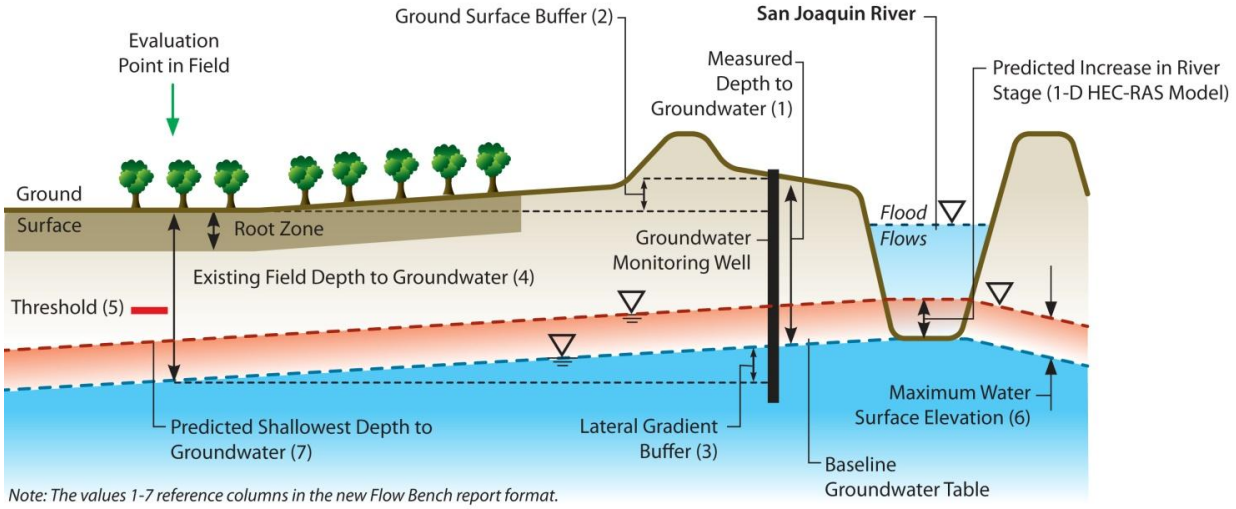

Figure 2: Conceptual Model for Increase in Stage Method

Table 4 shows the predicted maximum rise in groundwater based the elevation of the water surface in the river and the conceptual model shown in Figure 3. Reclamation uses this drainage method where current groundwater levels are higher than thresholds without flows in the San Joaquin River. A predicted water surface elevation (WSEL) above (or within 0.3 feet) of the threshold elevation does not allow drainage and therefore restricts flows.

Table 4: Predicted Groundwater Elevation for Key Wells – Drainage Method

Column ID		10	11	12	
Well	**Reach**	**Existing Field GW Elevation (feet)**	**Predicted WSEL (feet)**	**Threshold Elevation (feet)**	**Drainage Method Comment**
MW-10-92	4A	98.6	98.0	98.4	Acceptable
MW-10-90	4B1	95.0	94.2	95.1	Acceptable
MW-10-95	4B1	95.3	92.7	92.8	Does not allow drainage

