EXHIBIT 6

aquilogic, Inc.
environment ● water ● strategy

245 Fischer Avenue, Suite D-2
Costa Mesa, CA 92626
Tel. +1.714.770.8040
Web: www.aquilogic.com

MEMORANDUM

To: Abby Ostovar and Derrik Williams, Montgomery & Associates

Cc: Piret Harmon and Emily Gardner, Salinas Valley Basin Groundwater Sustainability Agency
Christopher Bunn, Salinas Basin Water Alliance
Stephanie Hastings, Brownstein Hyatt Faber Schrek, LLP
Dwight Smith, UES

From: Anthony Brown, Principal-In-Charge, aquilogic, Inc.
Bob Abrams, PhD, PG, CHg, Senior Principal Hydrogeologist, aquilogic, Inc.

Date: December 2, 2025

Subject: Comments on Montgomery & Associates draft Memorandum, "*Results of Computer Modeling Agreement for SVWC and SBWA*," dated August 22, 2025
Project No.: 018-09

Montgomery & Associates (M&A), on behalf of the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA), prepared a draft memorandum, "*Results of Computer Modeling Agreement for SVWC and SBWA*," dated August 22, 2025. The M&A draft memorandum summarizes results of a hydrologic modeling exercise (hereafter referred to as inter-subbasin impact modeling) designed to isolate and individually evaluate the impacts of pumping in the Upper Valley Aquifer Subbasin (UV), the Forebay Aquifer Subbasin (FB), the 180/400-Ft Aquifer Subbasin (180/400), and the East Side Aquifer Subbasin (ES), one subbasin at a time, on the water resources[1] of the other three subbasins.[2]

The inter-subbasin impact modeling was jointly requested by the Salinas Basin Water Alliance (SBWA) and the Salinas Valley Water Coalition (SVWC). SVBGSA agreed that the modeling would be beneficial and instructed M&A to proceed. The M&A draft memorandum presents a summary of the results of the inter-subbasin impact modeling, which was conducted by M&A. The purpose of this **aquilogic** memorandum is to provide comments on, and recommendations for revisions of, the M&A draft memorandum, so that any final iteration is more easily understood by readers who may lack a technical background, including stakeholders.[3]

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[1] In this context, the term "water resources" has the same meaning as "water availability." Water availability in the Salinas Valley Groundwater Basin (SVGB) concerns both groundwater and stream flows in the Salinas River.

[2] The inter-subbasin impact modeling was conducted by M&A using the version of the Salinas Valley Hydrologic Model (SVIHM) released by the United States Geological Survey (USGS) in April 2025.

[3] **Aquilogic** will provide further independent comments on the model results to the SVBGSA Board of Directors, under separate cover.

As described in the M&A draft memorandum, the modeling was conducted by: (1) sequentially turning pumping on in one subbasin at a time using a "full basin" as a starting point (i.e., no pumping anywhere); and (2) sequentially turning pumping off in one subbasin at a time using the simulated historical condition as a starting point (i.e., pumping everywhere). Changes in groundwater flow and Salinas River flow between the subbasins, as well as changes in groundwater elevations in all four subbasins, were then evaluated and compared to the respective starting points.

The modeling described in the M&A memorandum is hypothetical in nature. The modeling was conducted in a "what if" (i.e., hypothesis testing) mode using the principle of superposition. As such, the modeling results were not expected to be precise. Instead, the results should be considered as "order-of-magnitude" accuracy (e.g., 10,000 to 15,000, instead of 13,051).[4]

CHRONOLOGY OF INTER-SUBBASIN IMPACT MODELING DEVELOPMENT

Aquilogic, Inc. (**aquilogic**), on behalf of SBWA, and McGinley & Associates (now UES), on behalf of SVWC (collectively, the stakeholder team), requested that SVBGSA conduct the inter-subbasin impact modeling in a memorandum, "*Assessment of Groundwater Flows between Subbasins of the Salinas Valley Groundwater Basin (SVGB),*" dated June 21, 2022, to Donna Myers, then General Manager of SVBGSA. The purpose of the June 21, 2022 memorandum was to, "*jointly submit a set of proposed simulation scenarios, developed by aquilogic and McGinley & Associates, to the SVBGSA to run and evaluate*." Importantly, the June 21, 2022 memorandum noted the integral role the Salinas River plays in SVGB water availability.

M&A responded to the stakeholder team's June 21, 2022 memorandum by preparing a letter to Ms. Myers, "*Cost Estimate for Salinas Basin Water Alliance and Salinas Valley Water Coalition Modeling Request*," dated August 24, 2022. Ms. Myers, SVBGSA, and M&A agreed that the inter-subbasin impact modeling would enhance the scientific understanding of SVGB hydrology. The June 21, 2022 letter was followed by a memorandum from M&A to the stakeholder team, "*Summary of Modeling Approach*," dated June 16, 2023.

Taken together, the three documents described above provided the "roadmap" for the modeling to be conducted by M&A, and the resulting August 22, 2025 M&A draft memorandum. All of these documents acknowledge that the hydrology of the Salinas Valley is highly integrated and essentially represents a single water resource composed of both groundwater and surface water (e.g., potential capture of Salinas River water by pumping and the need to evaluate changes in Salinas River flow resulting from such pumping are acknowledged). The hydrology of

[4] After completing the inter-subbasin impact modeling, M&A updated the version of SVIHM released in April 2025 by the USGS. **Aquilogic** expects that modeling results obtained from using the updated SVIHM would be consistent with the results discussed herein and in the M&A draft memorandum.

the SVGB dictates that groundwater pumping necessarily impacts Salinas River stream flows and these stream flows necessarily impact groundwater levels. Not surprisingly, the summary modeling results presented by M&A in their draft memorandum emphasize the strong connection between the groundwater system and the Salinas River.

The M&A draft memorandum provides summaries of simulated Salinas River flows and changes in flows at the Soledad, Chualar, and Spreckels stream gages. However, it should be noted that it would also be useful to include similar information at all other Salinas River stream gages, in a revised M&A memorandum.

RECOMMENDED REVISIONS TO THE M&A DRAFT MEMORANDUM

Aquilogic recommends the following revisions be made to the introductory text, figures, and tables of the M&A draft memorandum.

Introduction Section

M&A's summary memorandum is well written, clear, and easily understood by technical experts with knowledge of the SVBG and the inter-subbasin impact modeling. However, it may not be well understood by laypersons, including stakeholders. Accordingly, we recommend that the introductory discussion provide sufficient background and context to enable the reader to understand why the modeling was undertaken.

Figures

<u>Changes in Groundwater Elevations, Figures 2 through 5 and Figures 9 through 12</u>

The figures in the draft M&A memorandum are generally informative. However, Figures 2 through 5 and Figures 9 through 12 do not show the results of interest. These figures show the groundwater elevation changes in the subbasin for which pumping was turned on or off. They do not show the impact of pumping in one subbasin on water availability in adjacent and downgradient subbasins. M&A provided draft "replacement figures" at **aquilogic**'s request but did not update their draft memorandum.

Further, the color ramps used for Figures 2 through 5 and Figures 9 through 12 make it difficult to understand the modeling results, because the shades of green or red are nearly identical for several of the contour intervals. For example, these figures make clear that pumping in the UV and FB lowers groundwater levels in the 180/400. However, the magnitude of the impacts cannot easily be discerned. We suggest here that labeled contour lines be superimposed on the color shading.

The replacement figures are particularly difficult to decipher, due to the issues noted above with the color ramp, as well as the scale of maps. **Aquilogic** suggests that each figure should be split into three parts. These parts should zoom in on: (1) the 180/400 and ES; (2) the FB; and (3) the UV. The revised replacement figures should be included in a revised draft of the M&A August 25, 2025 draft memorandum.

Additional Figures

The tables in the M&A draft memorandum do a good job of summarizing the modeling results. However, most of the same information can and should be displayed on a few graphs, which would make it much easier to understand the results.

Aquilogic has independently reviewed the model results and summarized the results in the attached **aquilogic Figures 1** through **4**. It should be noted that changes in Salinas River stream flows from one subbasin to the others are approximated in **Figures 1** through **4** by the changes in stream flows at the Soledad stream gage (UV to FB) and Chualar stream gage (FB to 180/400) caused by pumping in the various subbasins.

Aquilogic Figure 1 shows the changes in Salinas River stream flows and groundwater flow between subbasins caused by pumping in the UV. **Aquilogic Figure 2** shows the changes in Salinas River stream flows and groundwater flow between the subbasins caused by pumping in the FB. **Aquilogic Figure 3** shows the changes in Salinas River stream flows and groundwater flow between the subbasins caused by pumping in the 180/400. **Aquilogic Figure 4** shows the changes in Salinas River stream flows and groundwater flow between the subbasins caused by pumping in the ES. All four figures also show the impact on seawater intrusion (SWI) caused by pumping in each subbasin.

Aquilogic's figures illustrate the modeling results, specifically:

1. Changes in Salinas River stream flows are significantly larger than changes in groundwater flow between the UV, FB, and 180/400:
    a. Pumping in the UV removes approximately 40,000 acre-feet per year (AFY) from the Salinas River (predominantly growing season reservoir releases), reducing water availability and groundwater replenishment in the FB and 180/400 (compared to 105,370 AFY total UV groundwater pumping[5])
        i. Therefore, approximately 38% of the pumping in the UV is derived directly from the Salinas River (i.e., growing season reservoir releases)

[5] Water Year 2024 Annual Report, Upper Valley Aquifer Subbasin, Table 3-2, p. 16). https://svbgsa.org/wp-content/uploads/2025/04/UpperValley_AnnualReport2024_Final-Cond.pdf, accessed October 27, 2025.

   b. Pumping in the FB removes approximately 40,000 AFY from the Salinas River (predominantly growing season reservoir releases), reducing water availability in the 180/400 (compared to 118,320 AFY total FB groundwater pumping[6])
      i. Therefore, approximately 35% of the pumping in the FB is derived directly from the Salinas River (i.e., growing season reservoir releases), potentially with contributions from the Arroyo Seco early in the growing season
2. Pumping in the UV and FB removes approximately 80,000 AFY from the Salinas River (i.e., stream depletion)
3. Pumping in the 180/400 reduces Salinas River flow from the FB to the 180/400 by approximately 10,000 AFY (compared to 103,980 AFY total 180/400 groundwater pumping[7])
   a. Therefore, approximately 10% of the pumping in the 180/400 is derived directly from Salinas River (i.e., growing season reservoir releases), potentially with contributions from the Arroyo Seco early in the growing season
4. Pumping in the ES removes approximately 35,000 AFY of groundwater from the 180/400 and less than 5,000 AFY from the FB (compared to approximately 81,540 AFY total ES groundwater pumping[8]
   a. Therefore, approximately 45% of the pumping in the ES is supplied by groundwater from the 180/400
5. Pumping in the 180/400 does causes minor impacts on water availability in the UV and FB (i.e., approximately 5,000 to 10,000 AFY)
6. Pumping in the ES does not cause significant impacts on water availability in the UV and FB (i.e., approximately 2,500 to 5,000 AFY)
7. Pumping in the UV and FB does not directly cause significant SWI in the 180/400, although it does reduce water availability in the 180/400
8. Pumping in the 180/400 and ES causes the majority of SWI in the 180/400 (5,000 to 8,000 AFY and 1,000 to 2,000 AFY, respectively)[9]

Additional Table

To better illustrate the model results – specifically, changes in Salinas River stream flows caused by pumping – we recommend including the attached **Table 1**. **Aquilogic**'s **Table 1** shows the relevance of the modeling requested by the stakeholder team by comparing the pumping-induced Salinas River depletion to water year (WY) 2024 total pumping.

[6] Water Year 2024 Annual Report, Forebay Aquifer Subbasin, Table 3-2, p. 16. https://svbgsa.org/wp-content/uploads/2025/04/Forebay_AnnualReport2024_Final-Cond.pdf, accessed October 27, 2025.
[7] Water Year 2024 Annual Report, 180/400-Ft Aquifer Subbasin, Table 3-1, p. 10. https://svbgsa.org/wp-content/uploads/2025/04/180400_AnnualReport2024_Final-Cond.pdf, accessed October 27, 2025.
[8] Water Year 2024 Annual Report, East Side Aquifer Subbasin, Table 3-1, p. 12. https://svbgsa.org/wp-content/uploads/2025/04/Eastside_AnnualReport2024_Final-Cond.pdf, accessed October 27, 2025.
[9] Presumably , pumping closer to the coast has a larger impact on SWI than pumping in distal portions of the 180/400

Conclusion

The inter-subbasin impact modeling results demonstrate that pumping in each of the upstream subbasins within the SVGB decreases water availability in downstream subbasins. The model results also demonstrate that water produced in upstream subbasins is mostly derived from growing season reservoir releases. This result is consistent with data provided by the Monterey County Water Resources Agency (MCWRA) Salinas River Discharge Measurements Series Results (River Series).[10] M&A's draft memorandum should be updated to more clearly reflect the model results.

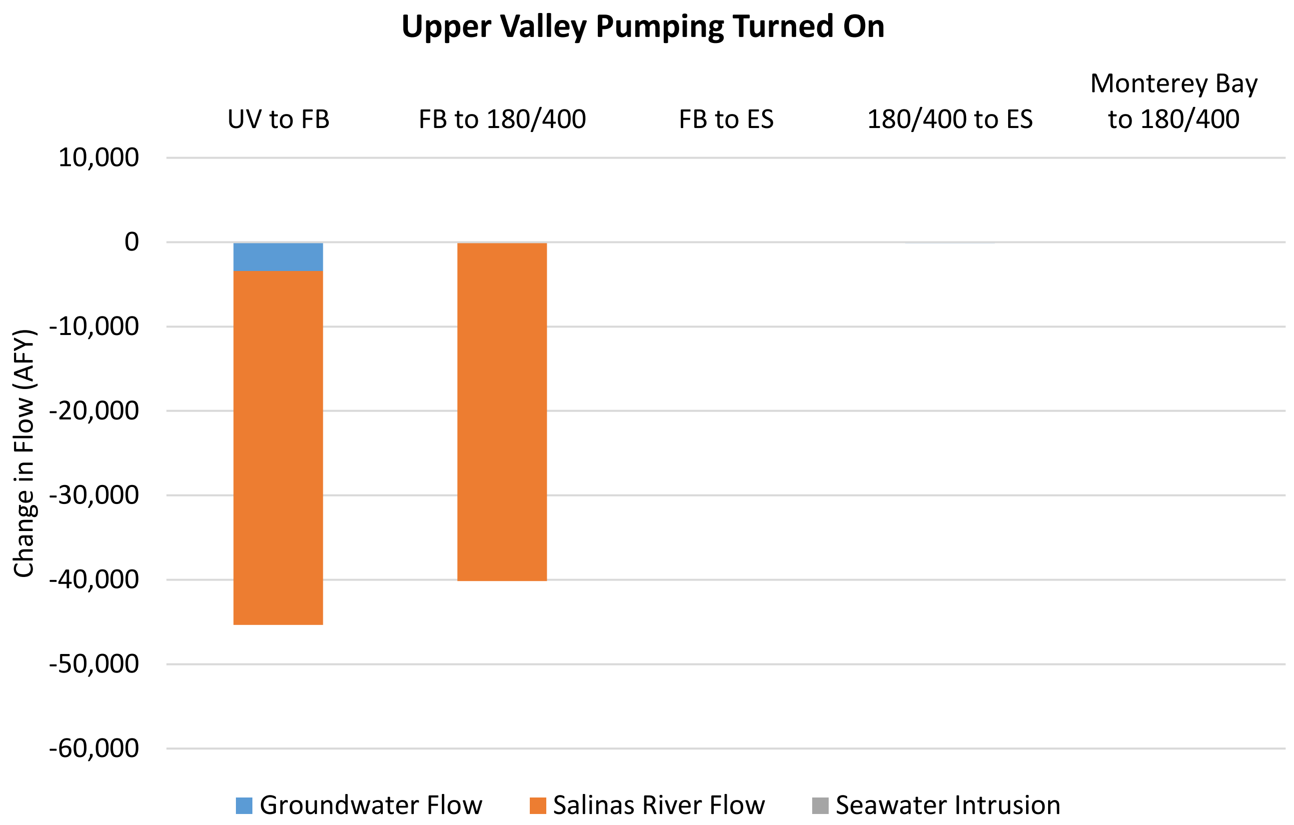
[10] https://www.countyofmonterey.gov/government/government-links/water-resources-agency/documents/salinas-river-discharge-measurement-series, accessed October 27, 2025.

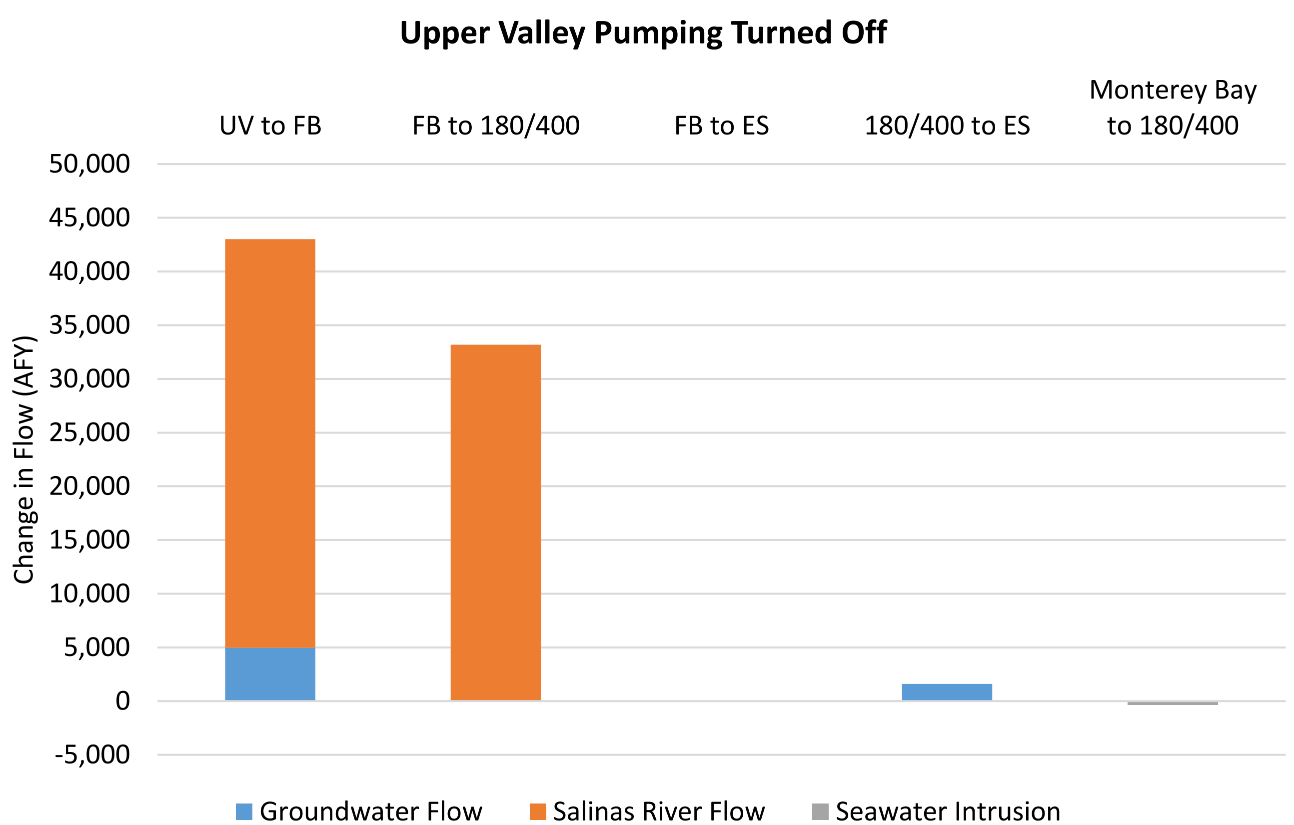
Table 1: Impacts of Pumping on Salinas River Flow

Salinas Basin Water Alliance

		Change in Salinas River Flow UV to FB (AFY)				Change in Salinas River Flow FB to 180/400 (AFY)			
	WY 2024 Annual Report Total Pumping (AFY)	Pumping Turned On Decrease	Pumping Turned Off Increase	Average	Approximate Percent of UV Pumping Derived from Salinas River	Pumping Turned On Decrease	Pumping Turned Off Increase	Average	Approximate Percent of FB Pumping Derived from Salinas River
UV	105,370	41,942	38,033	39,988	38%	40,117	33,166	36,642	--
FB	118,320	28,169	26,412	27,291	--	43,747	38,236	40,992	35%
180/400	103,980	4,474	5,212	4,843	--	9,956	9,640	9,798	--
ES	81,540	2,860	2,366	2,613	--	6,026	4,423	5,225	--

Notes:
AFY: Acre-feet per year
UV: Upper Valley Aquifer Subbasin
FB: Forebay Aquifer Subbasin
180/400: 180/400-Ft Aquifer Subbasin
ES: East Side Aquifer Subbasin
--: Not applicable





UV: Upper Valley Aquifer Subbasin
FB: Forebay Aquifer Subbasin
180/400: 180/400-Ft Aquifer Subbasin
ES: East Side Aquifer Subbasin
AFY: Acre-feet per year