bgs = below ground surface
GW = groundwater
WSEL = water surface elevation

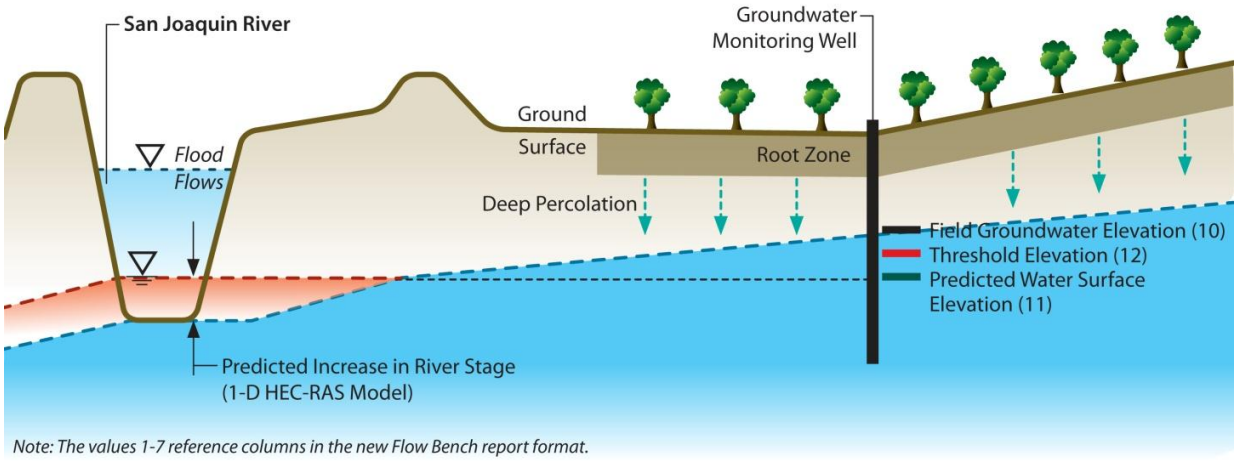

Figure 3: Conceptual Model for Drainage Method

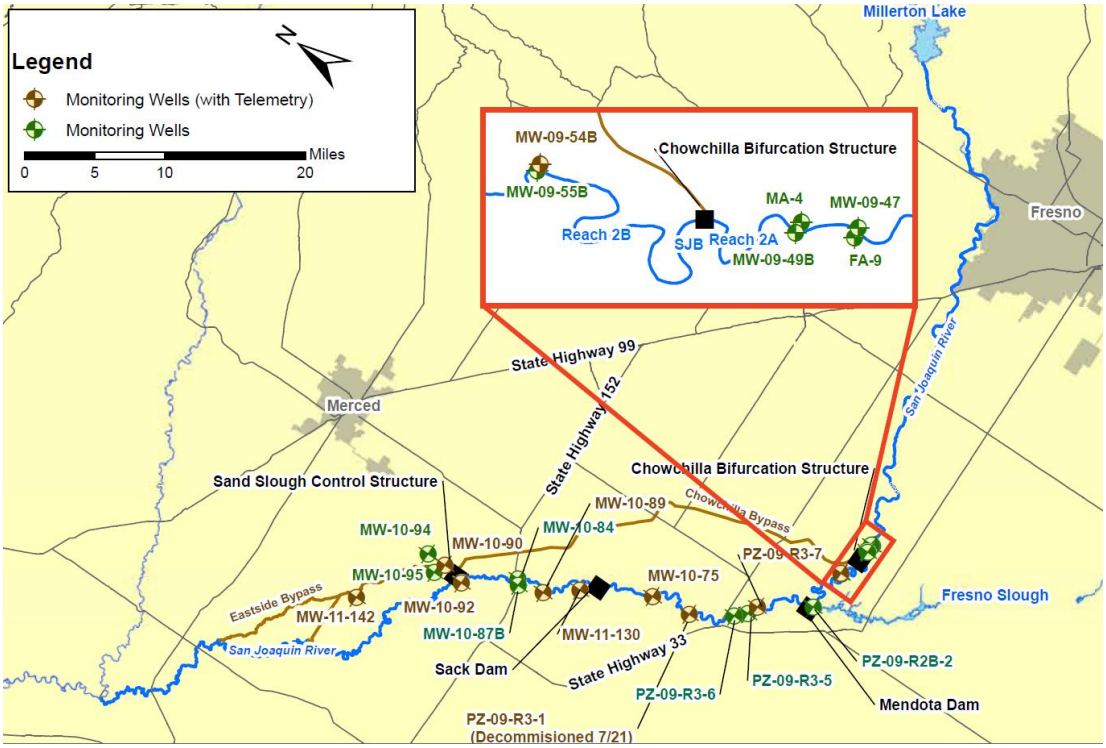

Figure 4: Key Monitoring Well Locations

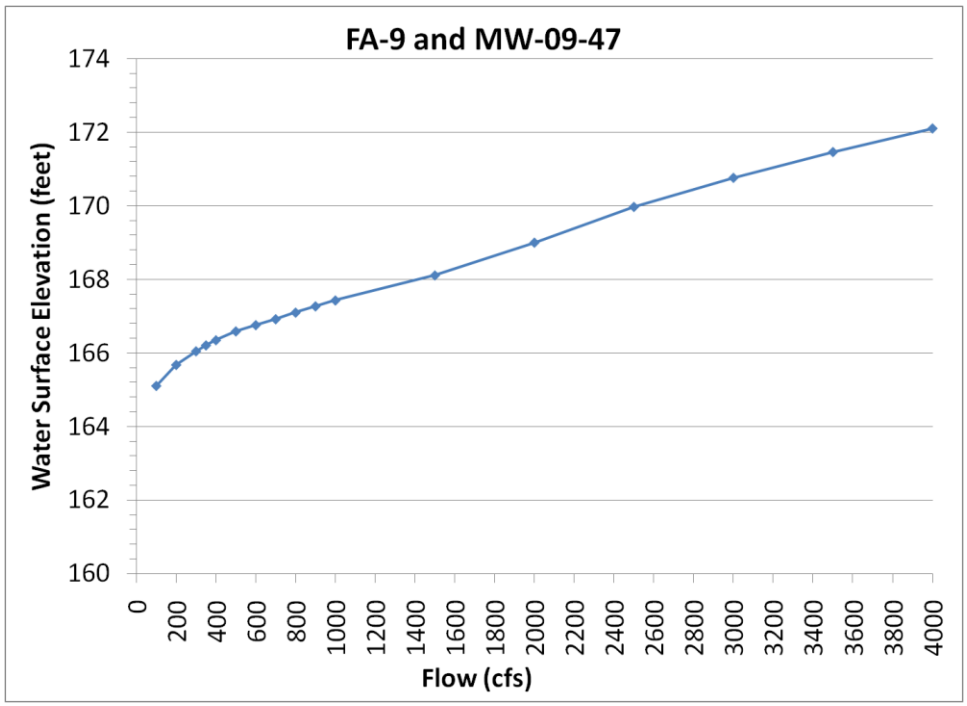

Figure 5. River Stage vs. Flow Rating Curve at Locations FA-9 and MW-09-47

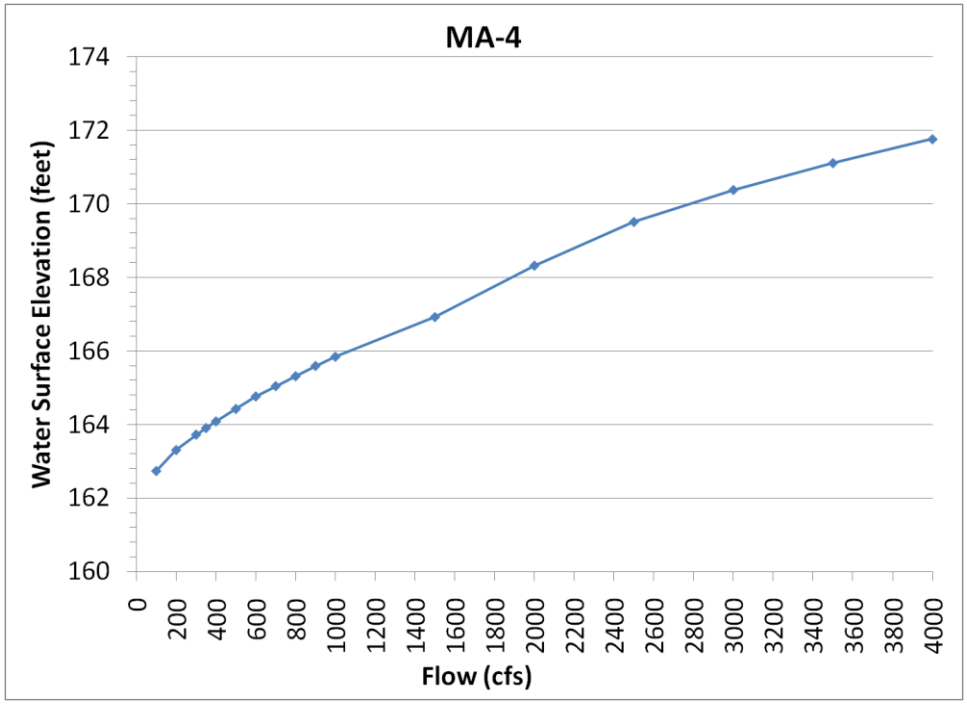

Figure 6. River Stage vs. Flow Rating Curve at Location MA-4

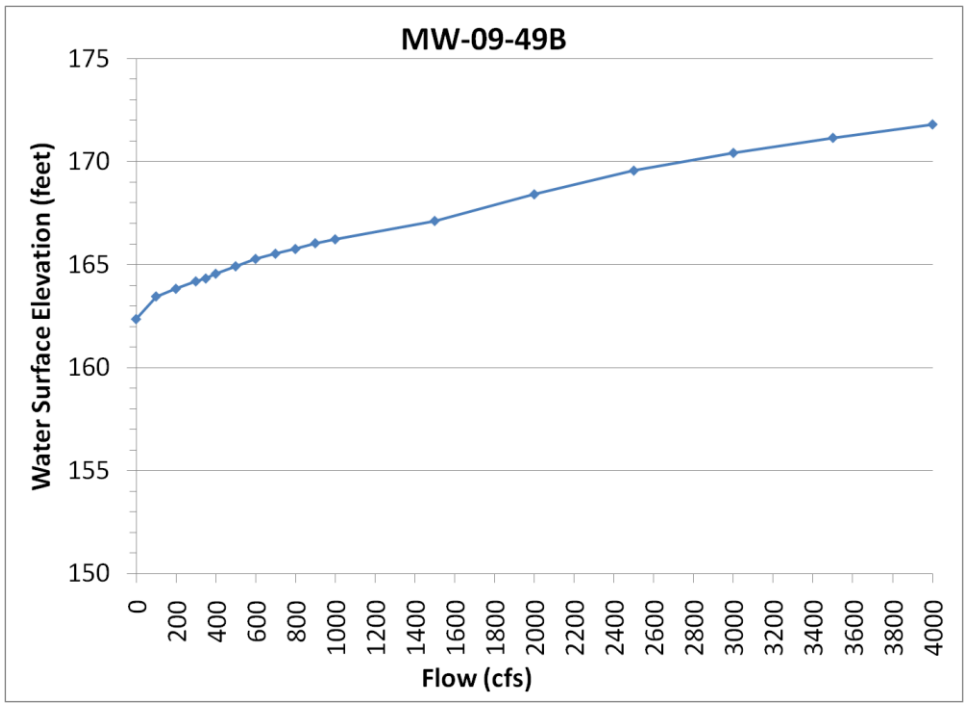

Figure 7. River Stage vs. Flow Rating Curve at Location MW-09-49B

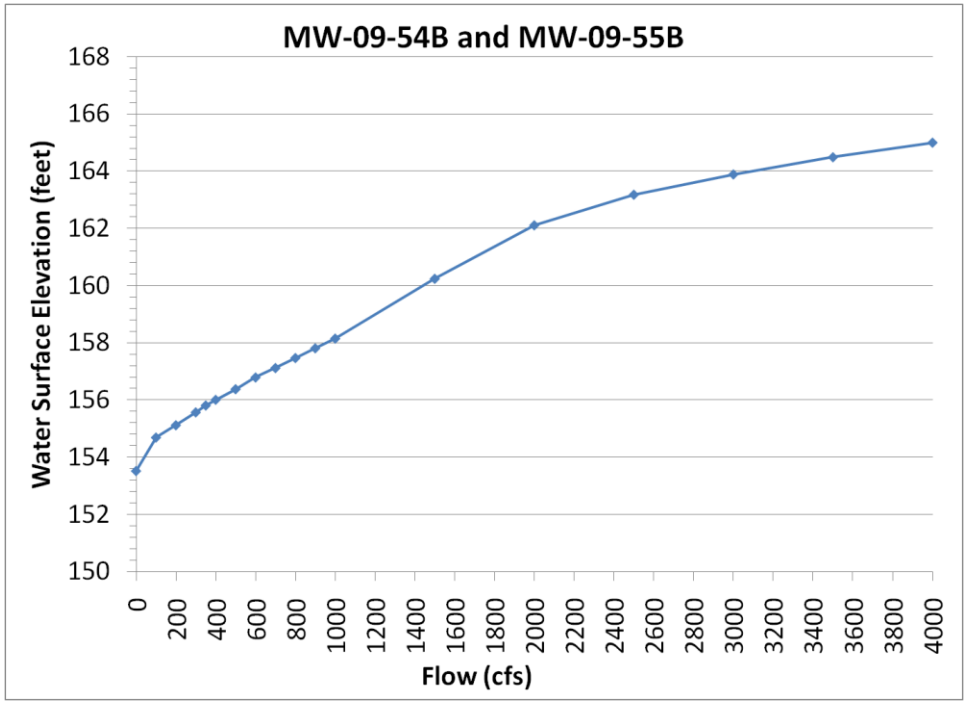

Figure 8. River Stage vs. Flow Rating Curve at Locations MW-09-54B and MW-09-55B

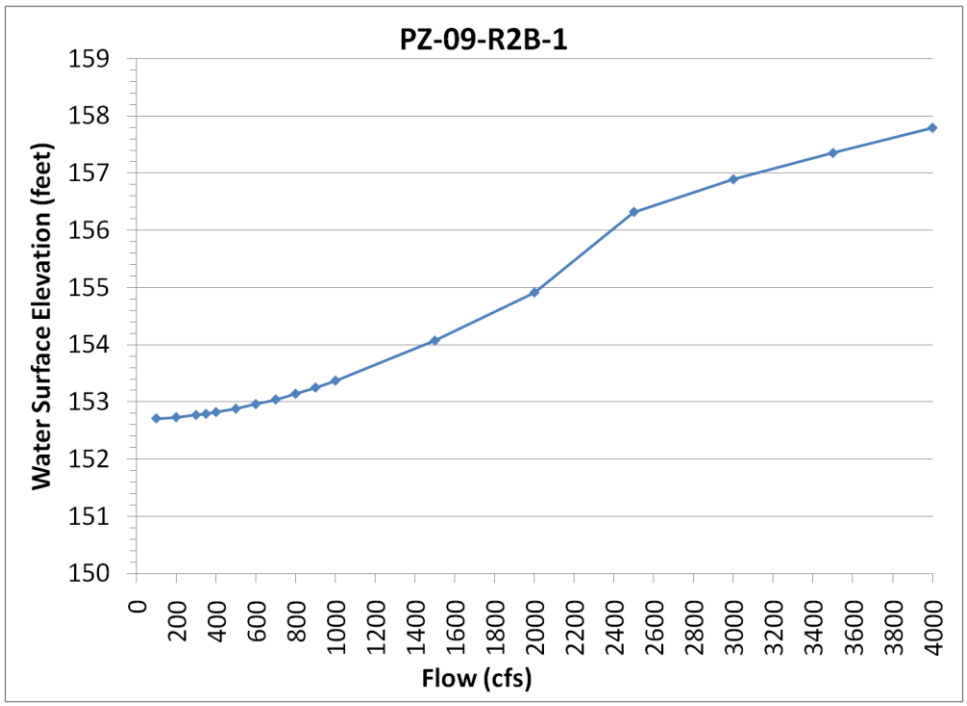

Figure 9. River Stage vs. Flow Rating Curve at Location PZ-09-R2B-1

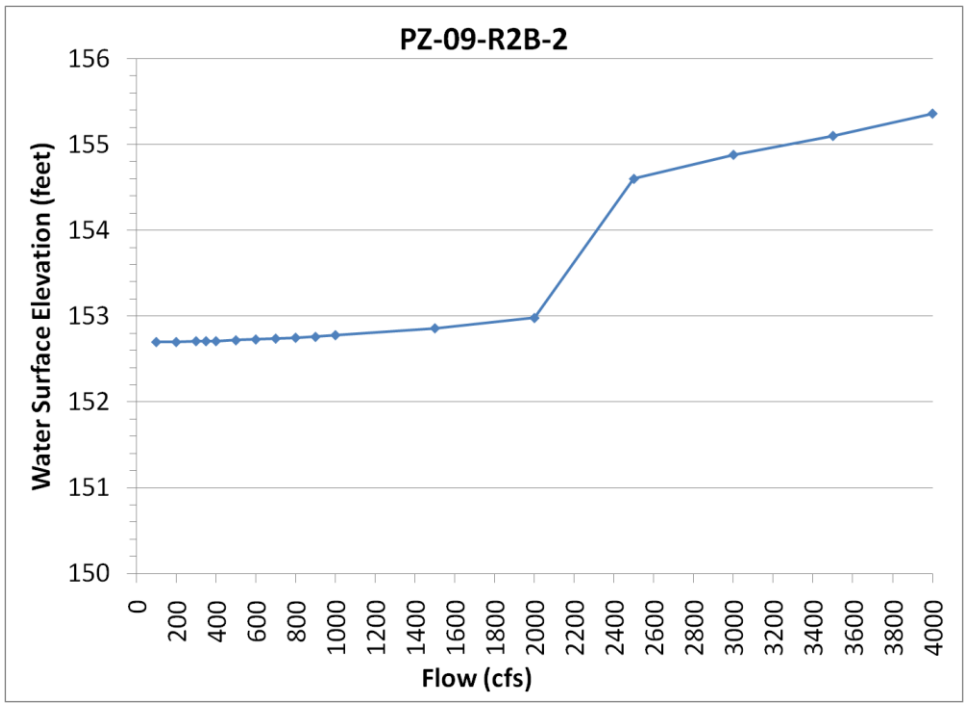

Figure 10. River Stage vs. Flow Rating Curve at Location PZ-09-R2B-2

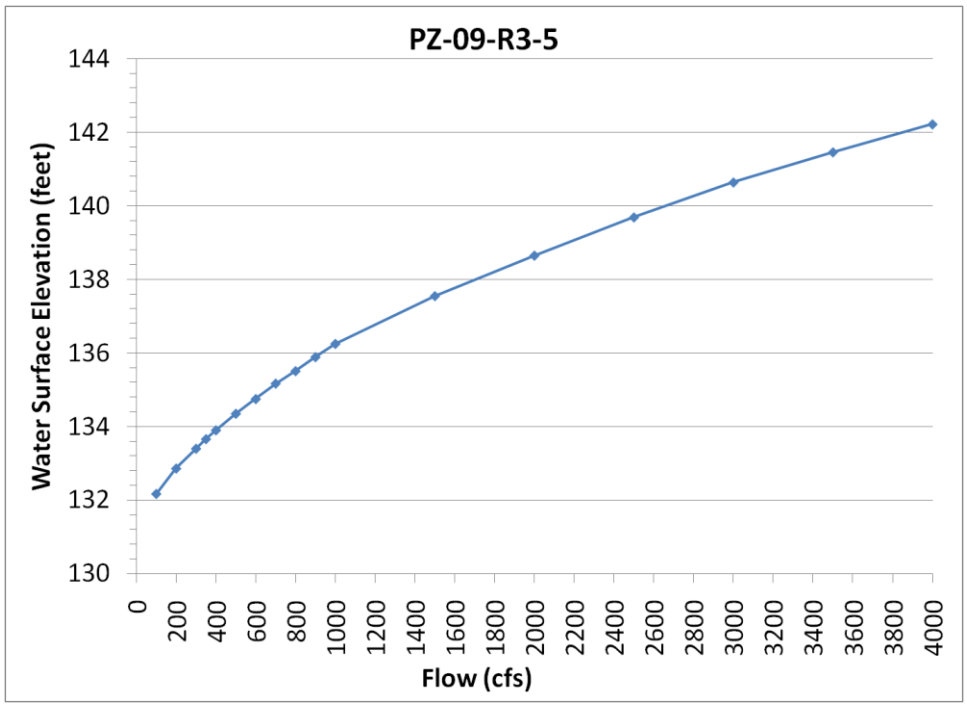

Figure 11. River Stage vs. Flow Rating Curve at Location PZ-09-R3-5

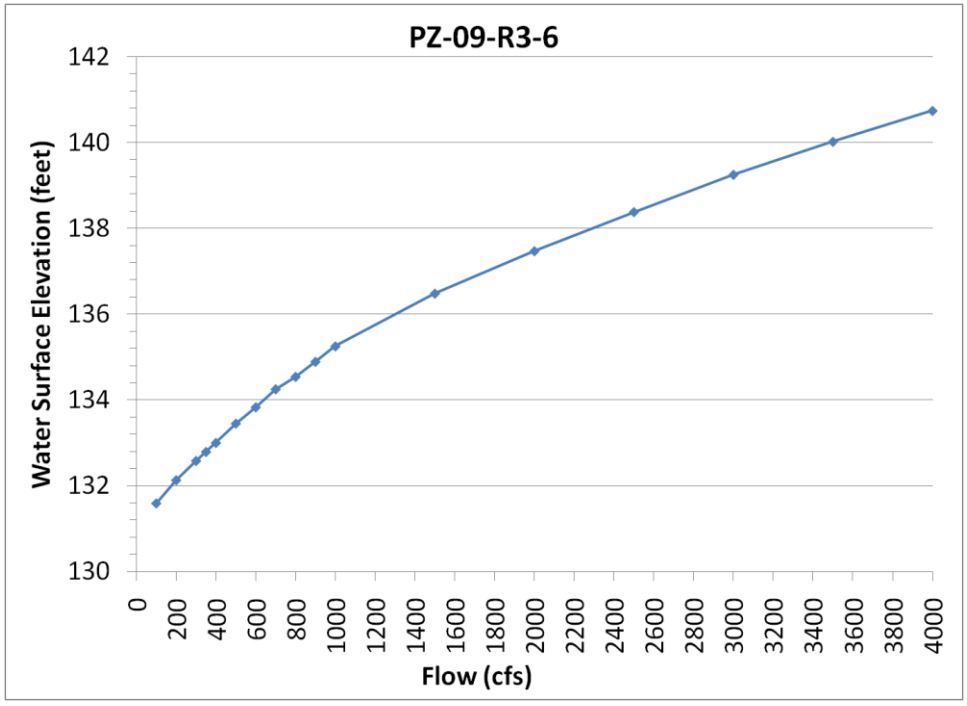

Figure 12. River Stage vs. Flow Rating Curve at Location PZ-09-R3-6

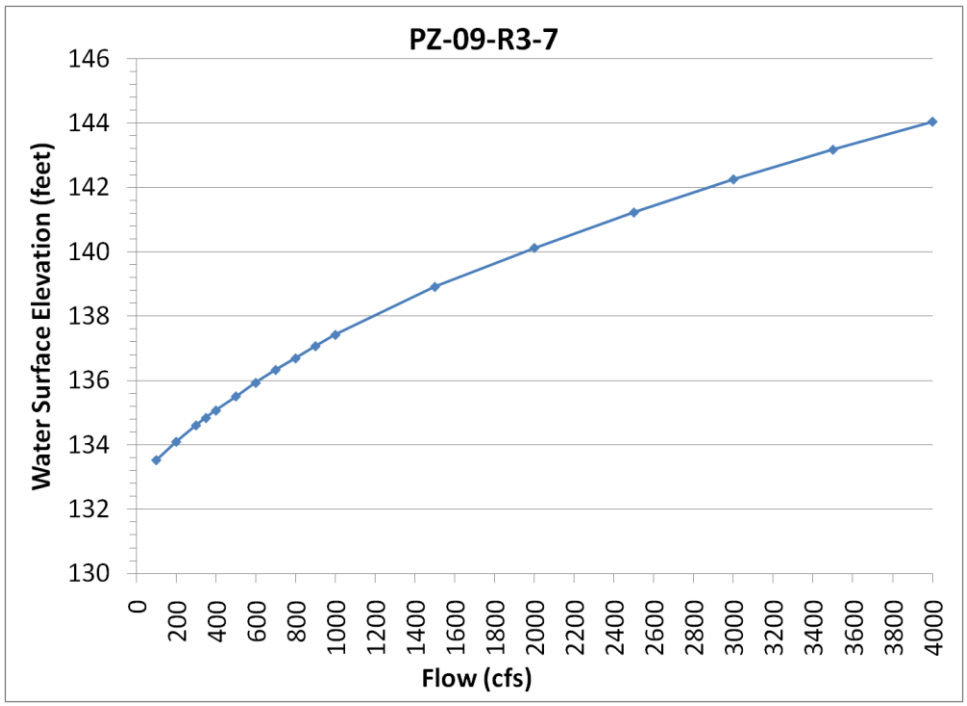

Figure 13. River Stage vs. Flow Rating Curve at Location PZ-09-R3-7