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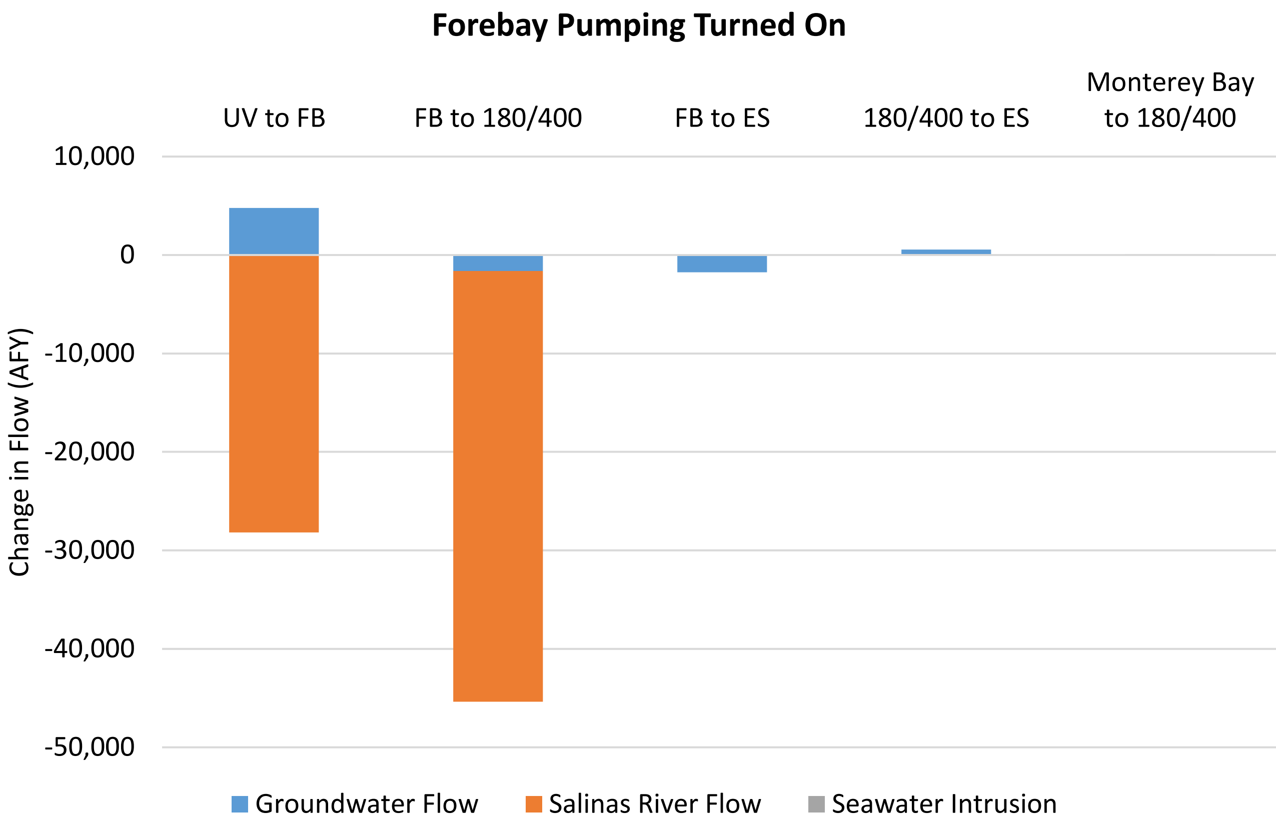
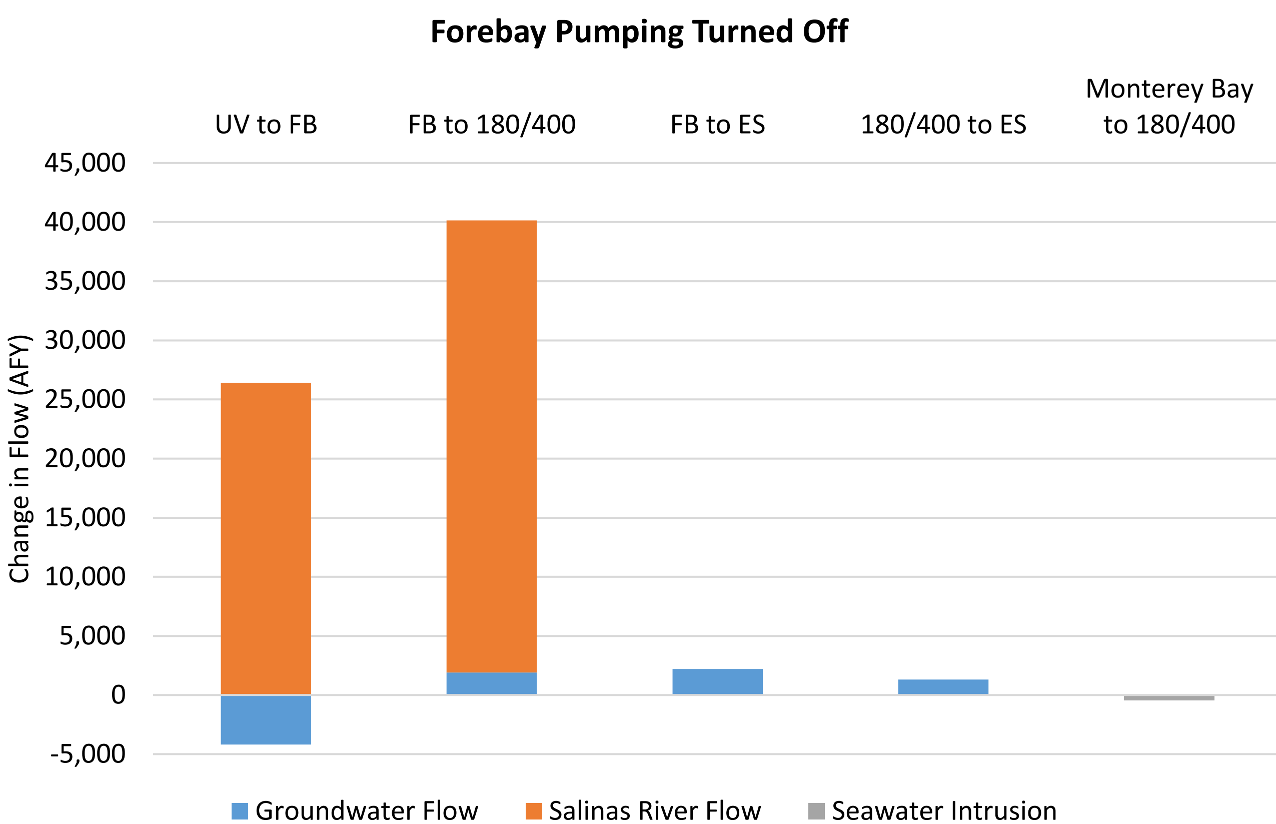
Upper Valley Aquifer Subbasin Pumping Impacts on Other Subbasins

Date:10/29/2025	Project #: 018-09	**Figure 1**





UV: Upper Valley Aquifer Subbasin
FB: Forebay Aquifer Subbasin
180/400: 180/400-Ft Aquifer Subbasin
ES: East Side Aquifer Subbasin
AFY: Acre-feet per year

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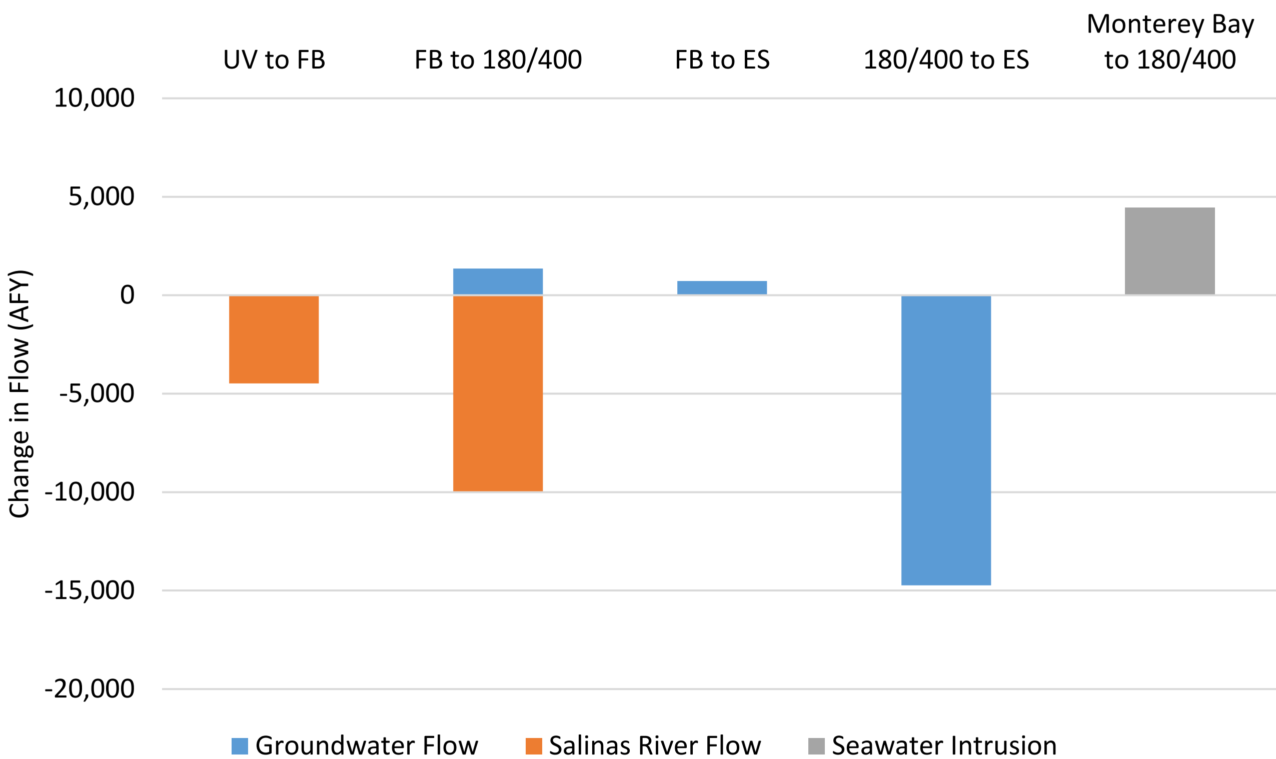
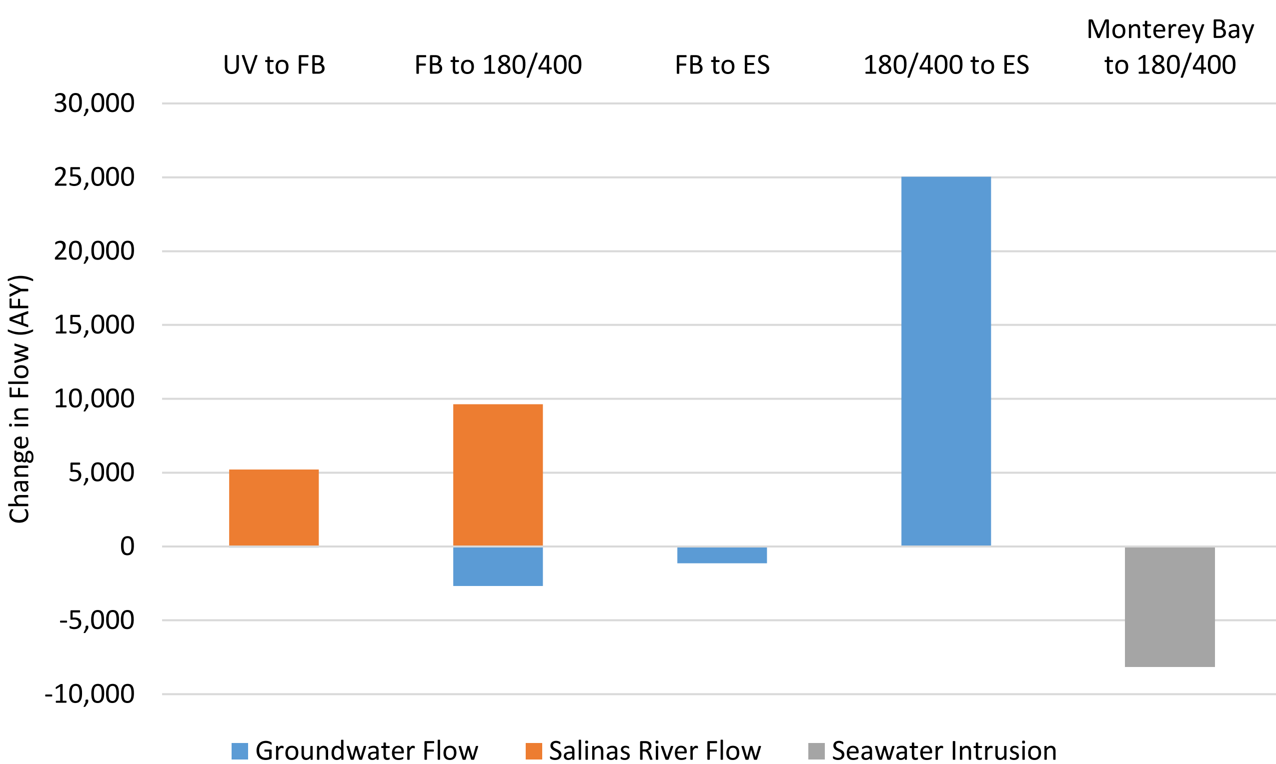
Forebay Aquifer Subbasin Pumping Impacts on Other Subbasins

Date:10/29/2025	Project #: 018-09	**Figure 2**

180/400 Pumping Turned On



180/400 Pumping Turned Off



UV: Upper Valley Aquifer Subbasin
FB: Forebay Aquifer Subbasin
180/400: 180/400-Ft Aquifer Subbasin
ES: East Side Aquifer Subbasin
AFY: Acre-feet per year

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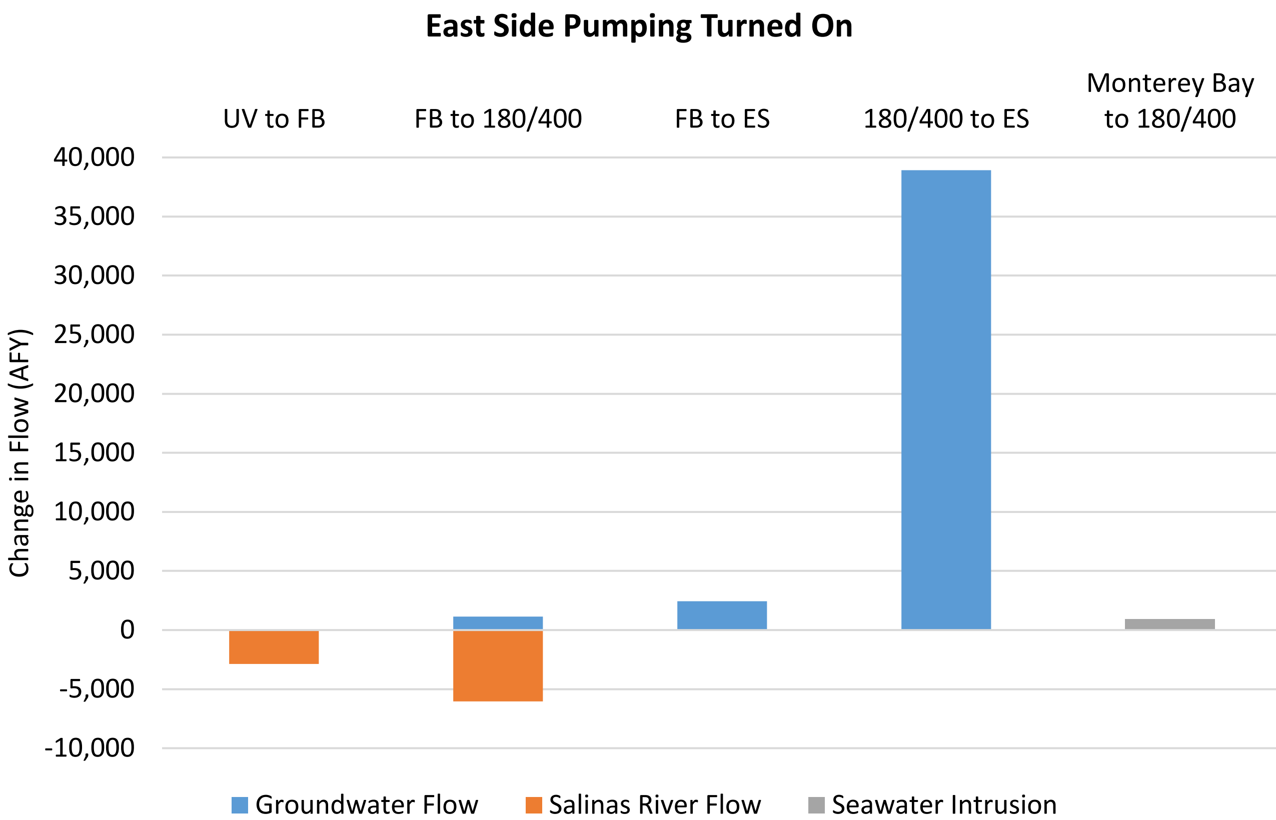
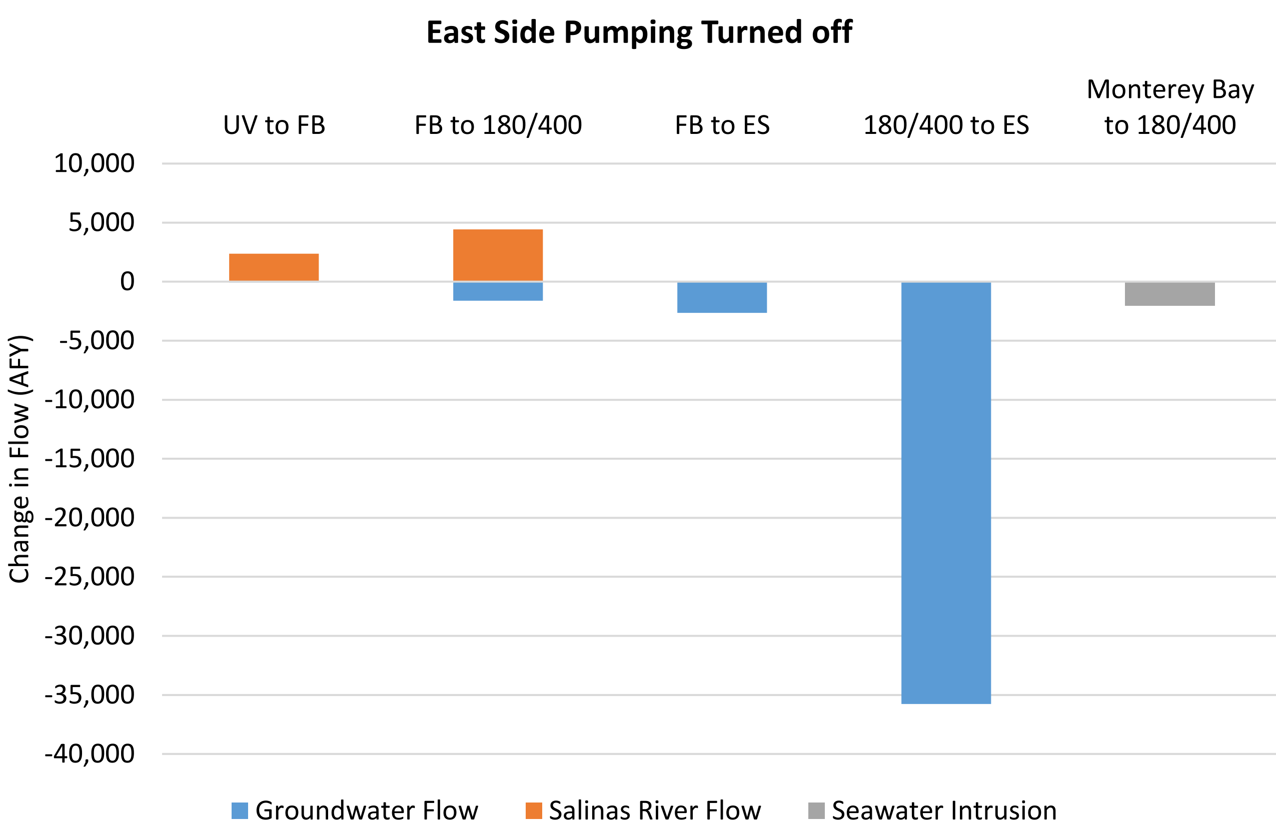
180/400-Ft Aquifer Subbasin Pumping Impacts on Other Subbasins

Date:10/29/2025	Project #: 018-09	**Figure 3**





UV: Upper Valley Aquifer Subbasin
FB: Forebay Aquifer Subbasin
180/400: 180/400-Ft Aquifer Subbasin
ES: East Side Aquifer Subbasin
AFY: Acre-feet per year

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East Side Aquifer Subbasin Pumping Impacts on Other Subbasins

Date:10/29/2025	Project #: 018-09	**Figure 3**

EXHIBIT 7

MEMORANDUM

To:	Abby Ostovar and Derrik Williams, Montgomery & Associates
CC:	Nancy Isakson, Salinas Valley Water Coalition Eric Robinson, Kronick Moskovitz Tiedemann & Girard Piret Harmon and Emily Gardner, SVBGSA Bob Abrams, Aquilogic
From:	Dwight L. Smith, PG, CHg, Principal Hydrogeologist
Date:	October 18, 2025
Subject:	**Technical Review Comments on Montgomery & Associates' Superposition Modeling Technical Memorandum dated August 22, 2025**

1.0 INTRODUCTION

Montgomery & Associates (M&A) has conducted superposition modeling to examine subbasin water balance interactions in accordance with a written funding agreement executed by the Salinas Valley Water Coalition (SVWC), the Salinas Basin Water Alliance (SBWA), and the Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA). The Work Plan attached to the funding agreement was developed in 2023, but superposition modeling was not conducted until after the U.S. Geological Survey published the Salinas Valley Integrated Hydrologic Model (SVIHM) in April of 2025. While an update to the 2025 published SVIHM is currently being worked on by the SVBGSA, the associated improvements expected to be forthcoming in the SVIHM v2 are not expected to significantly change the superposition modeling results produced by using the SVIHM v1 (2025).