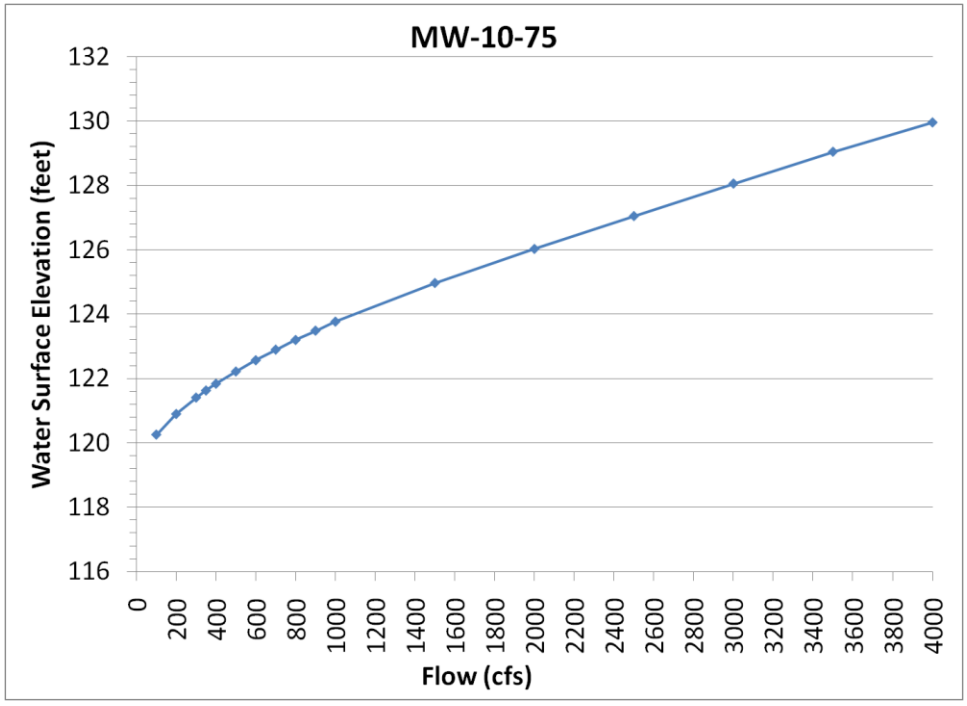

Figure 14. River Stage vs. Flow Rating Curve at Location MW-10-75

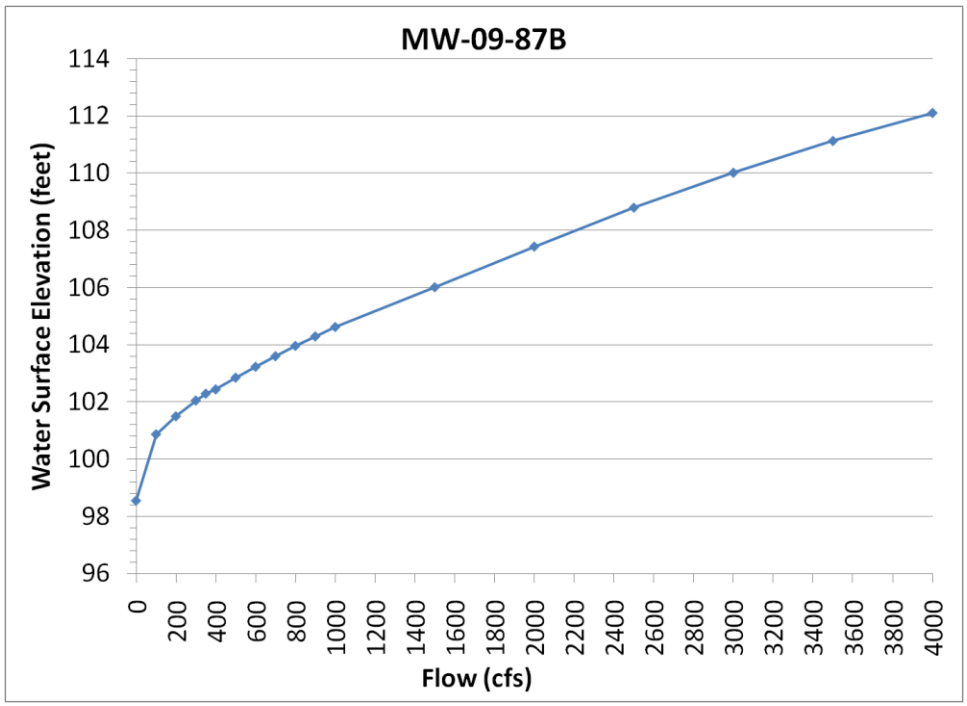

Figure 15. River Stage vs. Flow Rating Curve at Location MW-09-87B

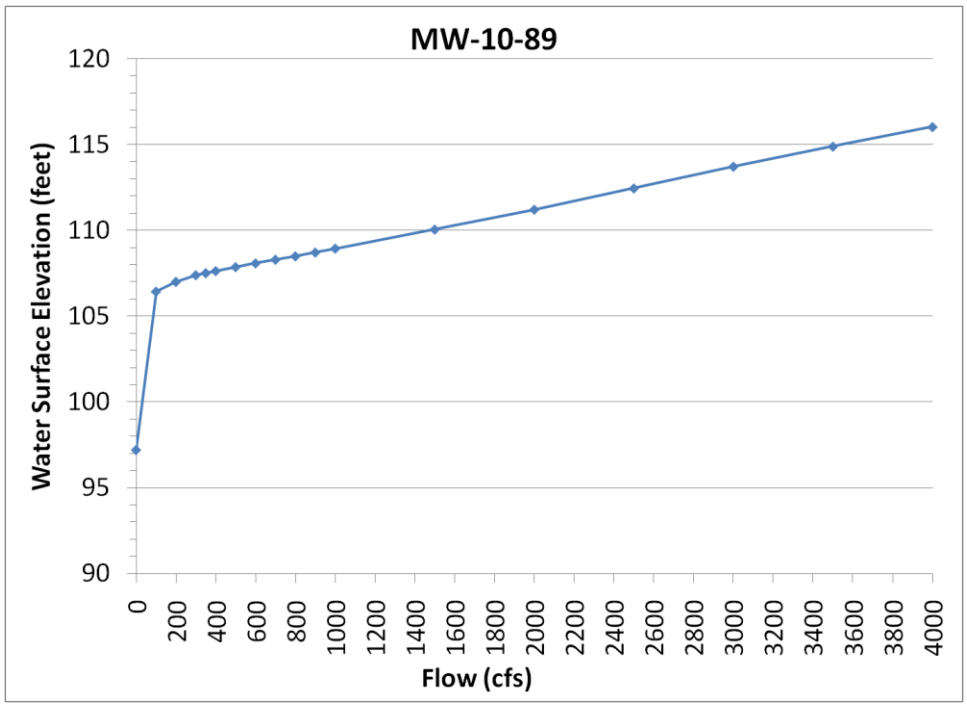

Figure 16. River Stage vs. Flow Rating Curve at Location MW-10-89

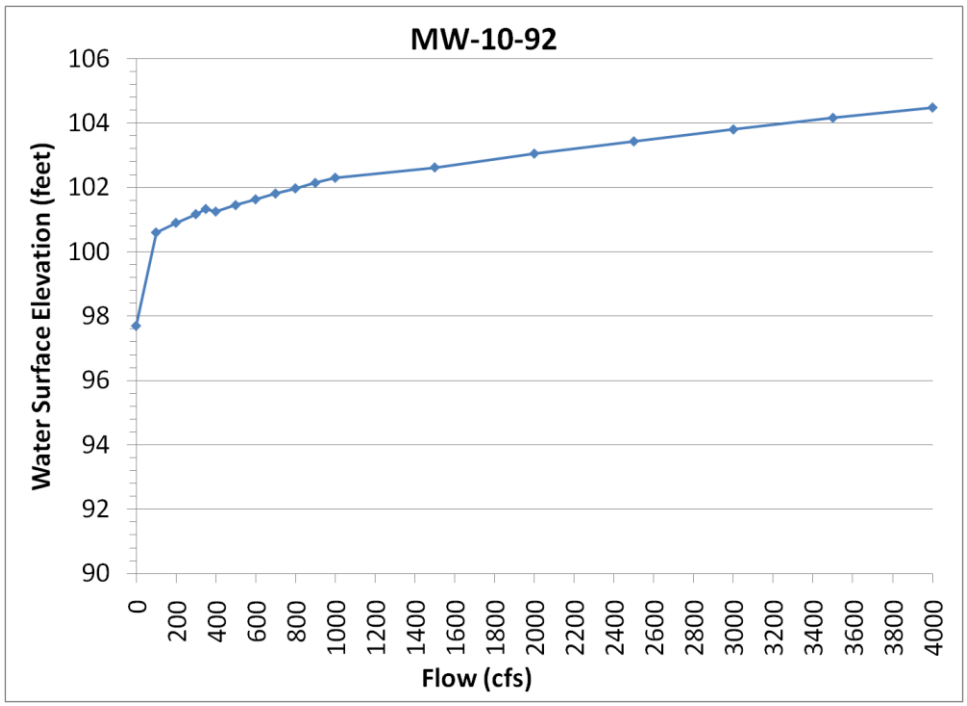

Figure 17. River Stage vs. Flow Rating Curve at Location MW-10-92

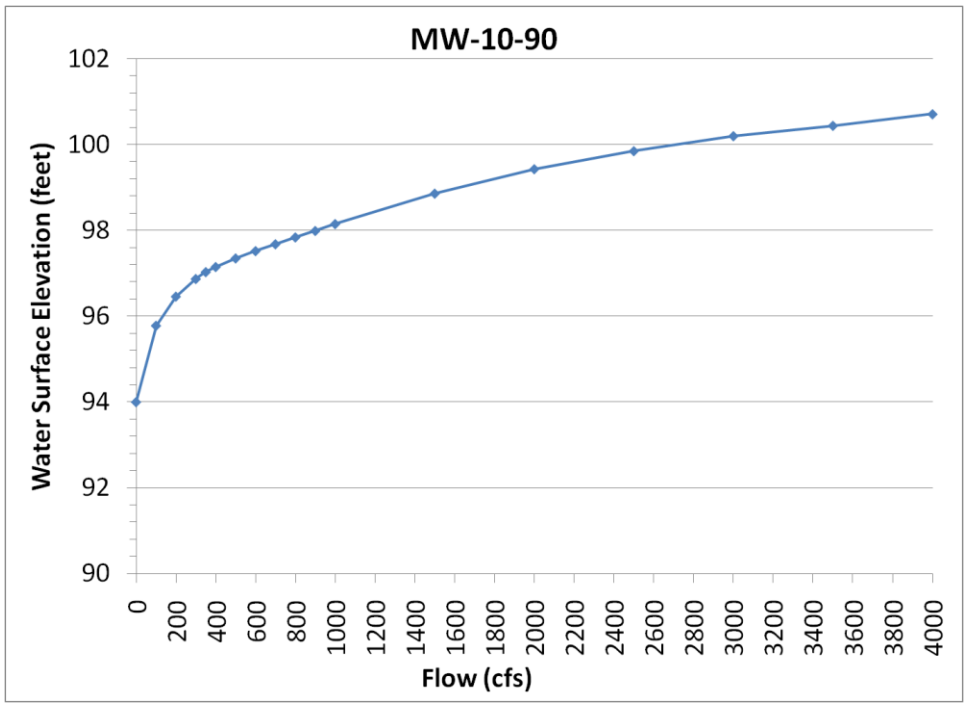

Figure 18. River Stage vs. Flow Rating Curve at Location MW-10-90

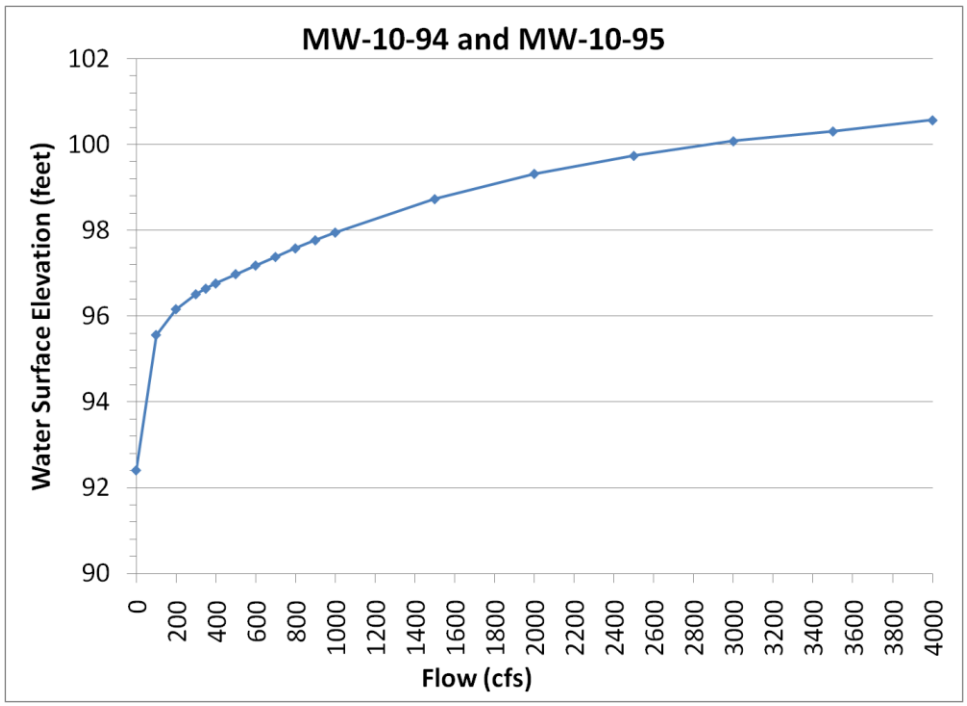

Figure 19. River Stage vs. Flow Rating Curve at Locations MW-10-94 and MW-10-95

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Example Daily Flow Evaluation

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SJRRP Seepage Daily Evaluation

March 15, 2010

Based on preliminary data, flow exceeded 475 cfs in Reach 2A as recorded at the Gravelly Ford gaging station on March 13, 2010. Flow exceeded 475 cfs in Reach 3 as recorded at the Mendota Pool gaging station on March 8, 2010. Based on the available information below, no seepage problems are anticipated and Reclamation will continue with the Interim Flow releases as scheduled. Daily evaluations will continue while flow remains above this evaluation threshold.

As of 8:00 AM, March 15, 2010, Reclamation personnel have reported the following:

1. Flows are below known conveyance thresholds (8,000 cfs in Reach 2A, 1,300 cfs in Reach 2B, and 1,300 cfs in Reach 3) based on preliminary real-time data.
2. Mendota Pool operations calls did not identify groundwater seepage or flow problems.
3. The seepage hotline received two calls, on March 4th regarding R2B-1, and on March 11th regarding an airstrip near river mile 238.5. The R2B-1 site evaluation determined flow releases could continue as planned. The river mile 238.5 site evaluation is currently underway.
4. Real-time groundwater in Reach 2B and 3 wells has not risen above identified groundwater level thresholds based on preliminary data.
5. Manually monitored groundwater wells do not show groundwater levels above identified thresholds, with the exception of wells R2B-1 and MW-49B. R2B-1 shows a depth below ground surface of 5.58 ft, with groundwater levels stabilizing (buffer 4-6 feet). The groundwater in MW-49B was measured at 5.79 feet below ground surface (buffer 4-6 feet).
6. Known upstream conditions do not indicate likely seepage impacts.