In the context of hydrologic modeling, superposition testing is a method of examination used to evaluate the impact of one hydrologic parameter, or variable, on other attributes within a complex and interconnected hydrologic system. In numerical flow modeling, superposition testing is used during model calibration to examine the sensitivity of parameter values to achieving calibration and to direct calibration to the most meaningful parameters. Superposition testing is also used on calibrated models to examine effects of project-specific actions amongst cumulative actions, and to examine hydrologic effects of differing assumed input parameters, such as variables associated with climate change or varying conceptual flow models. In this case, superposition modeling was requested by SVWC and SBWA to aid in the understanding of pumping influences on a subbasin scale on primary attributes of Salinas Valley hydrology, including groundwater elevations, subsurface groundwater flows between the subbasins, flows in the Salinas River, and the magnitude of seawater intrusion along the coast. As implemented, large changes to pumping were input into the model, and the model-predicted hydrologic effects throughout the Salinas Valley's subbasins were then examined. Although this testing is fictitious in the sense that the pumping changes do not reflect proposed management actions, it is insightful for understanding the magnitude of presence or absence of hydrologic connections throughout the valley. Simply put, the superposition modeling reveals whether pumping in one subbasin affects groundwater conditions in other subbasins and, if so, how strongly.

The completed superposition modeling work is consistent with the Work Plan, and the documentation provided by M&A is thorough. The modeling meets the expectations of requested work by SVWC, but I do have a few suggestions that relate to the need for a clear and concise summary of the results. As agreed by the SVBGSA, interpretation of the results may be left to the reader, but the results are to be presented to the SVBGSA's Board of Directors, so clearly summarizing the purpose of superposition testing and the key results is important. These comments focus on the need for a clearer summary of the results, so they can be readily understood.

2.0 M&A MEMORANDUM REVIEW RECOMMENDATIONS

2.1 DEFINE SUPERPOSITION MODELING FOR THE AUDIENCE

The M&A technical memorandum is thorough but needs an introduction describing superposition modeling. Something like the description provided above should be added to M&A's final technical memorandum.

2.2 SUMMARY OF RESULTS NEEDED

The final M&A memorandum should include a "Summary" section presenting highlights of the superposition test results, not just "Summary Notes" stating caveats and limitations. The Summary should present a clear and concise overview of superposition testing results that an interested layperson can easily understand.

2.2.1 Subsurface Flow Observations

A primary interest for SVWC is the subsurface flow relationships between the Upper Valley, Forebay, Eastside and 180/400 Subbasins. While documentation of subsurface flow changes is complete, the tables within the M&A memorandum are complex and results are unnecessarily difficult to decipher. The new Summary section should include tables such as those presented below (**Tables 1-4**) and figures such as **Figures 1-5** presented below. Those tables and figures present the primary superposition test results in a format this is more easily understood by the SVBGSA's Board of Directors and interested lay people. Some description of the information in the tables and text should help guide the reader. For example:

Figure 1 illustrates the model simulated subsurface flows between the Upper Valley, Forebay, Eastside and 180/400 subbasins for the two baseline conditions from which superposition testing is compared. The left pane shows the simulated average annual subsurface flows between subbasins that has historically occurred. The right pane shows the simulated subsurface flows between subbasins for a baseline condition where no pumping has occurred in any subbasins. All values are in units of acre-feet per year (AFA) as averaged over the modeled years of 1980-2022. Under the historical baseline, an average of 5,071 AFA flows from the Upper Valley to the Forebay Subbasin; 8,431 AFA flow from the Forebay to the 180/400 Subbasin, and 6385 AFA flows from the Forebay to the Eastside Subbasin; 27,292 AFA flows from the 180/400 to the Eastside Subbasin; and 8603 AFA flows from the bay into the 180/400 Subbasin as seawater intrusion.

The **Figure 2** left pane illustrates how much the subsurface flows are simulated to change if there had been no pumping from the Upper Valley Subbasin over the entire historical period. There is a simulated increase in subsurface flow from the Upper Valley to the Forebay Subbasin of 4,979 AFA; a simulated increase in subsurface flow from the Forebay to the 180/400 and Eastside Subbasins of 3 and 26 AFA, respectively; a simulated increase in subsurface flow from the 180/400 to the Eastside Subbasin of 1,598 AFA; and a reduction in seawater intrusion to the 180/400 Subbasin of 381 AFA. The changes under the "full aquifer" baseline where the starting point is no pumping anywhere in the valley, then pumping is turned on in the Upper Valley produces comparable results, but the direction of subsurface flows comparison are presented changes (note direction of arrows in the figures).

Results of the superposition testing may be made for changes to pumping in the Forebay, Eastside, and 180/400 Subbasins using Figures 3-5. Values for subsurface flows in the baseline conditions, and then the changes observed by testing pumping in each subbasin are summarized in the **Tables 1-4**. **Table 1** summarizes the superposition results from the scenario in which pumping in each subbasin is successively turned off, while pumping in all the other subbasins remains on for the hydrologic testing period 1980-2022. The first row shows the baseline amounts of annual groundwater flow between subbasins and seawater intrusion with actual historic pumping turned on in all subbasins. The second row shows the impact on inter-subbasin flows if actual historic Upper Valley pumping were turned off. For example, turning off Upper Valley pumping would reduce seawater intrusion into the 180/400 Subbasin to 8,221 AFA (down 382 AFA). Meanwhile, the bottom row shows that turning off 180/400 Subbasin pumping would reduce seawater intrusion into the 180/400 Subbasin to 456 AFA (down 8,147 AFA). Those and all the other net changes in inter-subbasin flows and seawater intrusion are summarized below in **Table 2**.

Table 3 summarizes the superposition results from the scenario in which pumping in each subbasin is successively turned on, while pumping in all the other subbasins remains off for the hydrologic testing period 1980-2022. The first row shows the baseline amounts of annual groundwater flow between subbasins and 4,450 AFA of groundwater discharge to the ocean with actual historic pumping turned off in all subbasins. The second row shows the impact on inter-subbasin flows and ocean discharge if actual historic Upper Valley pumping were turned on. For example, turning on Upper Valley pumping would reduce ocean discharge from the 180/400 Subbasin to 4,339 AFA (down 51 AFA). Meanwhile, the bottom row shows that turning on 180/400 Subbasin pumping would reduce ocean discharge from the 180/400 Subbasin to 3 AFA (down 4,447 AFA) while turning on Eastside Subbasin pumping would reduce ocean discharge from the 180/400 Subbasin to 3,515 AFA (down 935 AFA). Those and all the other net changes in inter-subbasin flows and ocean discharge are summarized below in **Table 4**.

Table 1 – Summary of Subbasin Subsurface Flows – Historical Baseline Superposition Modeling

(Average Values 1980-2022 in AFA)

Model Scenario	Upper Valley to Forebay	Forebay to Eastside	Forebay to 180/400	180/400 to Eastside	Seawater Intrusion to 180/400
Historical Conditions	5,071	6,385	8,431	27,292	8,603
No Upper Valley Pumping[a]	10,050	6,412	8,434	28,890	8,221
No Forebay Pumping[a]	887	8,407	10,339	28,588	8,183
No Eastside Pumping[a]	5,013	3,751	6,815	10,566	6,555
No 180/400 Pumping[a]	5,005	5,251	5,766	52,324	456

Notes:
a Historical pumping continues in all other subbasins.

Table 2 – Summary of Subbasin Subsurface Flow Changes from Baseline – Historical Baseline Superposition Modeling

(Average Values 1980-2022 in AFA)

Model Scenario	Upper Valley to Forebay[b]	Forebay to Eastside[b]	Forebay to 180/400[b]	180/400 to Eastside[b]	Seawater Intrusion to 180/400
No Upper Valley Pumping[a]	4,979	26	3	29	-381[c]
No Forebay Pumping[a]	-4,185	2,022	1,908	3,930	-420[c]
No Eastside Pumping[a]	-58	-3,635	-1,616	-5,251	-2,047[c]
No 180/400 Pumping[a]	-67	-1,134	-2,665	-3,799	-8,147[c]

Notes:
a Historical pumping continues in all other subbasins.
b Positive value = increase over historical baseline flow; Negative value = decrease over historical baseline flow.
c Negative value = less seawater intrusion.

Table 3 – Summary of Subbasin Flows – Full Aquifer Baseline Superposition Modeling

(Average Values 1980-2022 in AFA)

Model Scenario	Upper Valley to Forebay	Forebay to Eastside	Forebay to 180/400	Eastside to 180/400	Seawater Intrusion to 180/400
Full Aquifer Conditions (No Historical Pumping)	4,478	1,822	5,492	21,973	-4,450[b]
Upper Valley Pumping On[a]	1,084	1,815	5,440	22,100	-4,339 [b]
Forebay Pumping On[a]	9,256	57	3,884	21,429	-4,397 [b]
Eastside Pumping On[a]	4482	4266	6632	-16,941	-3,515 [b]
180/400 Pumping On[a]	4,484	2,547	6,841	36,700	-3 [b]

Notes:
a No pumping in all other subbasins.
b Negative value for seawater intrusion = subsurface outflow to the ocean

Table 4 – Summary of Subbasin Flow Changes from Baseline – Full Aquifer Baseline Superposition Modeling

(Average Values 1980-2022 in AFA)

Model Scenario	Upper Valley to Forebay[b]	Forebay to Eastside[b]	Forebay to 180/400[b]	Eastside to 180/400[b]	Seawater Intrusion to 180/400
Upper Valley Pumping On[a]	-3,394	-7	-52	127	51 [c]
Forebay Pumping On[a]	4,778	-1,765	-1,608	-544	53 [c]
Eastside Pumping On[a]	4	2,444	1,140	-38,914	935 [c]
180/400 Pumping On[a]	6	725	1,349	14,727	4,447 [c]

Notes:
a No pumping in all other subbasins.
b Positive value = increase over historical baseline flow, Negative value = decrease over historical baseline flow.
c Positive value = less outflow to the ocean.

2.2.2 Salinas River Flow Observations

Simulated flow changes in the Salinas River should also be summarized in the new Summary text. Average annual discharge at key gages in units of acre-feet per year (AFA) would suffice. M&A Tables 7 and 14 are relatively easy to understand and probably do not need to be repeated in the Summary, but general average annual magnitudes of change in flow in the superposition testing should be simply and clearly described, and a complementary summary figures are suggested, such as the **Figures 6-10**. **Figure 6** shows the simulated baseline flows at three key gages on the Salinas River, in units of AFA, averaged over the 1980-2022 simulation period. **Figures 7-10** then show the simulated changes in flows resulting from subbasin pumping turned off while other pumping continues (historical baseline – left side pane) and pumping turned on by subbasin at historical rates for the "aquifer full" baseline condition (right side pane). **Tables 5 and 6** summarizes the simulated Salinas River flow changes, for both the historical baseline testing and the "full aquifer" baseline testing for the most down-stream gage Spreckels.

For example, Salinas River average annual flow at the Spreckels gage for historical pumping baseline is simulated at 246,536 AFA (left pane, **Figure 6**). When all historical pumping in the Upper Valley Subbasin is turn off for the simulation period, there is an increase in average annual flow at the Spreckels gage of 35,904 AFA (left pane, **Figure 7**), or an approximate flow increase of 14.6% (**Table 5**). For the "full aquifer" baseline conditions, historical pumping turned on in the Upper Valley Subbasin is simulated to decrease the average annual flow at the Spreckels gage from 423,519 AFA to 378,498 AFA, or a reduction in flow of 45,020 AFA or 10.6% of the total annual flow at Spreckels (refer to **Figure 7** right pane, and **Table 6**).

Table 5 – Summary of Salinas River Simulated Annual Flows and Changes at the Spreckels Gage for Historical Baseline Superposition Modeling

(Average Values 1980-2022)

Model Scenario	Annual Flow (AFA)	Change in Annual Flow (AFA)	Percentage Change in Flow
Simulated Flow with All Historical Pumping	246,536	--	--
Simulated Flow with Upper Valley Pumping Off	282,461	+35,904	14.6%
Simulated Flow with Forebay Pumping Off	285,866	+39,310	15.9%
Simulated Flow with Eastside Pumping Off	254,677	+8,121	3.3%
Simulated Flow with 180/400 Pumping Off	266,920	+20,364	8.3%

Table 6 – Summary of Salinas River Simulated Annual Flows and Changes at the Spreckels Gage for the "Full Aquifer" Baseline Superposition Modeling

(Average Values 1980-2022)

Model Scenario	Annual Flow (AFA)	Change in Annual Flow (AFA)	Percentage Change in Flow
Simulated Flow with No Historical Pumping ("Full Aquifer" Condition)	423,519	--	--
Simulated Flow with Upper Valley Pumping On	378,498	-45,020	14.6%
Simulated Flow with Forebay Pumping On	376,506	-47,013	15.9%
Simulated Flow with Eastside Pumping On	409,221	-14,298	3.3%
Simulated Flow with 180/400 Pumping On	397,481	-26,038	8.3%

2.2.3 Regional Groundwater Level Changes

Regional water level elevation changes are relatively easy to visualize in color-flood maps in the M&A memorandum. Some complimentary Summary text and tables are needed to describe the magnitude and geographic distribution of average responses by subbasin. **Tables 7 and 8** are examples of this type of summary table, where maximum water level changes by subbasin (1980-2022, average change) are presented.

Table 7 shows water levels resulting from successively turning pumping off in each subbasin. For example, the first row shows turning Upper Valley Subbasin pumping off would increase Upper Valley water levels by 20-40 feet while increasing water levels elsewhere by 1-5 feet. The bottom row shows turning 180/400 Subbasin pumping off would increase water levels in the Forebay Subbasin by 5-10 feet, in the Eastside Subbasin by 40-60 feet, and in the 180/400 Subbasin by more than 60 feet.

Table 8 shows water levels resulting from successively turning pumping on in each subbasin. For example, the first row shows turning Upper Valley Subbasin pumping on would reduce Upper Valley water levels by 20-40 feet while reducing Forebay Subbasin water levels elsewhere by 1-5 feet, and water levels every else by less than 1 foot The bottom row shows turning the 180/400 Subbasin pumping on would reduce water levels in the Forebay Subbasin by 1-5 feet, in the Eastside Subbasin by 40-60 feet, and in the 180/400 Subbasin by more than 60 feet.

Table 7 – Summary of Maximum Water Level Changes – Historical Baseline Superposition Modeling

(Average Values 1980-2022 in Feet)

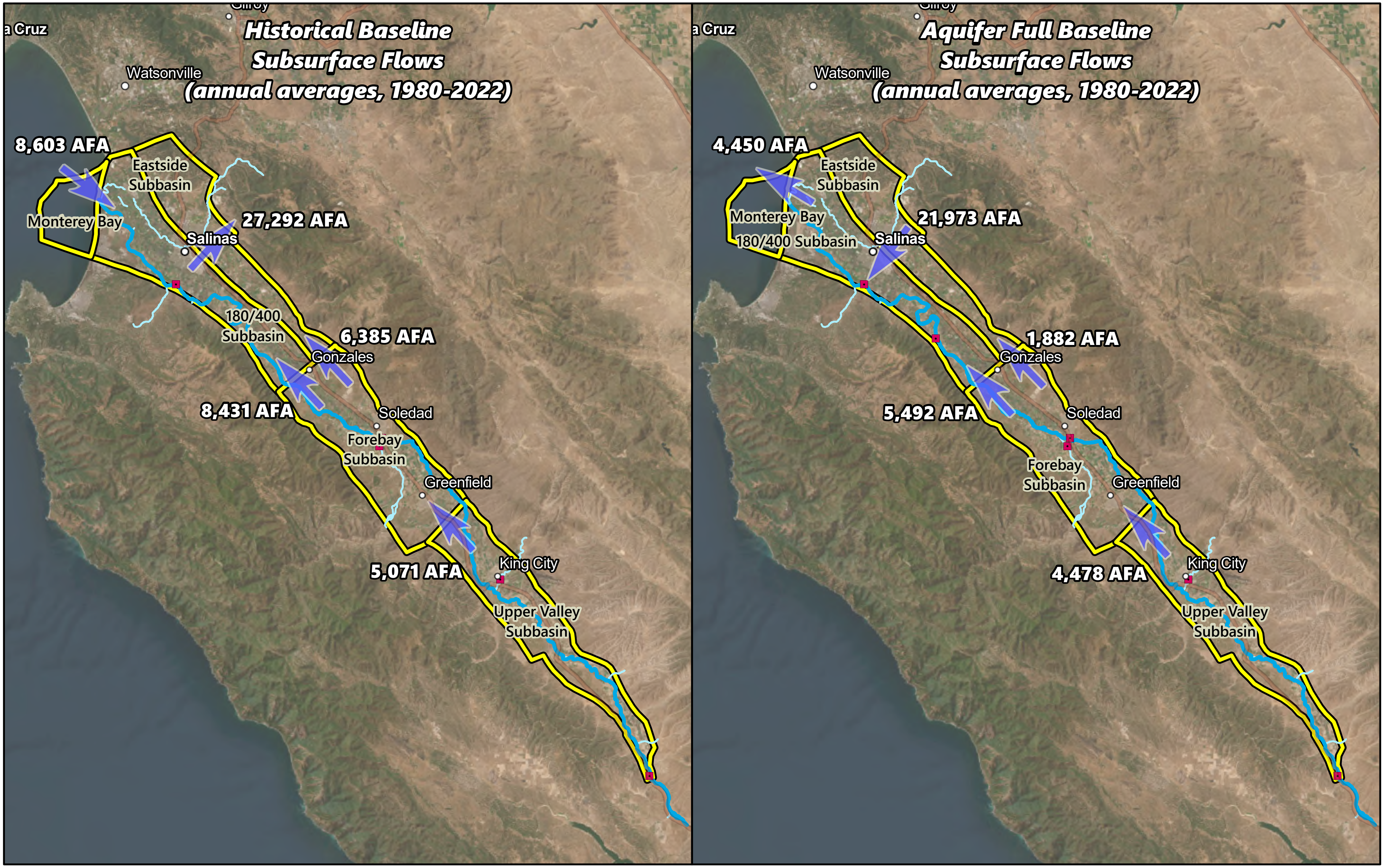
Model Scenario	Upper Valley	Forebay	Eastside	180/400
Upper Valley Pumping Off	20-40	1-5	1-5	1-5
Forebay Pumping Off	1-5	20-40	10-20	5-10
Eastside Pumping Off	<1	5-10	>60	20-40
180/400 Pumping Off	<1	5-10	40-60	>60

Table 8 – Summary of Maximum Water Level Changes – Full Aquifer Baseline Superposition Modeling

(Average Values 1980-2022 in Feet)

Model Scenario	Upper Valley	Forebay	Eastside	180/400
Upper Valley Pumping On	20-40	1-5	<1	<1
Forebay Pumping On	<1	20-40	10-20	1-5
Eastside Pumping On	<1	5-10	>60	20-40
180/400 Pumping On	<1	1-5	40-60	>60

Note: **Tables 7 and 8** above might present more accurately if average water level change over the subbasin is used in addition to maximum values presented from color flood figures (subbasin averages are not presented in the M&A memorandum, so not used in these example tables).



- Gaging Stations
- Salinas River
- Creeks
- Subbasins

N

0 13

Mile

FIGURE 1

Historical & Aquifer Full Baseline Maps
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition	
Project Code: HLLF001	
NAD 1983 UTM Zone 10N	
H.Chambers	10/13/2025

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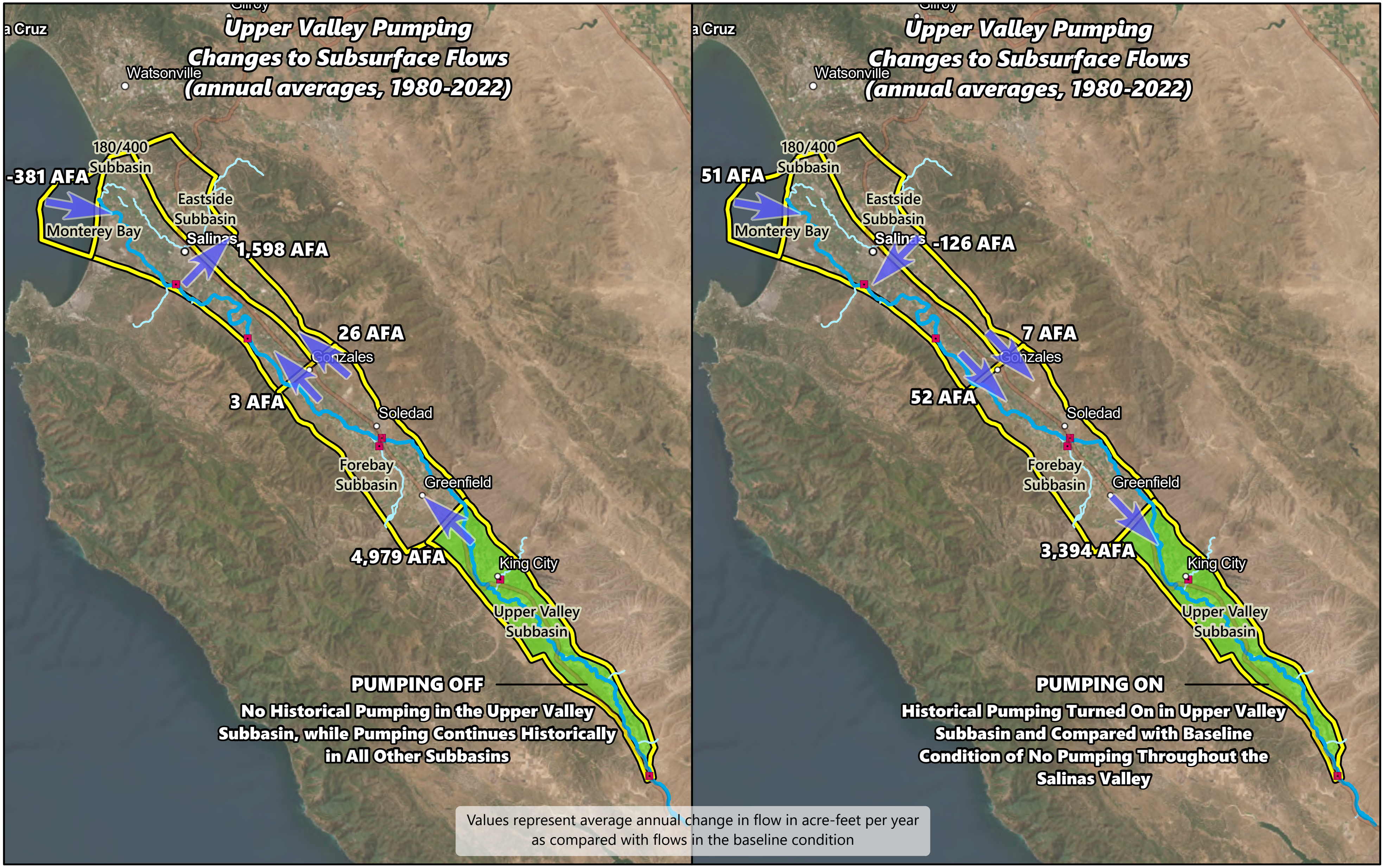

- Gaging Stations
- Salinas River
- Creeks
- Subbasins

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FIGURE 2

Upper Valley Pumping
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition	
Project Code: HLLF001	
NAD 1983 UTM Zone 10N	
H.Chambers	10/15/2025

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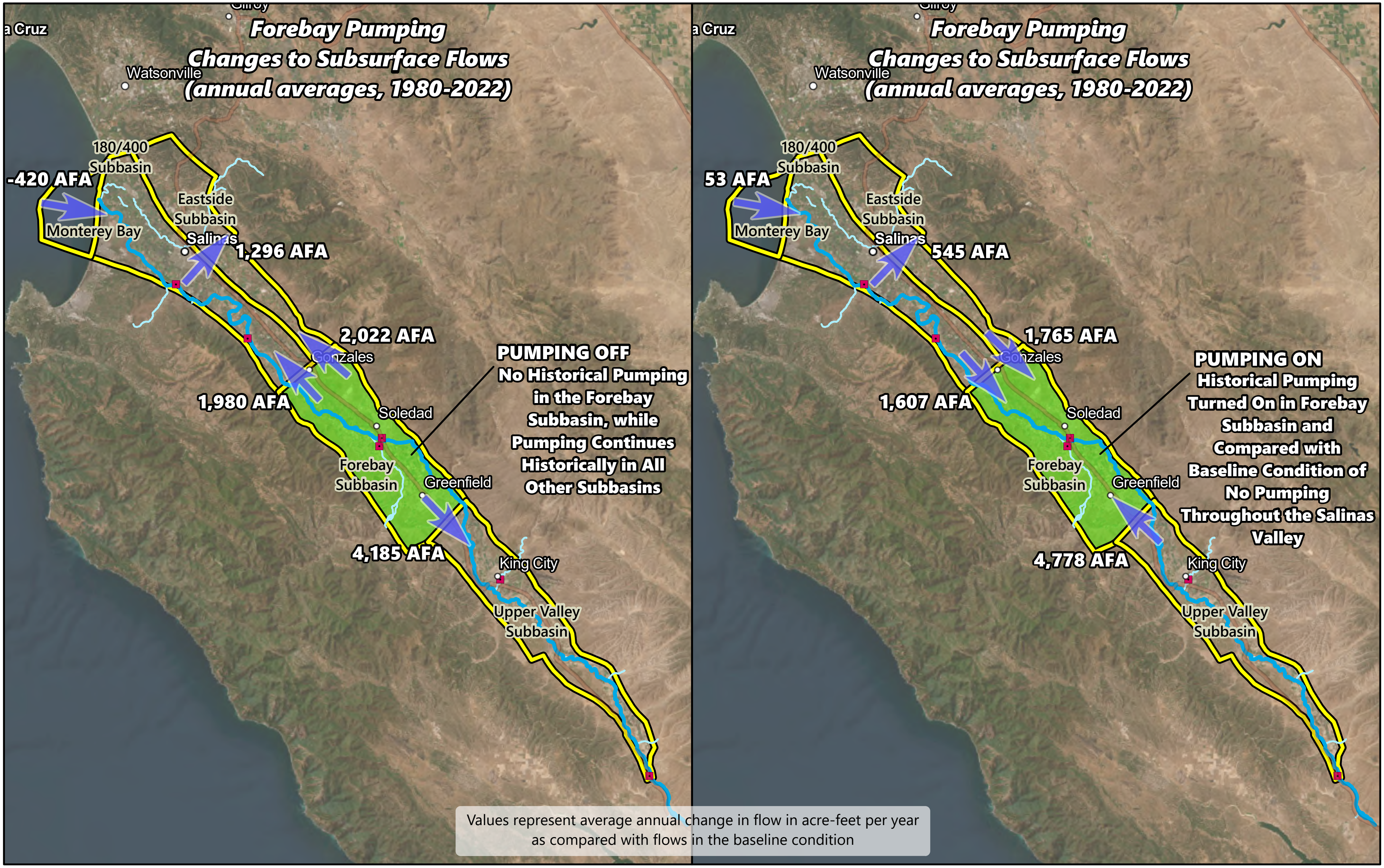

Gaging Stations
Salinas River
Creeks
Subbasins

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Mile

FIGURE 3

Forebay Pumping
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition	
Project Code: HLLF001	
NAD 1983 UTM Zone 10N	
H.Chambers	10/15/2025

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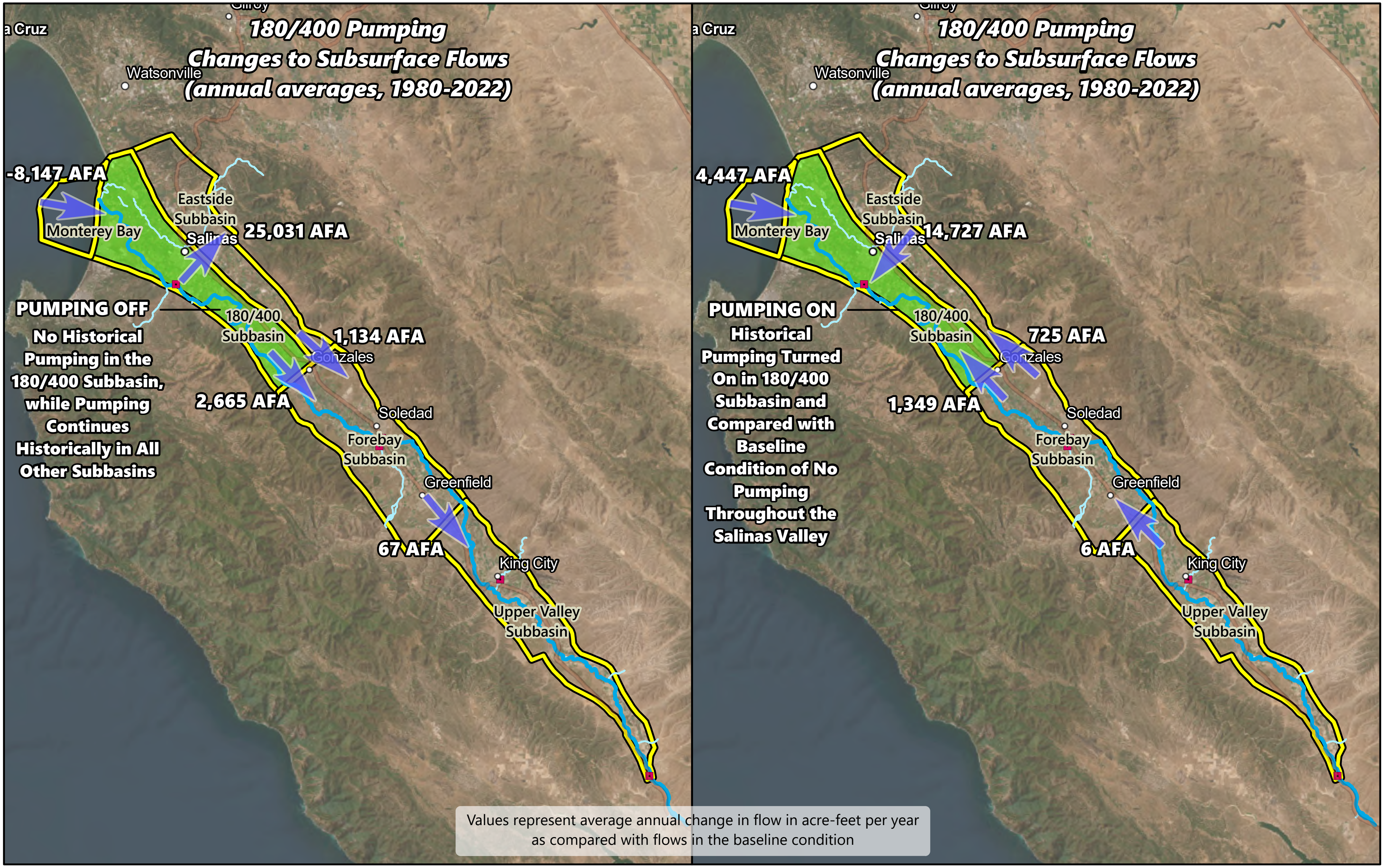

- Gaging Stations
- Salinas River
- Creeks
- Subbasins

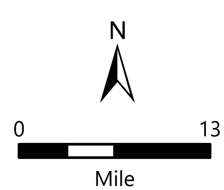

FIGURE 4

180/400 Pumping Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition
Project Code: HLLF001
NAD 1983 UTM Zone 10N
H.Chambers 10/15/2025

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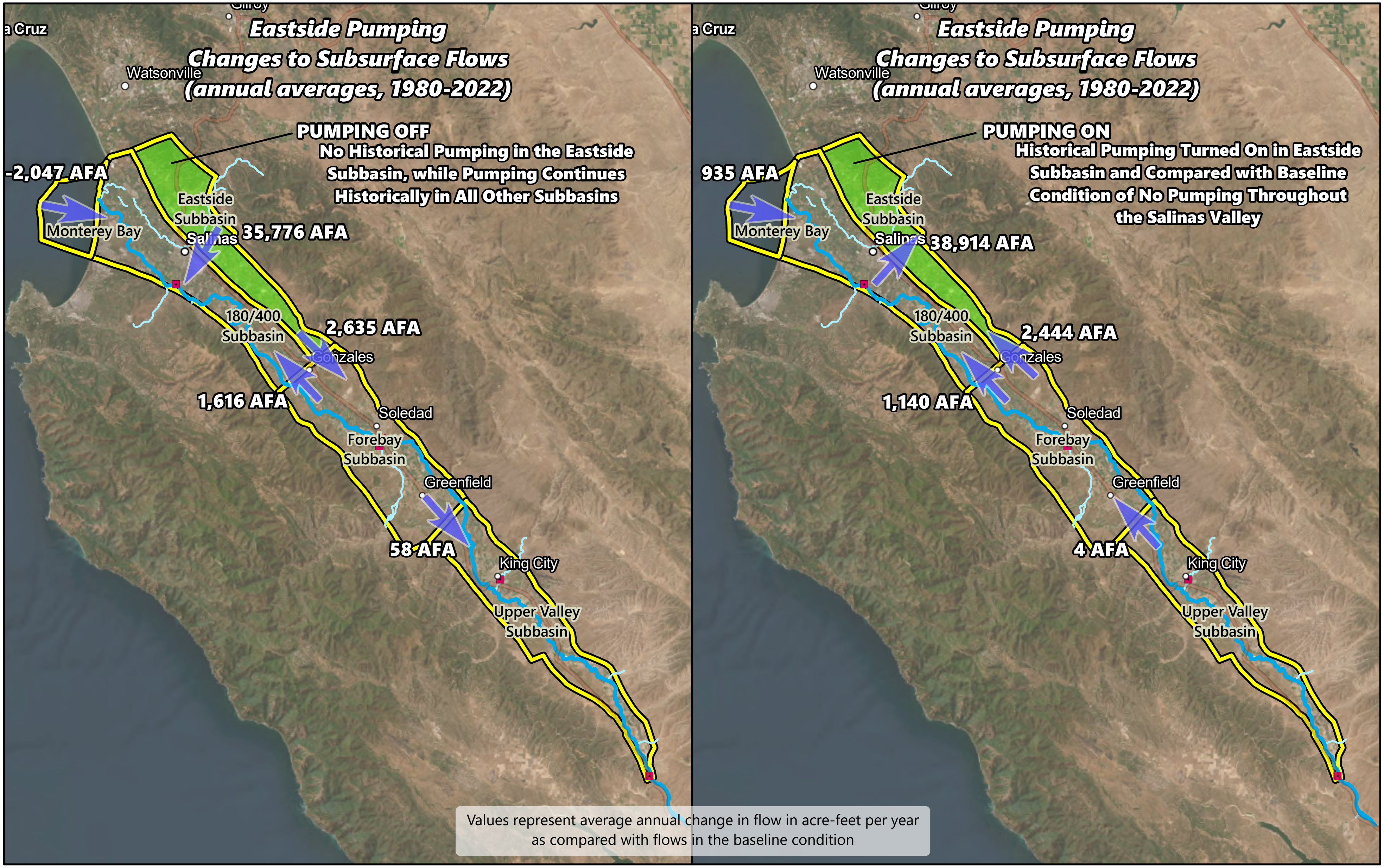

Gaging Stations
Salinas River
Creeks
Subbasins

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FIGURE 5

Eastside Pumping
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition
Project Code: HLLF001
NAD 1983 UTM Zone 10N
H.Chambers 10/15/2025

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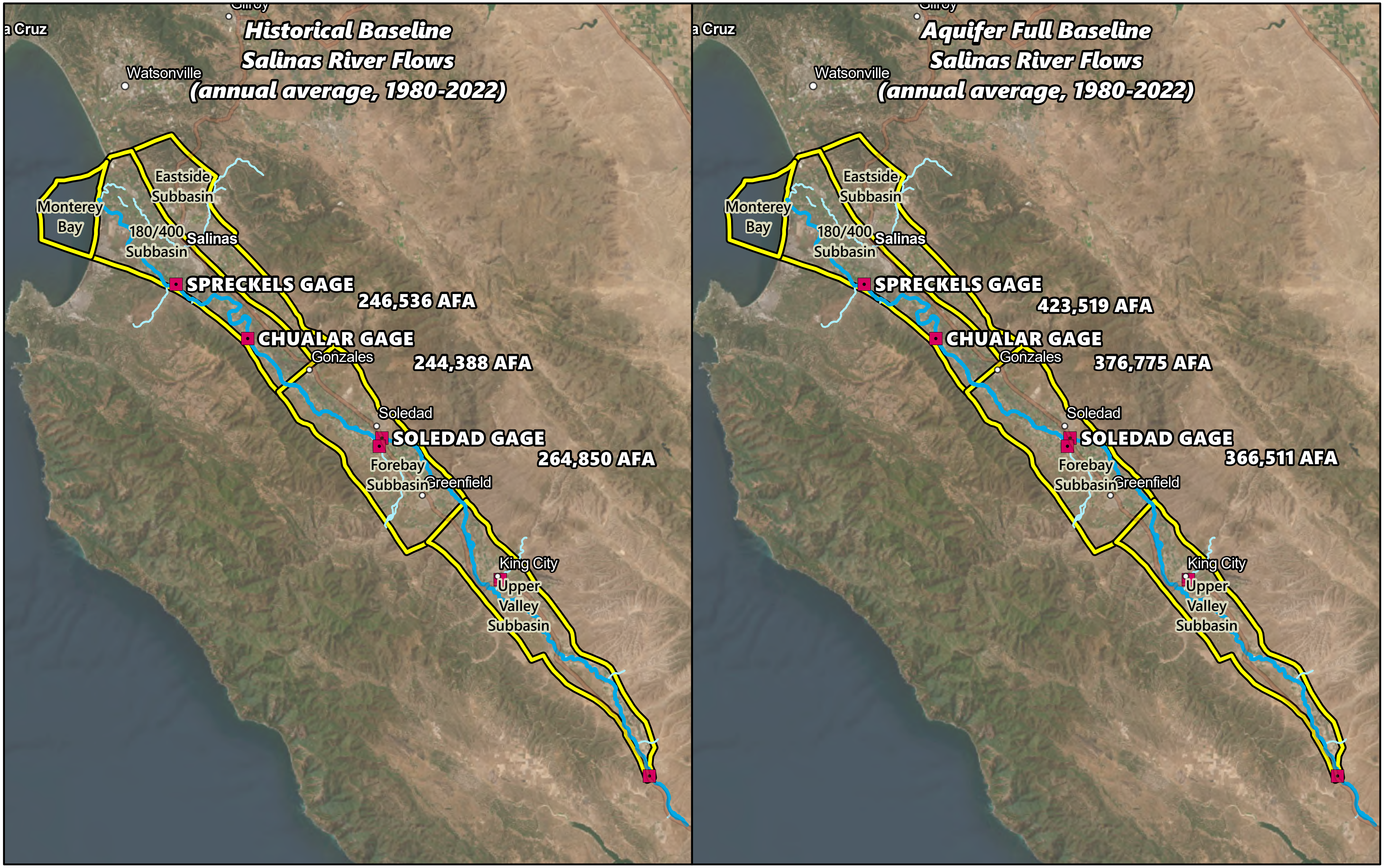

- Gaging Stations
- Salinas River
- Creeks
- Subbasins

N

0 — 13 Mile

FIGURE 6

Historical & Aquifer Full Baseline Maps
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition
Project Code: HLLF001
NAD 1983 UTM Zone 10N
H.Chambers 10/17/2025

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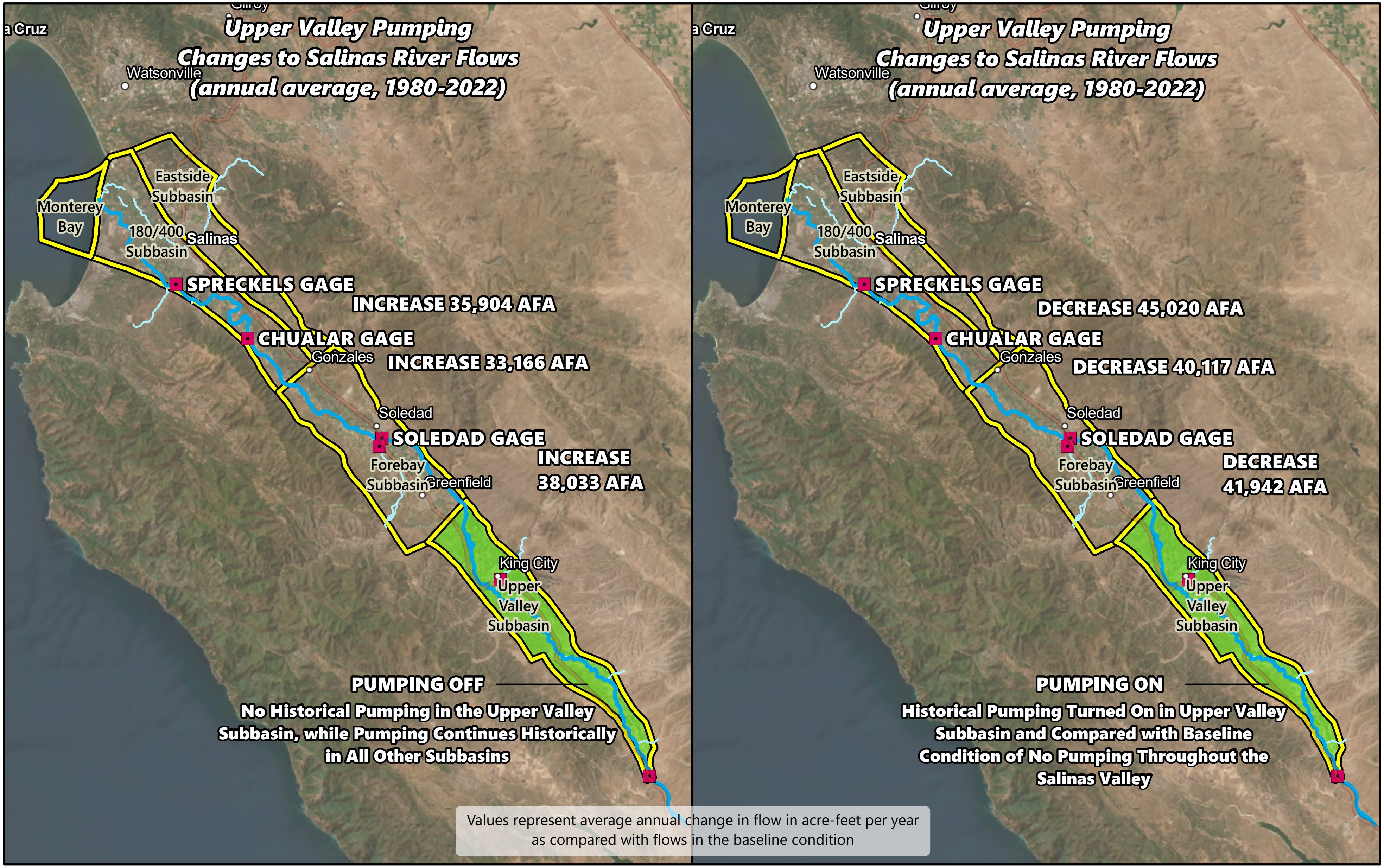

- Gaging Stations
- Salinas River
- Creeks
- Subbasins

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Mile

FIGURE 7

Upper Valley - Gages
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition
Project Code: HLLF001
NAD 1983 UTM Zone 10N
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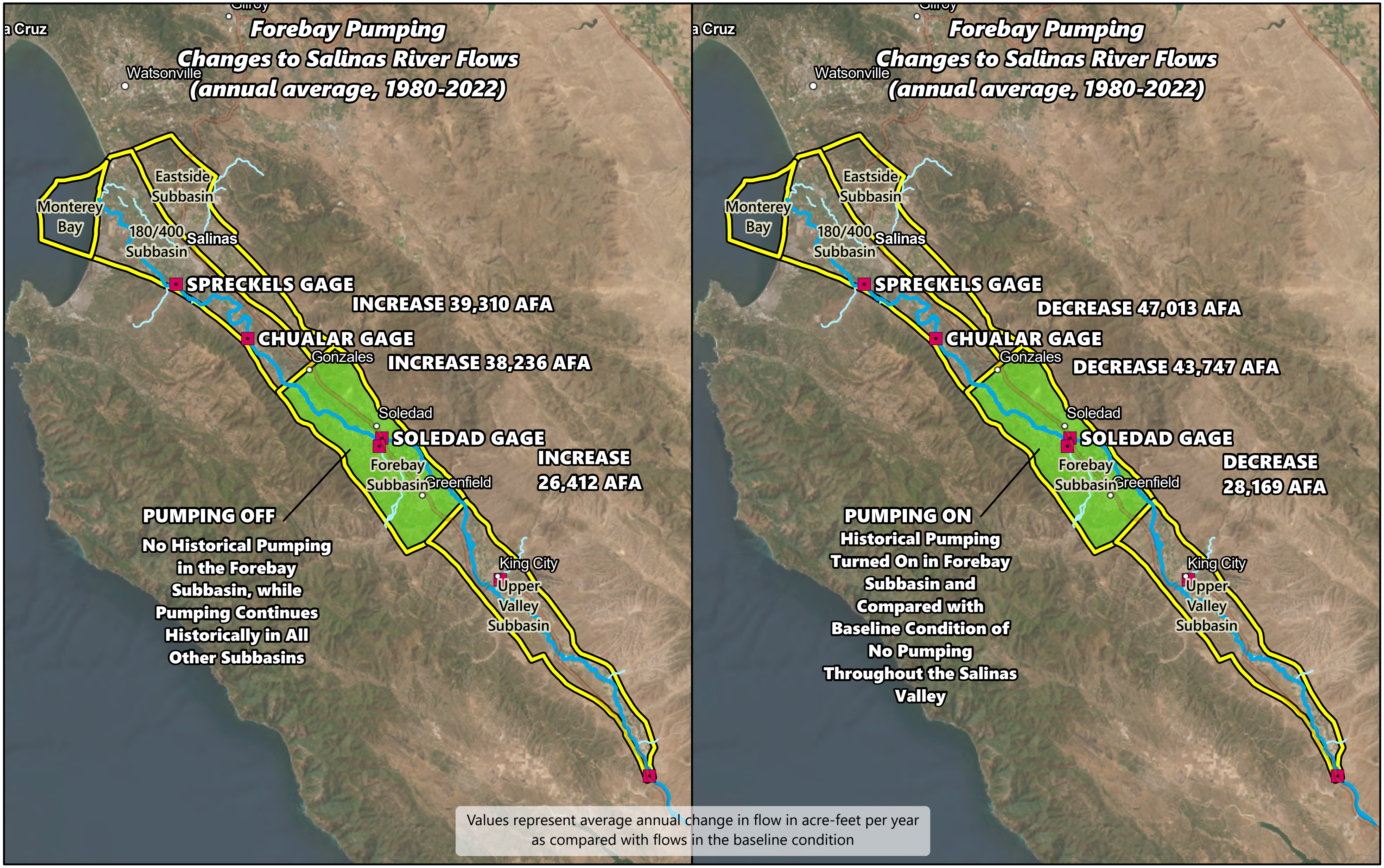

Gaging Stations
Salinas River
Creeks
Subbasins

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FIGURE 8

Forebay - Gages
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition
Project Code: HLLF001
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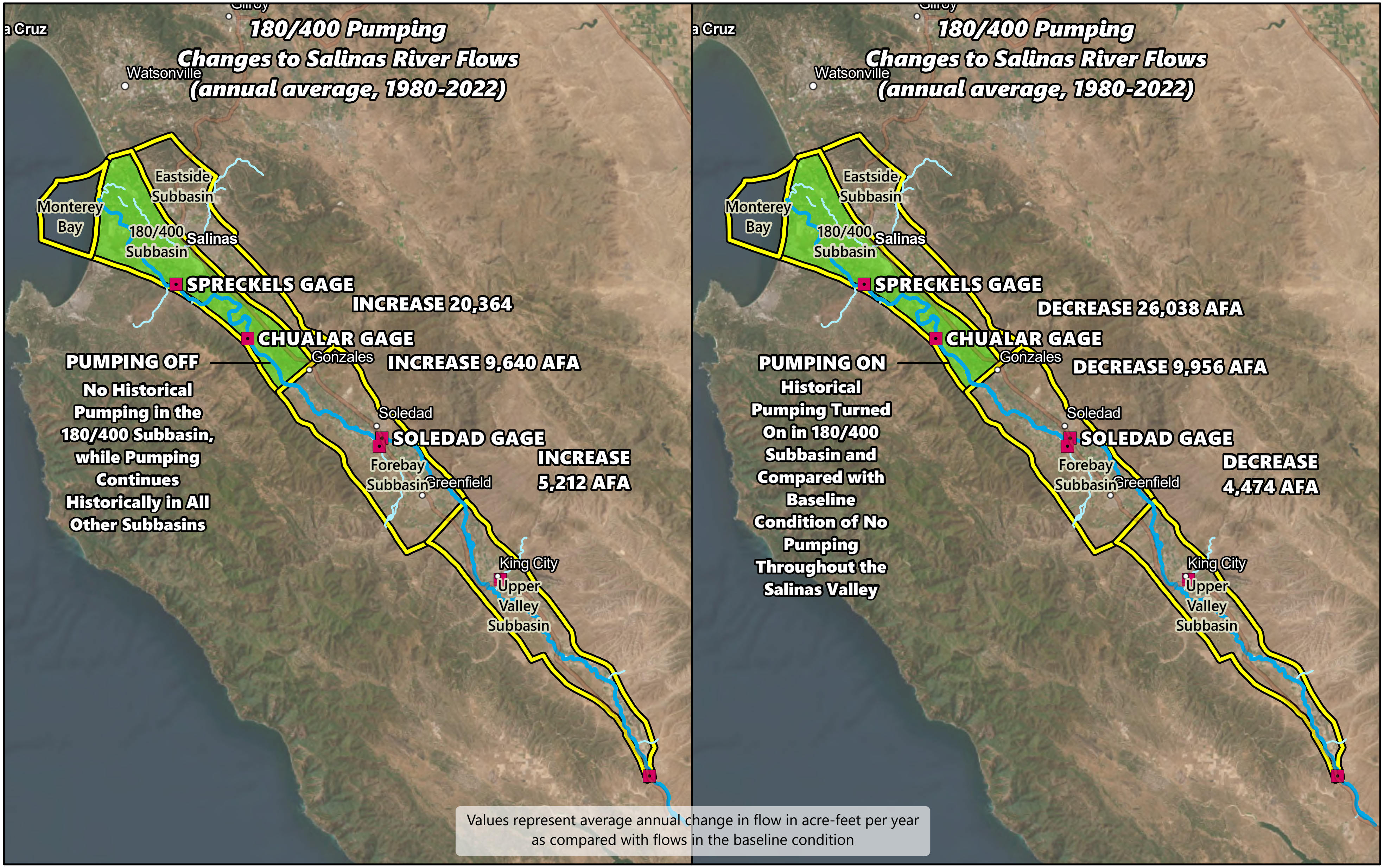

- Gaging Stations
- Salinas River
- Creeks
- Subbasins

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FIGURE 9

180/400 - Gages
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition	
Project Code: HLLF001	
NAD 1983 UTM Zone 10N	
H.Chambers	10/17/2025

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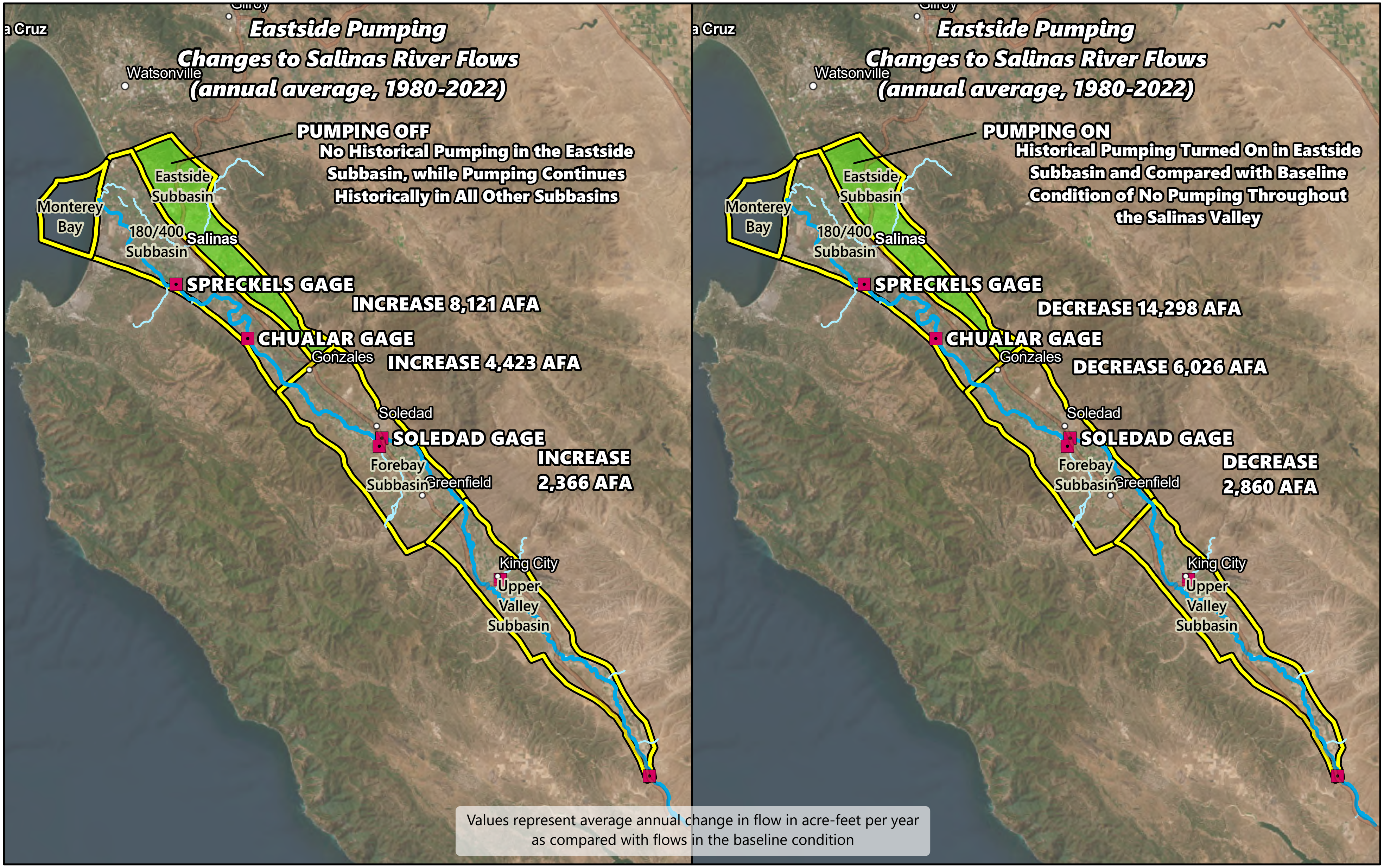

Gaging Stations
Salinas River
Creeks
Subbasins

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Mile

FIGURE 10

Eastside - Gages
Superposition Model Testing

Salinas Valley, CA

Client: Salinas Valley Water Coalition
Project Code: HLLF001
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EXHIBIT 8

MONTGOMERY
& ASSOCIATES
Water Resource Consultants

Groundwater experts since 1984

TECHNICAL MEMORANDUM

DATE: August 22, 2025 PROJECT #: 9100

TO: Dwight Smith, McGinley & Associates, on behalf of the Salinas Valley Water Coalition (SVWC)
Bob Abrams, Aquilogic, on behalf of the Salinas Basin Water Alliance (SBWA)

CC: Piret Harmon and Emily Gardner, Salinas Valley Basin Groundwater Sustainability Agency (SVBGSA)
Amy Woodrow, Monterey County Water Resources Agency (MCWRA)

FROM: Hanni Blair; Kayla Bicknell, Abby Ostovar, Ph.D.; Staffan Schorr; and
Derrik Williams, P.G., C.Hg.

PROJECT: Computer Modeling Agreement

SUBJECT: Results of Computer Modeling Agreement for SVWC and SBWA

INTRODUCTION

Under the Computer Modeling Agreement, Montgomery & Associates (M&A) has completed modeling simulations for the Salinas Basin Water Alliance (SBWA) and Salinas Valley Water Coalition (SVWC) to conduct a superposition analysis of pumping effects on intersubbasin flow using the Salinas Valley Integrated Hydrologic Model (SVIHM). The SVIHM was provisional and under development by the U.S. Geological Survey (USGS) when this project began, and M&A had permission to run the model through the SVBGSA Cooperation Agreement with the USGS. Although USGS published the SVIHM in April 2025, SBWA and SVWC decided to continue to have M&A run the modeling scenarios with the published version.

SBWA, SVWC, and their hydrologists proposed 2 approaches for model simulations: (1) use the existing historical conditions as the baseline condition and then turn off pumping in each of the Upper Valley Aquifer (Upper Valley), Forebay Aquifer (Forebay), Eastside Aquifer (Eastside), and 180/400-Foot Aquifer (180/400) Subbasins in 4 separate model simulations, and (2) develop a no-pumping baseline condition for the Valley and turn pumping on for the same 4 subbasins, each in a separate model simulation. Each approach consists of 5 model simulations for a total of 10 simulations, which will enable SBWA and SVWC to complete a superposition analysis of intersubbasin subsurface flow.

Phase I of this project consisted of developing the modeling approach and working closely with Aquilogic on behalf of SBWA and McGinley & Associates on behalf of SVWC. The approach is summarized in the *Summary of Modeling Approach Technical Memorandum (TM)* dated June 16, 2023. Phase II consists of running the scenarios and summarizing the results in this TM. After briefly describing the SVIHM and relevant changes made to conduct the simulations, the TM documents the modeling approach and results for each set of simulations. Aquilogic and McGinley & Associates are responsible for interpreting the significance of the results; however, the summary section includes notes and cautions to guide that interpretation.

GROUNDWATER FLOW MODEL

The SVIHM is a numerical groundwater flow model developed to simulate groundwater and surface water conditions in the Salinas Valley under historical conditions. It is part of a larger suite of models that includes a geologic model and a watershed model. The SVIHM is built using the most recent version of the USGS MODFLOW One Water Hydrologic Flow Model (OWHM) code.

The SVIHM has 9 layers representing principal aquifers and aquitards in the Salinas Valley. The Farm Process in the SVIHM—which is unique to MODFLOW OWHM—estimates demand-based agricultural pumping. Municipal, industrial, and domestic pumping are specified based on historical records and estimates. Reclaimed water supply, diversions to the Castroville Seawater Improvement Project (CSIP) from the Salinas River Diversion Facility, and surface water flows including releases from the Nacimiento and San Antonio Dams, are specified based on historical records. Runoff, agricultural return flows, and recharge are simulated flows that vary in time and space in the SVIHM in response to climate, land use, and groundwater elevations. Further description of the SVIHM can be found in the USGS model summary report by Henson and others (2025 [pre-print]).

The USGS made a few notable changes in the final version of the SVIHM, as compared to the version reviewed when developing the modeling approach for this project:

1. **Temporal Update:** The final SVIHM was updated to run from 1967 to 2022.
2. **Flooding of Layer 1:** The USGS added a layer of drain cells across layer 1 to address simulated water levels above the ground surface (flooding). With the addition of drains, any groundwater flow into model cells that would increase the head above the top elevation of the cell is routed to nearby streamflow. This computer modeling task was previously paused in 2024 due to observed simulated flooding of layer 1, for which the USGS added the drain later in 2024 as a preventative measure.
3. **Water Balance Subregion (WBS) Adjustment:** The SVIHM is divided into WBSs, or farms, as shown on Figure 1, which is reproduced from the USGS model report (Henson

and others, 2025 [pre-print]). The agricultural water demand and supply are calculated by the SVIHM at the WBS level. When the approach to this project was developed, the WBS boundaries specified in the SVIHM did not correspond with Bulletin 118 subbasin boundaries used for groundwater sustainability plans (GSPs), and they were not necessarily contiguous. In the final version of the SVIHM, the USGS adjusted those boundaries to align better with the subbasin boundaries.

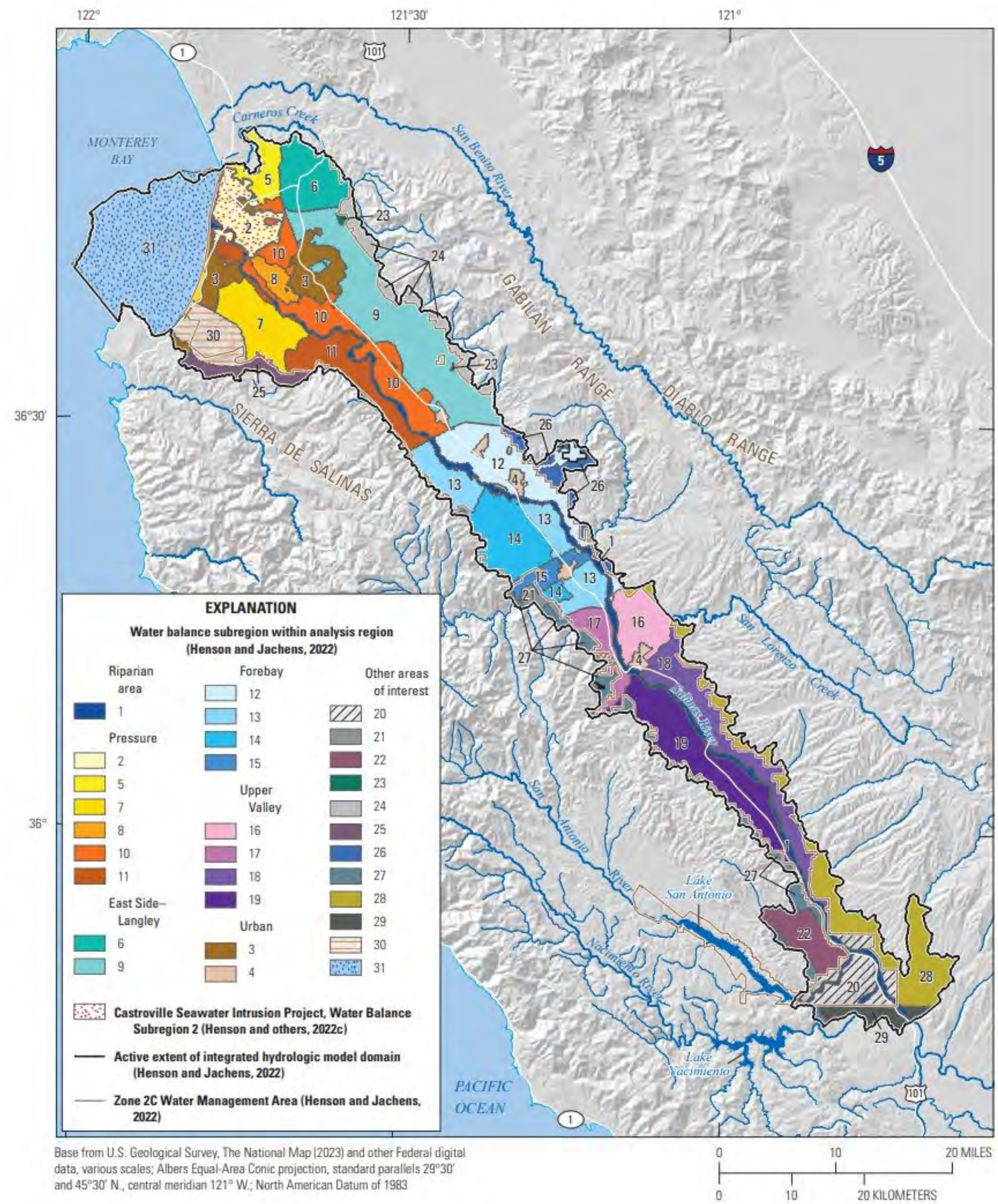

Figure 1. Water Balance Subregion Grouping for Results
(reproduced from Henson and others., 2025 [pre-print])

MODELING APPROACH

The proposed superposition analysis requires that groundwater pumping be removed from or turned off in individual subbasins in the SVIHM, or to be turned on again after being turned off for the no-pumping baseline. Wells were turned off by subbasin through the following methods:

- **Urban wells,** which have specified pumping rates (municipal, industrial, and domestic wells), were turned off by specifying a rate of zero for the affected wells in the MNW package input files.

- **Agricultural wells** have pumping rates calculated internally in the SVIHM Farm Process according to land use and crop demand. Groundwater pumping was eliminated as a potential source of water that the model can use to meet demand. Wells were “turned off” by setting the maximum pumping rate of the wells located within the subbasin of interest to zero in the farm package input files. Historical surface water deliveries continue for irrigation. Without additional water sources, demand was partially met (deficit irrigation). Land use demand remained unchanged. This approach, selected by the SBWA and SVWC hydrologists, also eliminated any recharge from return flow of excess agricultural irrigation sourced from groundwater since there was no groundwater supplied for irrigation.

CSIP deliveries are determined based on demand in the CSIP area: first, the model attempts to meet CSIP crop demand using natural sources (precipitation and groundwater root uptake), second, it uses prescribed non-routed delivery of recycled water, third, it attempts to divert surface water at the SRDF, and finally, it pumps groundwater to make up any demand shortfall. At Clark Colony, it follows the same progression without recycled water. The model simulates the historical diversion amounts as a specified diversion from the main channel (Salinas River for CSIP and Arroyo Secco for Clark Colony). The specified diversion goes into a side channel from which the associated farm (water balance subregion) is allowed to draw to meet its demand. In the public release version of the SVIHM from the USGS, any diverted water that is not used by the farm is returned to the main channel. This allows the farm to use up to the historical diversion but does not guarantee that the historical diversion will be totally removed from the system.

For the stream diversions to be consistent between the model runs, a change was implemented to the stream flow routing package to disconnect the return of the diversion side channels from the main channel. With this change, the historical diversion amount is always diverted from the main channel and if there is any unused portion it disappears from the model domain. Without groundwater as a water supply, irrigation decreases and deficit irrigation results in reduced evapotranspiration from crops. The other anticipated impacts on the water budget from this approach are reduced return flows and reduced deep percolation from farms.

M&A completed the 10 model simulations according to the defined approach. For clarity, the results are separated into sections for each group of model simulations:

Pumping Turned Off by Subbasin *Compared to the historical SVIHM baseline, pumping is turned off one subbasin at a time*	Pumping Turned On by Subbasin *Compared to a no-pumping baseline scenario, pumping is turned on by one subbasin at a time*
Upper Valley Off	Upper Valley On
Forebay Off	Forebay On
180/400 Off	180/400 On
Eastside Off	Eastside On

This TM provides model simulation outputs according to the *Summary of Modeling Approach Technical Memorandum TM*. In addition, M&A will share the raw output files with the SBWA and SVWC hydrologists. These include the model input files (discretization data), the groundwater elevation difference outputs compared to the baseline model, groundwater cell-by-cell flow budget files, and modeled Salinas River flow output.

MODEL RESULTS FOR TURNING OFF PUMPING BY SUBBASIN

For this set of simulations, M&A used the historical model with the stream diversion modifications noted above as the pumping baseline. Pumping was turned off for each of the Upper Valley, Forebay, Eastside, and 180/400 Subbasins in 4 separate model simulations. The results for the individual subbasin "off" simulations are compared to the pumping baseline simulation. This section focuses on the first set and organizes results by the key outputs.

Groundwater Level Changes

Groundwater level change is calculated as the difference between the pumping baseline simulation and each subbasin pumping off scenario. The difference is averaged over 2 time periods: 1980-2022 for the historical period and 2018-2022 for the recent period. Dry cells were excluded from the calculation. The average difference was calculated for the water table, 180-Foot Aquifer or equivalent (model layer 3), and the 400-Foot Aquifer or equivalent (model layer 5). In the Upper Valley, only the results for the water table are presented because the aquifer is unconfined and model layers 3 and 5 pinch out near the Forebay and Upper Valley border. Note that the water table crosses multiple layers, especially near the valley margins, and is represented as the simulated groundwater elevation in the topmost partially saturated cell. The FloPy python water table function was used to calculate the water table elevation. These average water level differences are presented spatially as color-flooded maps.

Figure 2 through Figure 5 show examples of groundwater level change differences between the pumping baseline and pumping off scenarios for key aquifers in each subbasin for the historical period.

Maps were also prepared to represent average groundwater level changes over time for either the wet (December to March) or dry (June to August) season. The water level difference between the pumping baseline and each scenario was calculated for only the months defined in the wet or dry season. Then the water level difference was averaged across the same 2 time periods mentioned above. Attachment 1 includes all figures representing the wet or dry seasons.

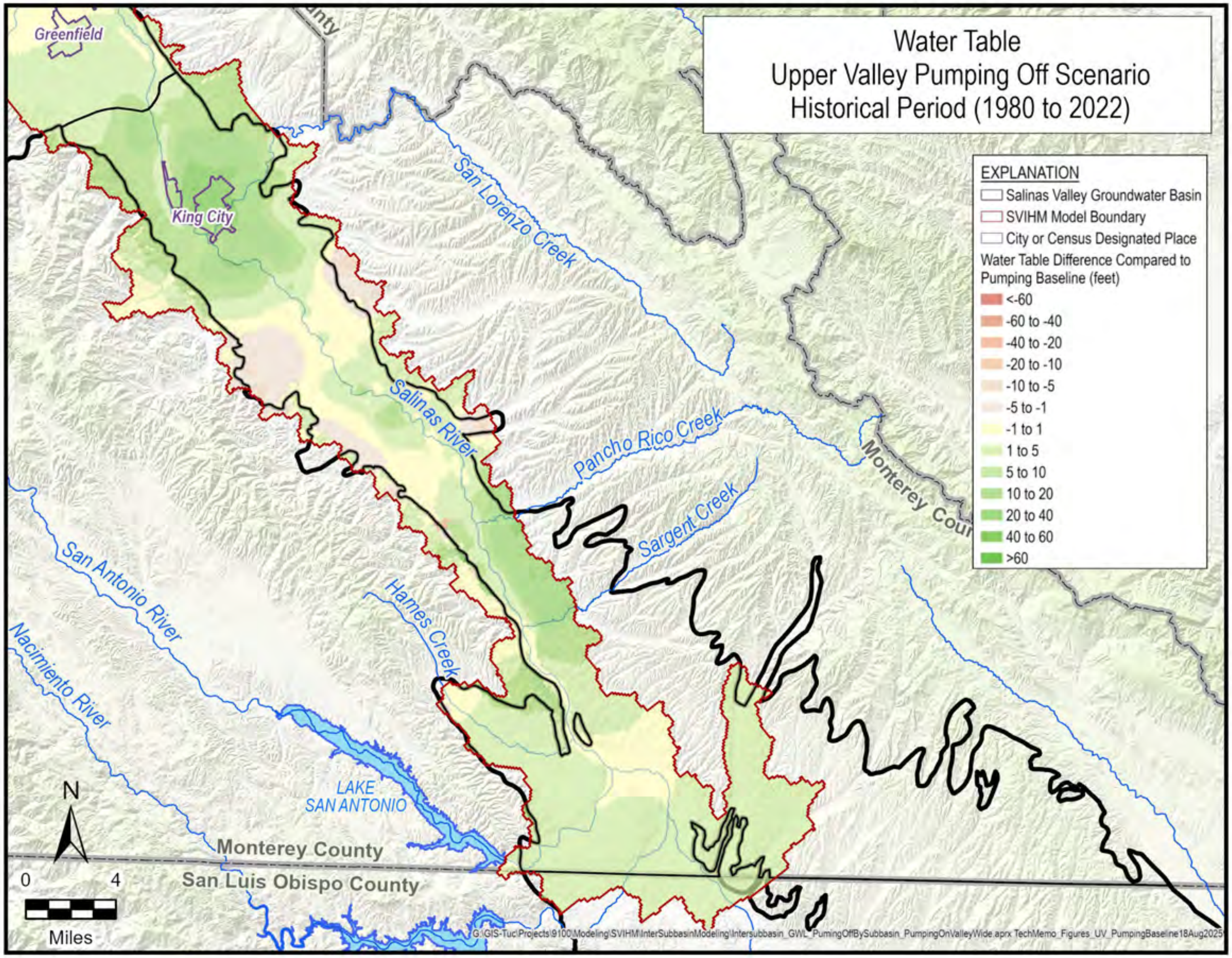

Figure 2. Upper Valley Pumping Off Scenario Compared to Pumping Baseline – Average Groundwater Level Difference for 1980-2022

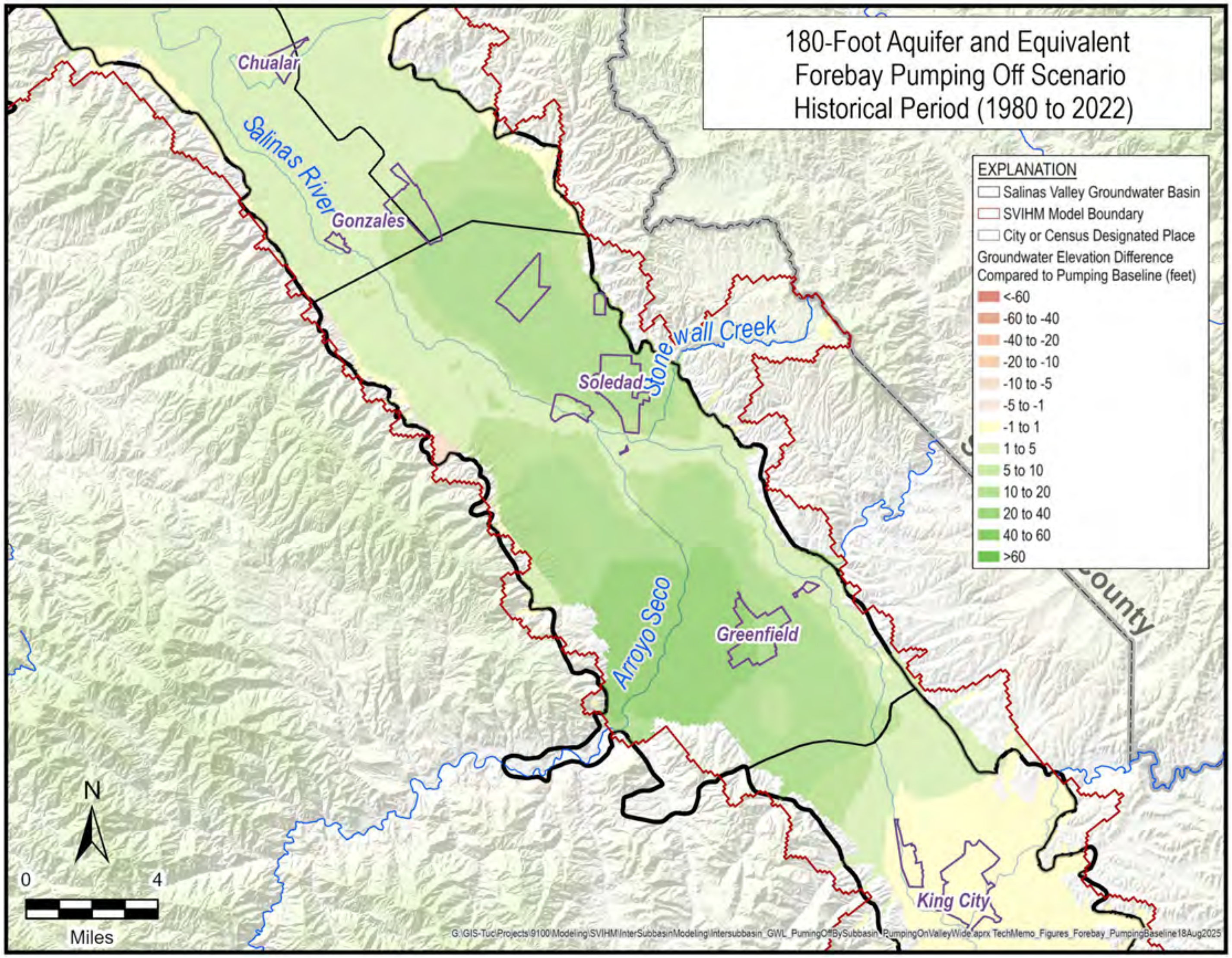

Figure 3. Forebay Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 1980-2022

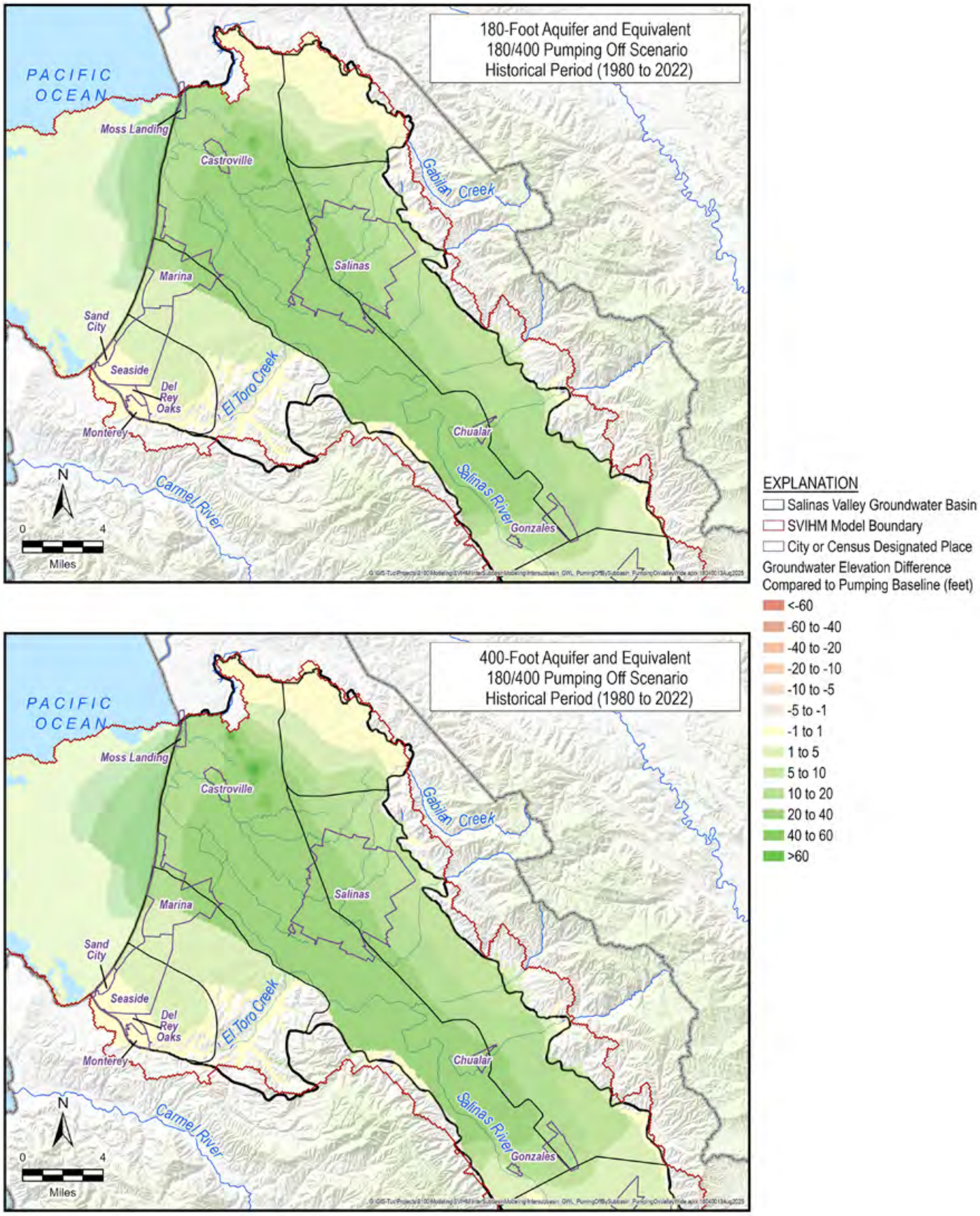

Figure 4. 180/400 Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 1980-2022

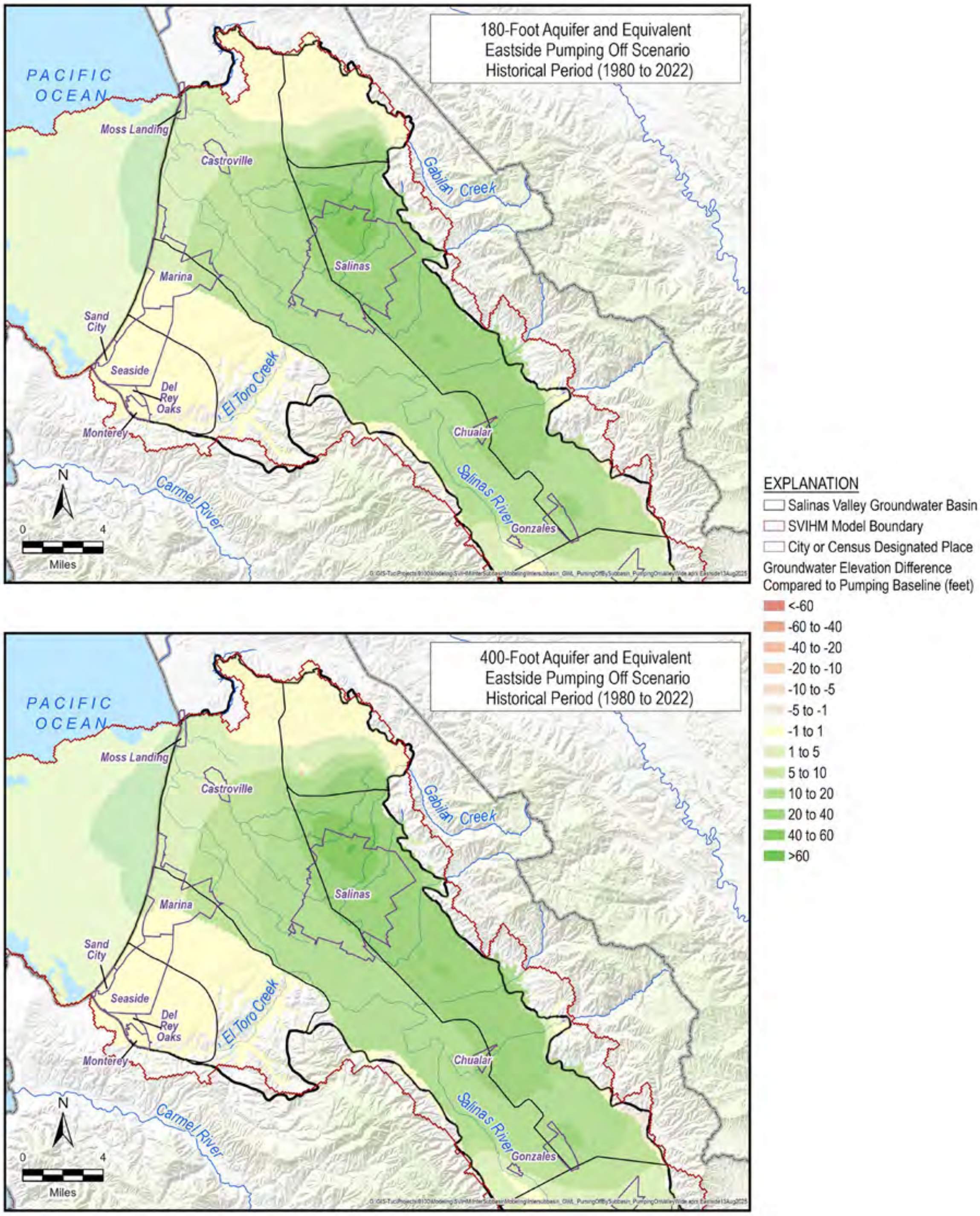

Figure 5. Eastside Pumping Off Scenario Compared to Pumping Baseline -
Average Groundwater Level Difference for 1980-2022

Intersubbasin Subsurface Flows

Annual subsurface flows between each subbasin are averaged over the historical period (1980-2022). Results for the pumping baseline are presented in Table 1. Results for each model scenario and the difference between the scenarios and baseline are presented in Table 2 through Table 5. In addition, annual intersubbasin subsurface flows will be provided to the hydrologists as part of model outputs.

Table 1. Annual Intersubbasin Subsurface Flows Pumping Baseline

	NET FLOW[1]						
	PUMPING BASELINE						
PUMPING BASELINE	**Upper Valley**	**Forebay**	**180/400**	**Eastside**	**Langley**	**Monterey**	**Seaside**
From Upper Valley to	0	5,071	0	0	0	0	0
From Forebay to	-5,071	0	8,431	6,385	0	0	0
From 180/400 to	0	-8,431	0	27,292	-449	2,270	0
From Eastside to	0	-6,385	-27,292	0	-4,489	0	0
From Langley to	0	0	449	4,489	0	0	0
From Monterey to	0	0	-2,270	0	0	0	290
From Pajaro Valley to	0	0	-229	0	-360	0	0
From Paso Robles to	-93	0	0	0	0	0	0

[1] Positive value indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow.

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Table 2. Annual Intersubbasin Subsurface Flows – Upper Valley Pumping Off Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM PUMPING BASELINE[2]					
	UPPER VALLEY OFF						UPPER VALLEY OFF					
UPPER VALLEY OFF	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	10,050	0	0	0	0	0	4,979	0	0	0	0
From Forebay to	-10,050	0	8,434	6,412	0	0	-4,979	0	3	26	0	0
From 180/400 to	0	-8,434	0	28,890	-444	2,918	0	-3	0	1,598	6	648
From Eastside to	0	-6,412	-28,890	0	-4,479	0	0	-26	-1,598	0	10	0
From Langley to	0	0	444	4,479	0	0	0	0	-6	-10	0	0
From Monterey to	0	0	-2,918	0	0	0	0	0	-648	0	0	0
From Pajaro Valley to	0	0	-241	0	-360	0	0	0	-11	0	0	0
From Paso Robles to	-152	0	0	0	0	0	-59	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

Table 3. Annual Intersubbasin Subsurface Flows – Forebay Pumping Off Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM PUMPING BASELINE[2]					
	FOREBAY OFF						FOREBAY OFF					
FOREBAY OFF	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	887	0	0	0	0	0	-4,185	0	0	0	0
From Forebay to	-887	0	10,339	8,407	0	0	4,185	0	1,908	2,022	0	0
From 180/400 to	0	-10,339	0	28,588	-443	2,991	0	-1,908	0	1,296	6	721
From Eastside to	0	-8,407	-28,588	0	-4,472	0	0	-2,022	-1,296	0	16	0
From Langley to	0	0	443	4,472	0	0	0	0	-6	-16	0	0
From Monterey to	0	0	-2,991	0	0	0	0	0	-721	0	0	0
From Pajaro Valley to	0	0	-245	0	-360	0	0	0	-16	0	0	0
From Paso Robles to	-105	0	0	0	0	0	-12	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

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Table 4. Annual Intersubbasin Subsurface Flows – 180/400 Pumping Off Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM PUMPING BASELINE[2]					
	180/400 OFF						180/400 OFF					
180/400 OFF	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	5,005	0	0	0	0	0	-67	0	0	0	0
From Forebay to	-5,005	0	5,766	5,251	0	0	67	0	-2,665	-1,134	0	0
From 180/400 to	0	-5,766	0	52,324	-238	8,892	0	2,665	0	25,031	211	6,622
From Eastside to	0	-5,251	-52,324	0	-3,612	0	0	1,134	-25,031	0	876	0
From Langley to	0	0	238	3,612	0	0	0	0	-211	-876	0	0
From Monterey to	0	0	-8,892	0	0	0	0	0	-6,622	0	0	0
From Pajaro Valley to	0	0	-501	0	-363	0	0	0	-272	0	-3	0
From Paso Robles to	-97	0	0	0	0	0	-4	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

Table 5. Annual Intersubbasin Subsurface Flows – Eastside Pumping Off Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM PUMPING BASELINE[2]					
	EASTSIDE OFF						EASTSIDE OFF					
EASTSIDE OFF	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	5,013	0	0	0	0	0	-58	0	0	0	0
From Forebay to	-5,013	0	6,815	3,751	0	0	58	0	-1,616	-2,635	0	0
From 180/400 to	0	-6,815	0	-8,483	-658	4,279	0	1,616	0	-35,776	-208	2,009
From Eastside to	0	-3,751	8,483	0	-1,305	0	0	2,635	35,776	0	3,183	0
From Langley to	0	0	658	1,305	0	0	0	0	208	-3,183	0	0
From Monterey to	0	0	-4,279	0	0	0	0	0	-2,009	0	0	0
From Pajaro Valley to	0	0	-403	0	-364	0	0	0	-174	0	-4	0
From Paso Robles to	-95	0	0	0	0	0	-2	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

Subsurface Outflow To and Inflow From Monterey Bay

Subsurface outflow to and inflow from Monterey Bay is averaged over the historical period in Table 6 for the pumping baseline and each pumping off scenario. In addition, the annual outflows and inflows are provided as part of model outputs.

Table 6. Net Average Annual Flows to Monterey Bay for WY 1980-2022 (AF/WY)

	Net Average Annual Flow		
Subbasin	180/400	Monterey	Seaside
Pumping Baseline	8,603	2,967	1,660
Upper Valley Pumping Off	8,221	2,682	1,629
Forebay Pumping Off	8,183	2,664	1,629
180/400 Pumping Off	456	-64	1,546
Eastside Pumping Off	6,555	2,139	1,633
	Difference Compared to Pumping Baseline		
	180/400	Monterey	Seaside
Upper Valley Pumping Off	-381	-285	-31
Forebay Pumping Off	-420	-303	-31
180/400 Pumping Off	-8,147	-3,031	-114
Eastside Pumping Off	-2,047	-828	-27

Note: Positive value indicates inflow into subbasin.

Simulated Salinas River Streamflow Changes

Changes in simulated Salinas River streamflow at Soledad (USGS gage 11151700), Chualar (USGS gage 11152300), and Spreckels (USGS gage 11152500) are summarized in Table 7. Results for each model simulation are presented for comparison between scenarios. In addition, Figure 6, Figure 7, and Figure 8 show the Salinas River flow over time at the Soledad, Chualar, and Spreckels gages respectively for each model run.

Table 7. Pumping Off Scenarios - Average Annual Salinas River Flow at the Soledad, Chualar, and Spreckels Gages

	Average Annual Flow (AF/yr)			Change in Average Annual Flow from Baseline to Model Run (AF/yr)		
	Soledad Gage	Chualar Gage	Spreckels Gage	Soledad Gage	Chualar Gage	Spreckels Gage
Pumping Baseline	264,850	244,388	246,536			
Upper Valley Off	302,883	277,554	282,461	38,033	33,166	35,904
Forebay Off	291,262	282,624	285,866	26,412	38,236	39,310
180/400 Off	270,062	254,028	266,920	5,212	9,640	20,364
Eastside Off	267,216	248,811	254,677	2,366	4,423	8,121

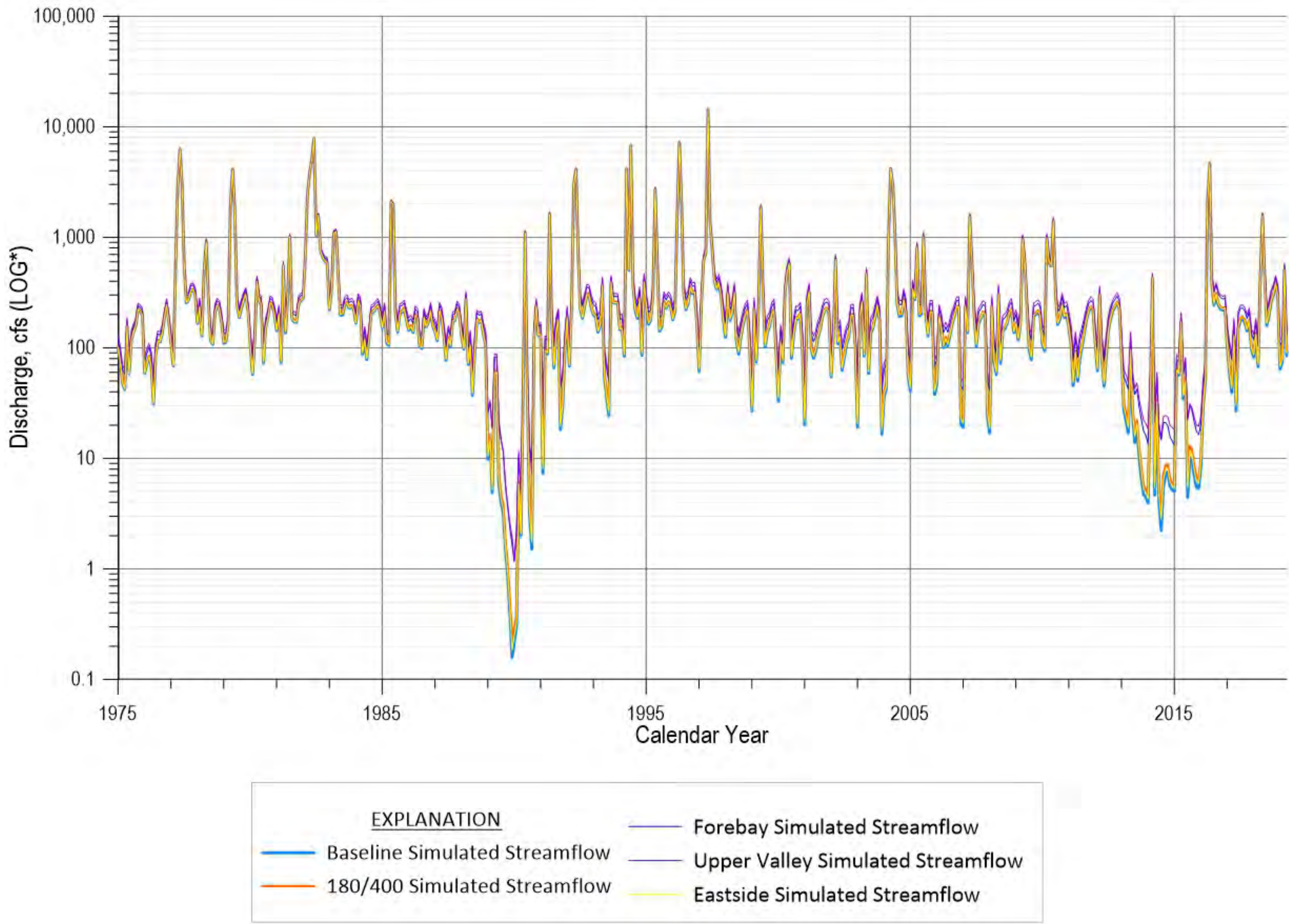

Figure 6. Pumping Off Scenarios – Simulated Salinas River Streamflow at the Soledad Gage

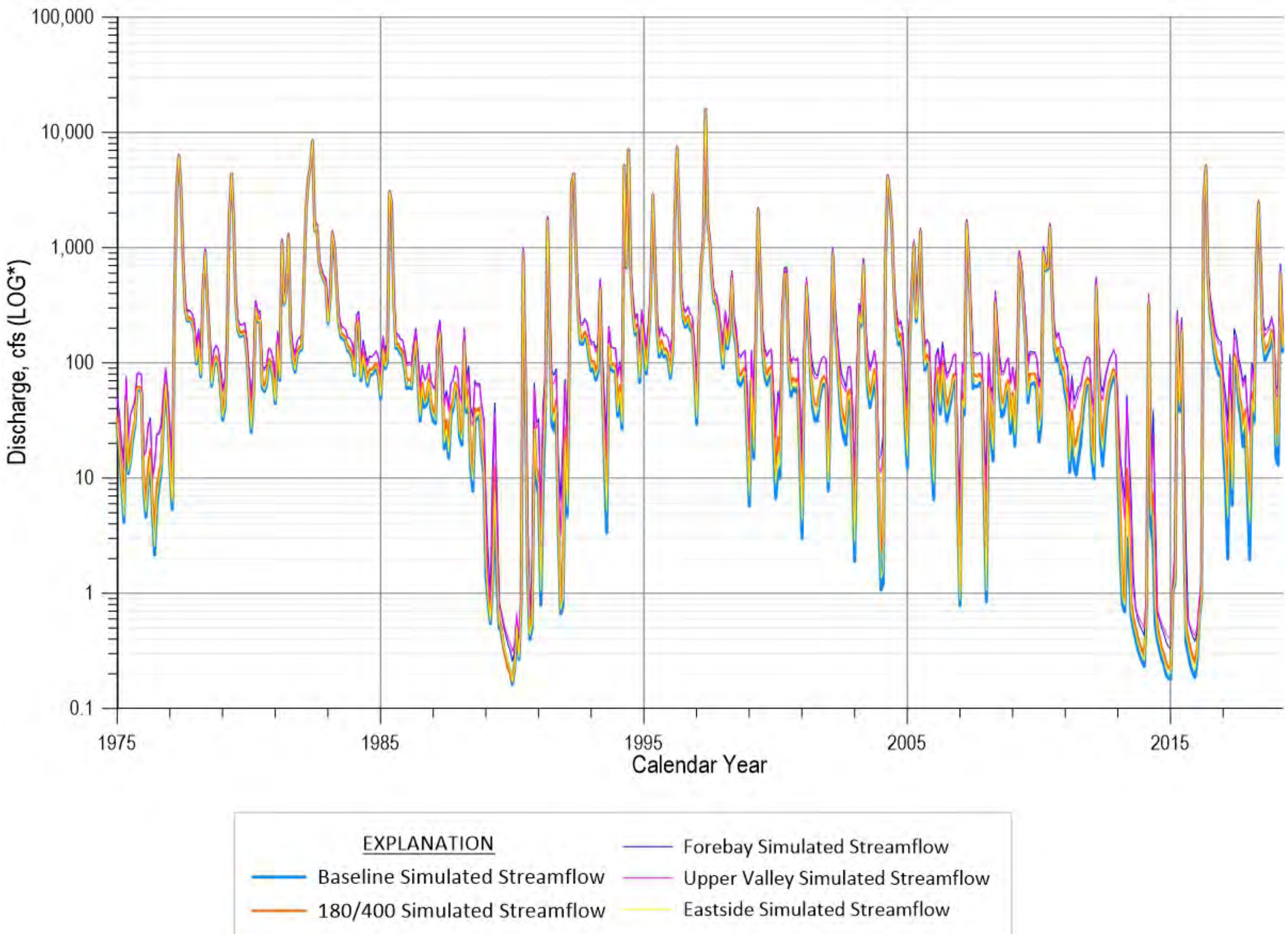

Figure 7. Pumping Off Scenarios – Simulated Salinas River Streamflow at the Chualar Gage

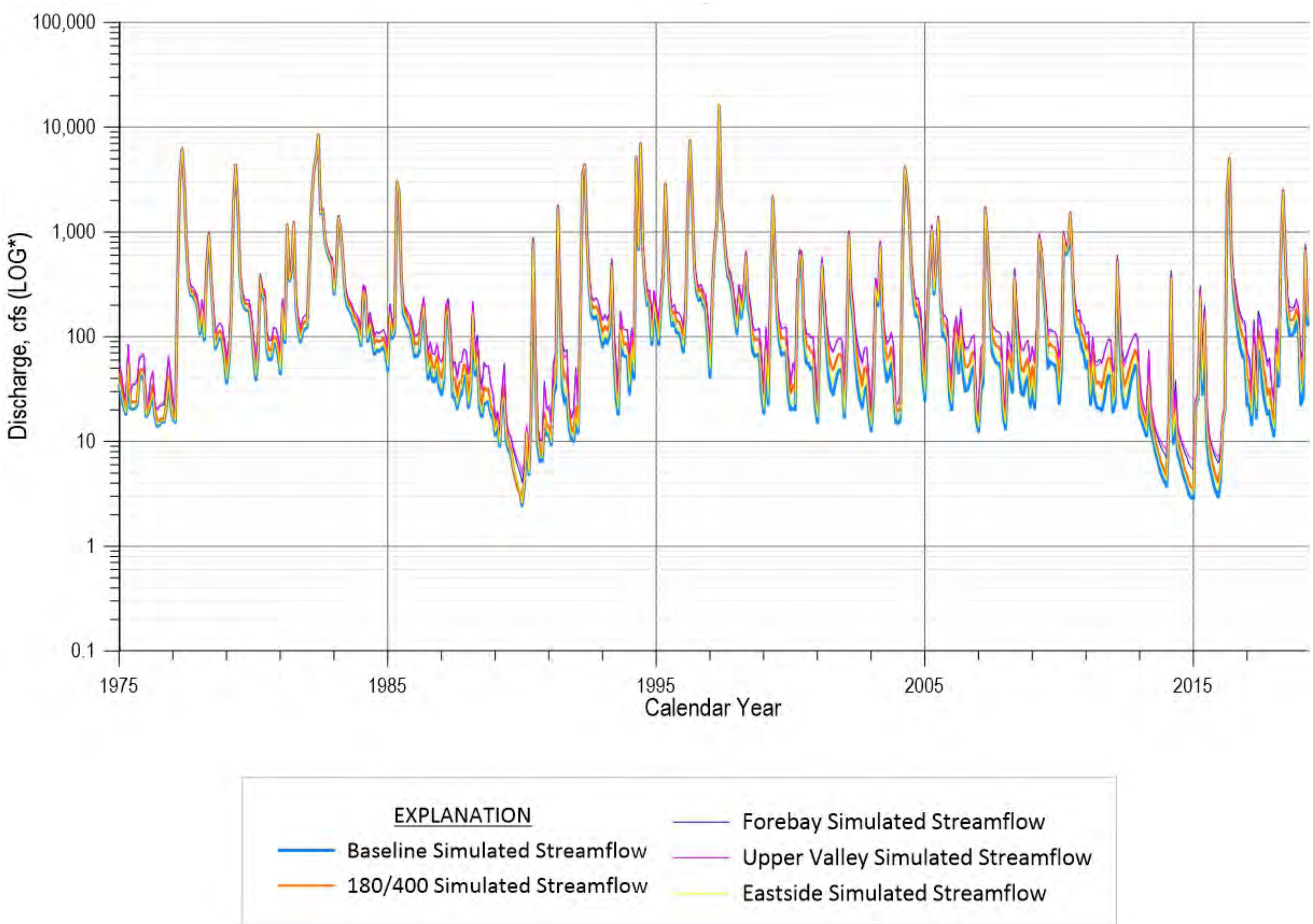

Figure 8. Pumping Off Scenarios – Simulated Salinas River Streamflow at the Spreckels Gage

MODEL RESULTS FOR TURNING ON PUMPING BY SUBBASIN

For this set of scenarios, M&A developed a no-pumping baseline as the baseline condition and then added and allowed for pumping for each of the Upper Valley, Forebay, Eastside, and 180/400 Subbasins in 4 separate model simulations. The no-pumping baseline consisted of the historical period of the model running 6 times. Each time, the final stress period heads from 2022 were used as the initial heads for the next iteration. Heads increased following each iteration. After the first iteration, heads in Eastside subbasin increased by up to approximately 50 feet. By the end of the second iteration heads in Eastside increased by up to 20 feet and the groundwater gradient switched directions and started flowing from the Eastside subbasin toward the 180/400 Subbasin. In the following iteration the head difference was less than 10 feet and the difference diminished with subsequent iterations. By the sixth iteration, groundwater levels had equilibrated.

Groundwater Level Changes

Groundwater level change is calculated using the same method as previously described for the pumping baseline set of simulations. The difference between the no-pumping baseline model and each subbasin pumping on scenario is calculated first. Then, the difference is averaged over the historical period (1980-2022) and the recent period (2018-2022). Dry cells were excluded from the calculation. The average difference was calculated for the water table, 180-Foot Aquifer or equivalent (model layer 3), and the 400-Foot Aquifer or equivalent (model layer 5). The 180-Foot and 400-Foot Aquifers are not present in Upper Valley; therefore, only the results for the water table are presented. These average water level differences are presented spatially as color-flooded maps.

As an example, Figure 9 shows groundwater level change differences between the Upper Valley pumping on scenario compared to the no-pumping baseline for the water table. Figure 10, Figure 11, and Figure 12 show similar figures for the pumping on scenarios in Forebay, 180/400, and Eastside Subbasin, respectively.

Average water level differences for the wet season and dry season were also prepared for the same 2 time periods mentioned above. Attachment 1 includes all figures.

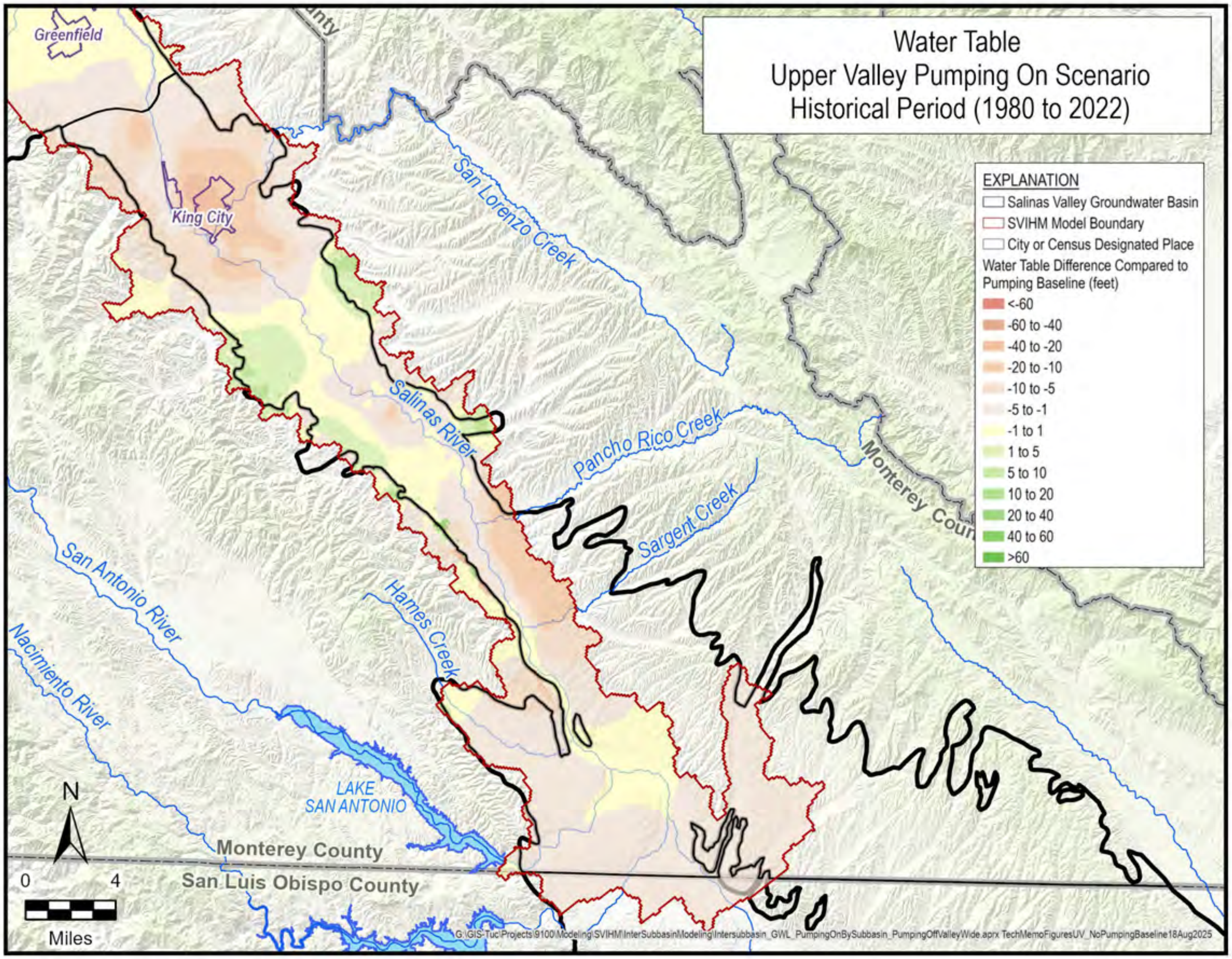

Figure 9. Upper Valley Pumping On Scenario Compared to No-pumping Baseline – Average Groundwater Level Difference for 1980-2022

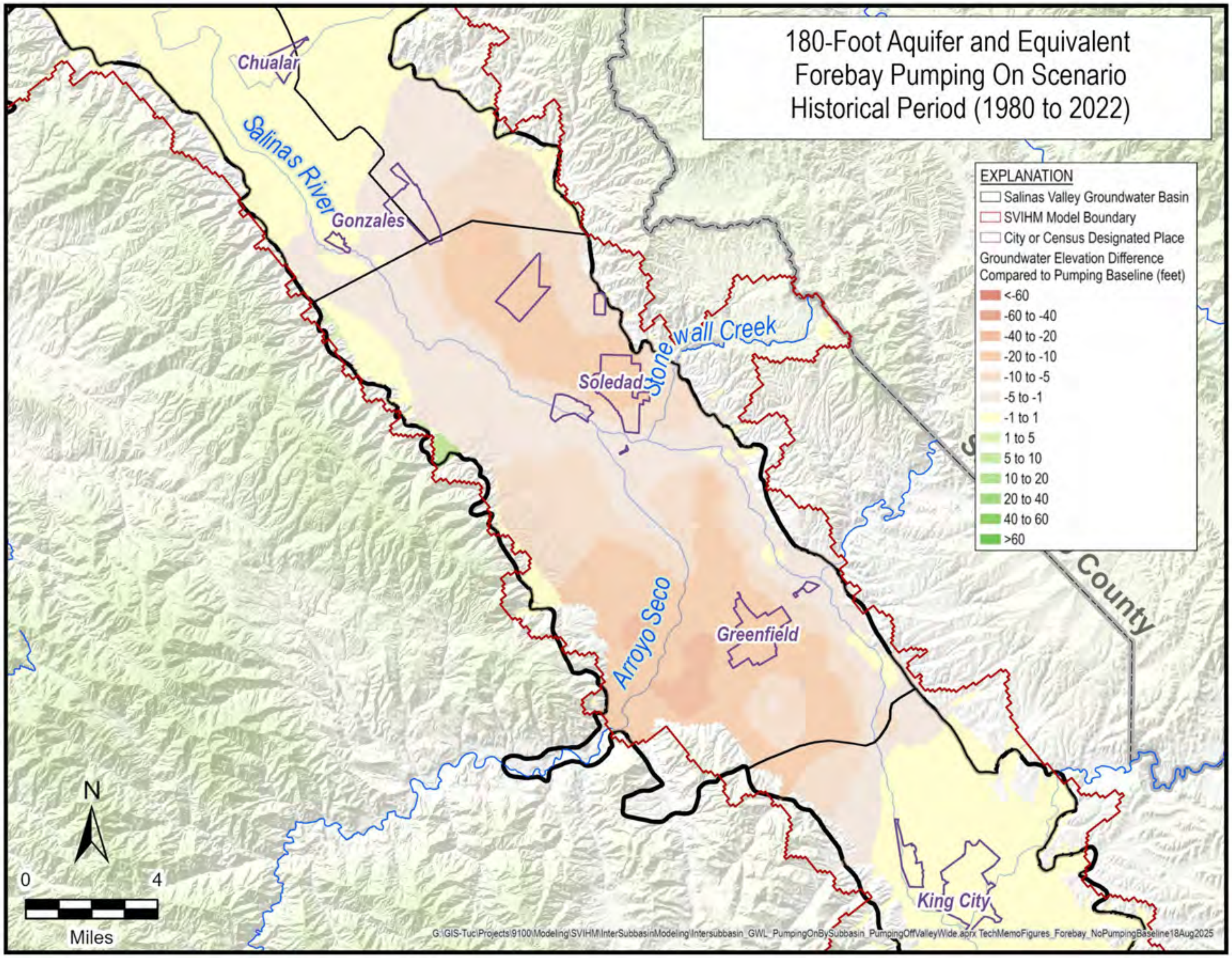

Figure 10. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 1980-2022

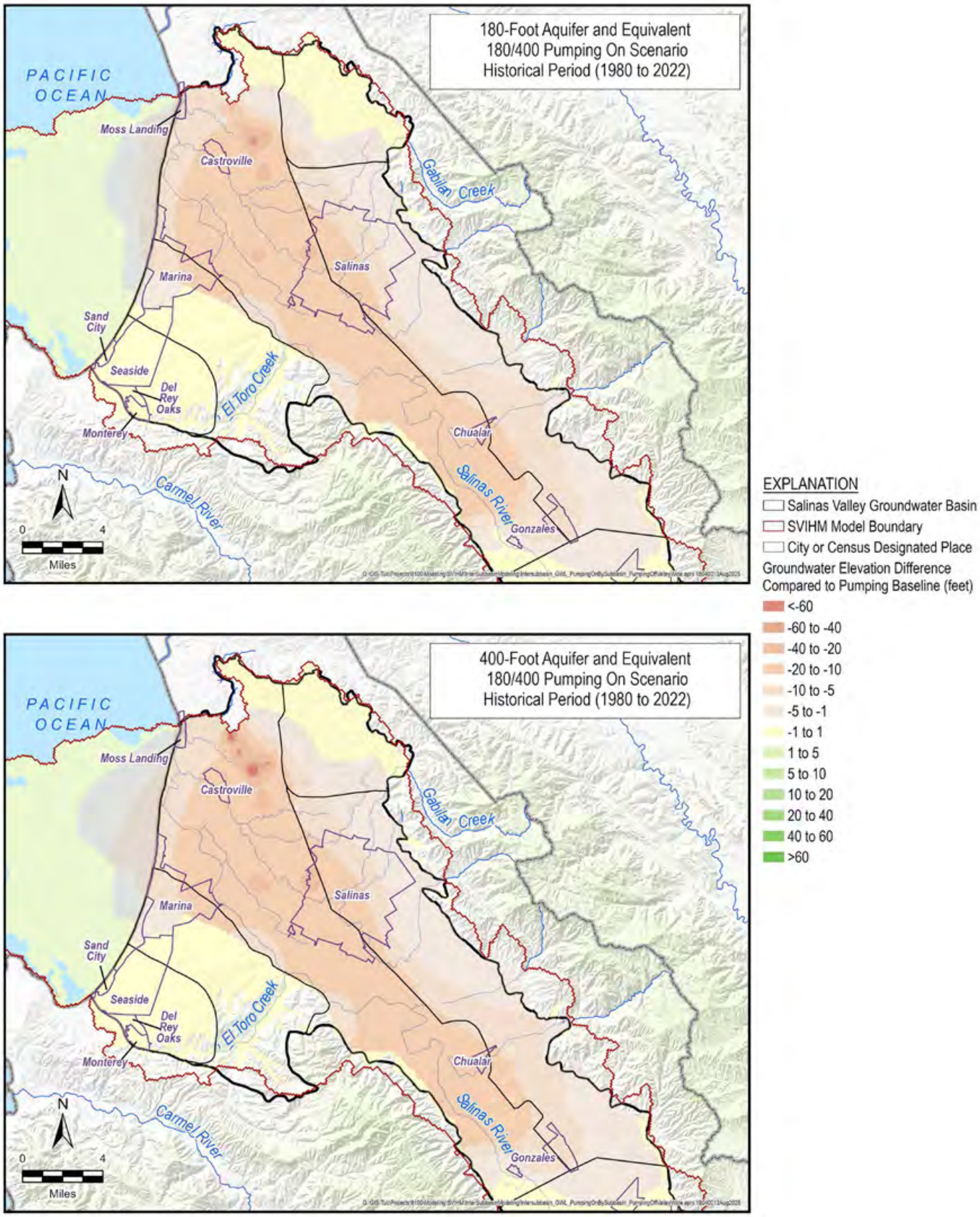

Figure 11. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 1980-2022

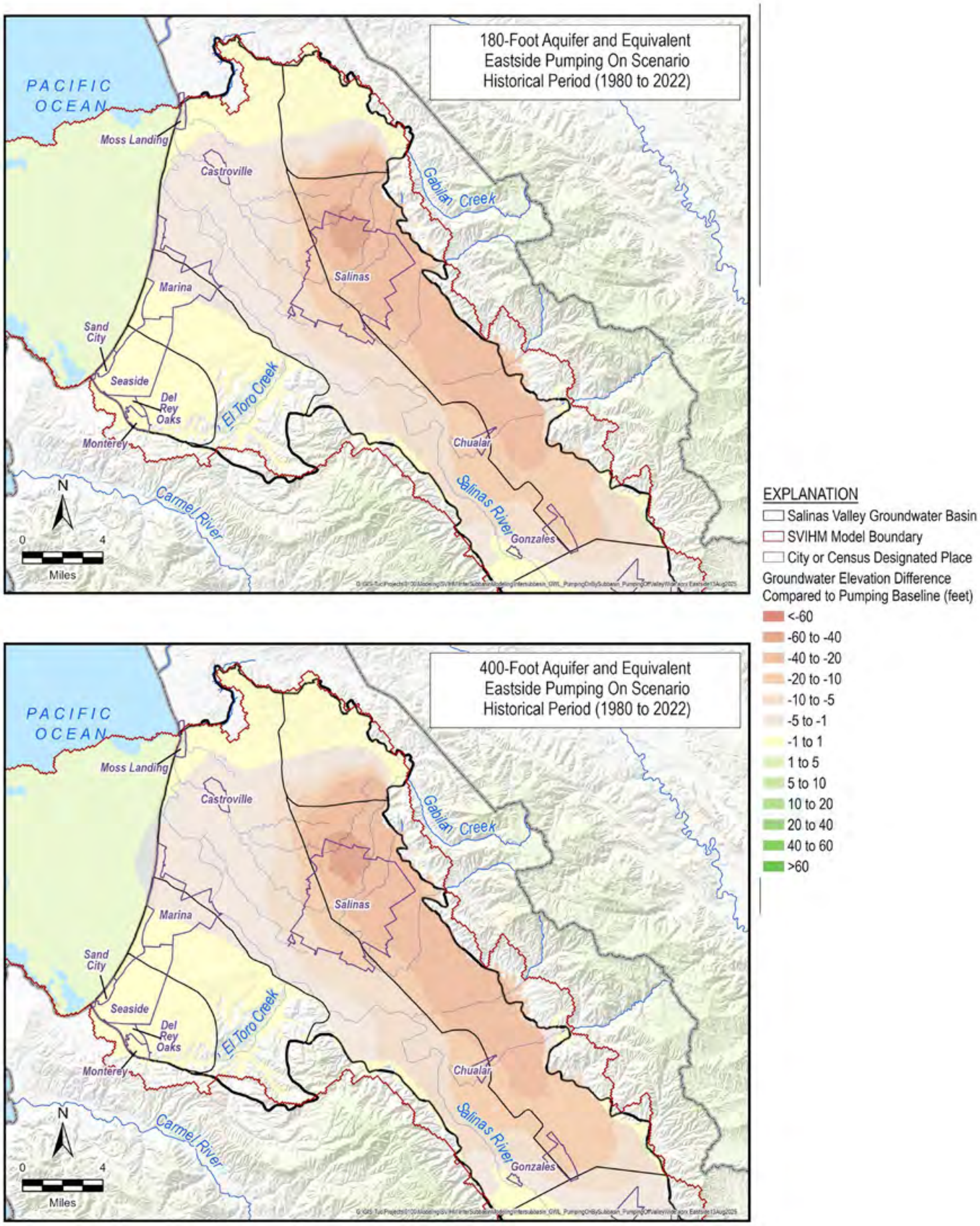

Figure 12. Eastside Pumping On Scenario Compared to No-pumping Baseline – Average Groundwater Level Difference for 1980-2022

Intersubbasin Subsurface Flows

Annual subsurface flows between each subbasin are averaged over the historical period (1980-2022). Results for the no-pumping baseline are presented in Table 8. Results for each model scenario and the difference between the scenarios and no-pumping baseline are presented in Table 9 through Table 12. Results for each model simulation are presented in a table for comparison between models. In addition, annual intersubbasin subsurface flows will be provided to the hydrologists as part of model outputs.

Table 8. Annual Intersubbasin Subsurface Flows for No-Pumping Baseline

	NET FLOW[1] No-Pumping Baseline						
No-Pumping Baseline	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Seaside
From Upper Valley to	0	4,478	0	0	0	0	0
From Forebay to	-4,478	0	5,492	1,822	0	0	0
From 180/400 to	0	-5,492	0	-21,973	-762	2,982	0
From Eastside to	0	-1,822	21,973	0	-822	0	0
From Langley to	0	0	762	822	0	0	0
From Monterey to	0	0	-2,982	0	0	0	-208
From Pajaro Valley to	0	0	-1,321	0	-450	0	0
From Paso Robles to	826	0	0	0	0	0	0

[1] Positive value indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow.

Table 9. Annual Intersubbasin Subsurface Flows – Upper Valley Pumping On Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM NO-PUMPING BASELINE[2]					
	UPPER VALLEY ON						UPPER VALLEY ON					
UPPER VALLEY ON	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	1,084	0	0	0	0	0	-3,394	0	0	0	0
From Forebay to	-1,084	0	5,440	1,815	0	0	3,394	0	-52	-7	0	0
From 180/400 to	0	-5,440	0	-22,100	-762	2,811	0	52	0	-126	0	-171
From Eastside to	0	-1,815	22,100	0	-827	0	0	7	126	0	-5	0
From Langley to	0	0	762	827	0	0	0	0	0	5	0	0
From Monterey to	0	0	-2,811	0	0	0	0	0	171	0	0	0
From Pajaro Valley to	0	0	-1,320	0	-450	0	0	0	1	0	0	0
From Paso Robles to	876	0	0	0	0	0	50	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

Table 10. Annual Intersubbasin Subsurface Flows – Forebay Pumping On Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM NO-PUMPING BASELINE[2]					
	FOREBAY ON						FOREBAY ON					
FOREBAY ON	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	9,256	0	0	0	0	0	4,778	0	0	0	0
From Forebay to	-9,256	0	3,884	57	0	0	-4,778	0	-1,607	-1,765	0	0
From 180/400 to	0	-3,884	0	-21,429	-762	2,801	0	1,607	0	545	0	-181
From Eastside to	0	-57	21,429	0	-827	0	0	1,765	-545	0	-6	0
From Langley to	0	0	762	827	0	0	0	0	0	6	0	0
From Monterey to	0	0	-2,801	0	0	0	0	0	181	0	0	0
From Pajaro Valley to	0	0	-1,319	0	-450	0	0	0	2	0	0	0
From Paso Robles to	832	0	0	0	0	0	6	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

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Table 11. Annual Intersubbasin Subsurface Flows – 180//400 Pumping On Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM NO-PUMPING BASELINE[2]					
	180/400 ON						180/400 ON					
180/400 ON	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	4,484	0	0	0	0	0	6	0	0	0	0
From Forebay to	-4,484	0	6,841	2,547	0	0	-6	0	1,349	725	0	0
From 180/400 to	0	-6,841	0	-36,700	-931	125	0	-1,349	0	-14,727	-170	-2,857
From Eastside to	0	-2,547	36,700	0	-1,323	0	0	-725	14,727	0	-501	0
From Langley to	0	0	931	1,323	0	0	0	0	170	501	0	0
From Monterey to	0	0	-125	0	0	0	0	0	2,857	0	0	0
From Pajaro Valley to	0	0	-1,164	0	-448	0	0	0	156	0	2	0
From Paso Robles to	824	0	0	0	0	0	-2	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

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Table 12. Annual Intersubbasin Subsurface Flows – Eastside Pumping On Scenario

	NET FLOW[1]						NET FLOW DIFFERENCE FROM NO-PUMPING BASELINE[2]					
	EASTSIDE ON						EASTSIDE ON					
EASTSIDE ON	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey	Upper Valley	Forebay	180/400	Eastside	Langley	Monterey
From Upper Valley to	0	4,482	0	0	0	0	0	4	0	0	0	0
From Forebay to	-4,482	0	6,632	4,266	0	0	-4	0	1,140	2,444	0	0
From 180/400 to	0	-6,632	0	16,941	-552	2,104	0	-1,140	0	38,914	209	-878
From Eastside to	0	-4,266	-16,941	0	-3,446	0	0	-2,444	-38,914	0	-2,624	0
From Langley to	0	0	552	3,446	0	0	0	0	-209	2,624	0	0
From Monterey to	0	0	-2,104	0	0	0	0	0	878	0	0	0
From Pajaro Valley to	0	0	-1,194	0	-446	0	0	0	126	0	3	0
From Paso Robles to	824	0	0	0	0	0	-2	0	0	0	0	0

[1] Positive value (red) indicates positive net flow from the subbasin in the rows to the subbasin in the columns; negative value indicates negative net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

[2] Positive value (red) indicates increase in net flow from the subbasin in the rows to the subbasin in the columns; negative value (blue) indicates decrease in net flow. Dark red indicates the greatest positive number in the specified simulation; dark blue indicates the greatest negative number.

Subsurface Outflow To and Inflow From Monterey Bay

Subsurface outflow to and inflow from Monterey Bay is averaged over the historical period in Table 13 for the no-pumping baseline and each pumping on scenario. In addition, the annual outflows and inflows are provided as part of model outputs.

Table 13. Net Subsurface Flows To/From Monterey Bay for WY 19080-2022 (AF/yr)

	Net Average Annual Flow		
Subbasin	180/400	Monterey	Seaside
No-Pumping Baseline	-4,450	-8,253	-3,077
Upper Valley Pumping On	-4,399	-8,194	-3,069
Forebay Pumping On	-4,397	-8,191	-3,069
180/400 Pumping On	-3	-6,722	-3,027
Eastside Pumping On	-3,515	-7,900	-3,066
	Difference Compared to No-Pumping Baseline		
	180/400	Monterey	Seaside
Upper Valley Pumping On	51	59	8
Forebay Pumping On	53	62	8
180/400 Pumping On	4,447	1,531	50
Eastside Pumping On	935	353	11

Note: Positive value indicates inflow into subbasin.

Simulated Salinas River Streamflow Changes

Changes in simulated Salinas River streamflows at the Soledad, Chualar, and Spreckels gages are included in Table 14, and results for each model run are presented for comparison between models. In addition, Figure 13, Figure 14, and Figure 15 shows the Salinas River flow over time at the Soledad, Chualar, and Spreckels gages for each model simulation, respectively.

Table 14. Pumping On Scenarios - Average Annual Salinas River Flow at the Soledad, Chualar, and Spreckels Gages

	Average Annual Flow (AF/yr)			Change in Average Annual Flow from Baseline to Model Run (AF/yr)		
	Soledad Gage	Chualar Gage	Spreckels Gage	Soledad Gage	Chualar Gage	Spreckels Gage
No-Pumping Baseline	366,511	376,775	423,519			
Upper Valley On	324,569	336,658	378,498	-41,942	-40,117	-45,020
Forebay On	338,343	333,028	376,506	-28,169	-43,747	-47,013
180/400 On	362,037	366,819	397,481	-4,474	-9,956	-26,038
Eastside On	363,652	370,749	409,221	-2,860	-6,026	-14,298

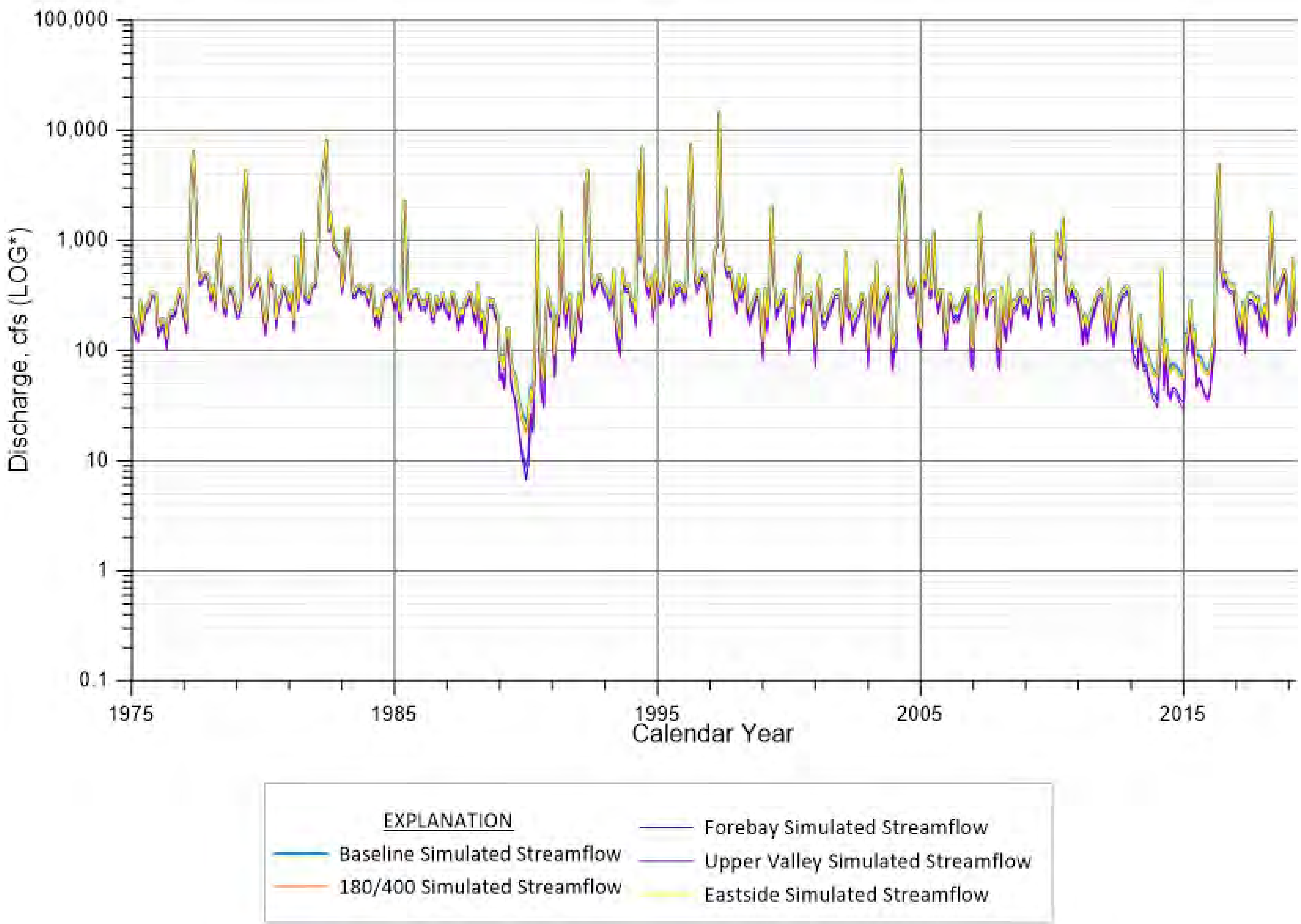

Figure 13. Pumping On Scenarios – Simulated Salinas River Streamflow at the Soledad Gage