DATA:

- Most recent stage and flow data: http://restoresjr.net/maps/SJRRarea_Map.html
- Real-time Wells: Three wells in Reaches 2B and 3 are real-time and posted on CDEC. Links are available on restoresjr.net under “Interim Flows Information”. http://restoresjr.net/activities/if/index.html
- Weekly Groundwater Report: Manual measurements taken weekly via electronic well sounder of groundwater monitoring wells in Reaches 2A, 2B, 3 and 4 are provided in the Weekly Groundwater Report. http://restoresjr.net/activities/if/index.html
- Well Atlas: Manual measurements for all wells are provided in the well atlas, available on the Interim Flows Information page under “Well Atlas”. http://restoresjr.net/activities/if/index.html
- Bench Evaluation: The most recent evaluation for the decision to increase to the next flow bench is available at: http://restoresjr.net/activities/if/index.html under “Flow Bench Evaluation”.

BACKGROUND:

Condition 9 of Order Water Right 2009-0058-DWR (Order) for the Water Year 2010 Interim Flows Project requires Reclamation to conduct a daily evaluation of groundwater levels and flow and stage levels when flows are greater than 475 cubic feet per second (cfs) in Reaches 2A and 3 and post the results of this evaluation to a publicly available website.

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Seepage Hotline Form

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SJRRP Seepage Hotline Intake Form

Responder Name:

Date and Time Received:

Seepage Report ID Number:

Contact Information

Landowner Name:

Contact Email or Phone:

Date and Time Contacted:

Seepage Location

Address or Parcel:

How best to access site for conducting a site evaluation?

River Mile (if known):

Approximate Distance from SJR:

Proximity to levee toe of most seepage (feet) – or through levee:

Description of Seepage (describe what was observed):

☐ Boils or piping ☐ Erosion on levee ☐ Levee close to overtopping ☐ River stage

☐ Visible standing water ☐ Waterlogged field(s) ☐ Monitoring Well Elevations increase

Description:

[Enter what observations occured and any supporting data that is available.]

When was this seepage first noticed, and how long has it been going on?

SJRRP Seepage Hotline Intake Form

Type of Potential Impact (describe the potential impacts of concern):

☐ Crop impacts ☐ Land Access (roads) ☐ Levee or Structure Integrity

Description:

[Please enter information regarding the extent and magnitude of anticipated impacts including supporting data such as EM probes, hand augers, crop records, etc.]

Interim Flow Relationship (describe why the impact is a result of the SJRRP flows.)

☐ River Stage ☐ Drainage ☐ Canals ☐ Irrigation ☐ Flood Operations

Description:

[Please include recent land-use practices in the area as well as any efforts to reduce or avoid adverse impacts]

Has a SJRRP monitoring well been requested? ☐ Yes ☐ No

Has the parcel been identified as at risk? ☐ No ☐ At a Public Meeting
☐ In EIS/R Comments ☐ Personal Communication with SJRRP Staff

Description: *[Insert text here describing when and with what language the parcel was identified as at risk]*

Immediacy of Response Needed (identify the timeframe for decision making)

☐ Impacts Occurred ☐ Levees at risk ☐ Impacts are imminent ☐ Adjust Future Flows
☐ Potential Future Impacts

Description:

Please attach additional comments as necessary.

Seepage Site Visit Form

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Seepage Site Visit Form

Seepage Report ID Number:

Date and Time of Site Evaluation:

Names of personnel attending site evaluation, agencies belonging to, and contact info:

Landowner Name, phone, contact info:

Parcel Group Location

Address or Parcel:

How easy was access? How should it be accessed in the future?

River Mile (if known):

Approximate Distance from San Joaquin River (SJR):

Meeting Summary

Immediacy of Response Needed

Identify the timeframe for decision making.

☐ Levee Failure ☐ Imminent ☐ Adjust Future Flows
☐ Impacts Occurred ☐ Seepage Project

Description:

Description of Current and Historical Seepage

☐ Boils or piping ☐ Erosion on levee ☐ Levee close to overtopping

☐ River stage ☐ Visible standing water ☐ Waterlogged field(s)

☐ Monitoring Well Elevations increase

Description (what observations occurred, distance of seepage from levee toe, GPS coordinates or a map tracing seepage boundaries if current, and what supporting data is available):

Type of Potential Future Impact

☐ Crop impacts ☐ Land and Field Access ☐ Levee or Structure Integrity

Description (extent and magnitude of anticipated impacts including supporting data such as EM probes, crop records, etc.):

Factors Influencing Groundwater Levels

Describe potential effects on seepage. (Include recent land-use practices in the area as well as any efforts to reduce or avoid adverse impacts)

☐ River Stage ☐ Drainage ☐ Canals

☐ Irrigation ☐ Flood Operations ☐ Groundwater Pumping

Description:

Response Action

Do you recommend a particular response action to reduce or avoid current impacts? Explain.

Follow Up

Is follow-up needed to perform a site evaluation and develop a long-term project? Explain.

Photo Log

Please include a Photo number or ID, the time (and date, if different from Site Evaluation date) the photo was taken, the location the photo was taken from and a description of the image subject and important points shown in it.

1)
2)
3)
4)

Other

Please attach additional pages as needed to describe all photos taken, or to add additional information, comments, records or supporting data to the Site Evaluation.

1)

2)

Action Items

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Seepage Response Action Form

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SJRRP Seepage Response Action Form

Date and Time of Response:

Address or Parcel:

Seepage Report ID Number:

Relevant Data:

Groundwater Observations:

Site Evaluation:

Landowner Input:

Comments:

SJRRP Seepage Response Action Form

Action:

☐ Planned Releases can occur ☐ Increased Monitoring

☐ Adjust local flow/conceptual model ☐ Adjust threshold

Flow Response Actions - Adjust Future Flows

☐ Restrictions on Maximum Release ☐ Restrictions on ramping rates and duration

☐ Reduction of Restoration Flow releases at Friant Dam ☐ Set Operational Criteron

Flow Response Actions - Immediate Action

☐ Emergency Measures (sandbagging, riprap, etc)

☐ Reduction of Restoration Flow releases at Friant Dam

☐ Redirection of flows at Chowchilla Bifurcation Structure (reduces impacts in Reach 2B on)

☐ Delivery of flows to Exchange Contractors at Mendota Pool (reduces impacts in Reach 3 on)

☐ Delivery of flows to Exchange Contractors and Refuges at Sack Dam (reduces impacts in Reach 4A and downstream)

Comments:

Follow-Up:

☐ Restrictions on Releases ☐ Initiate Site Evaluation for Projects

Comments: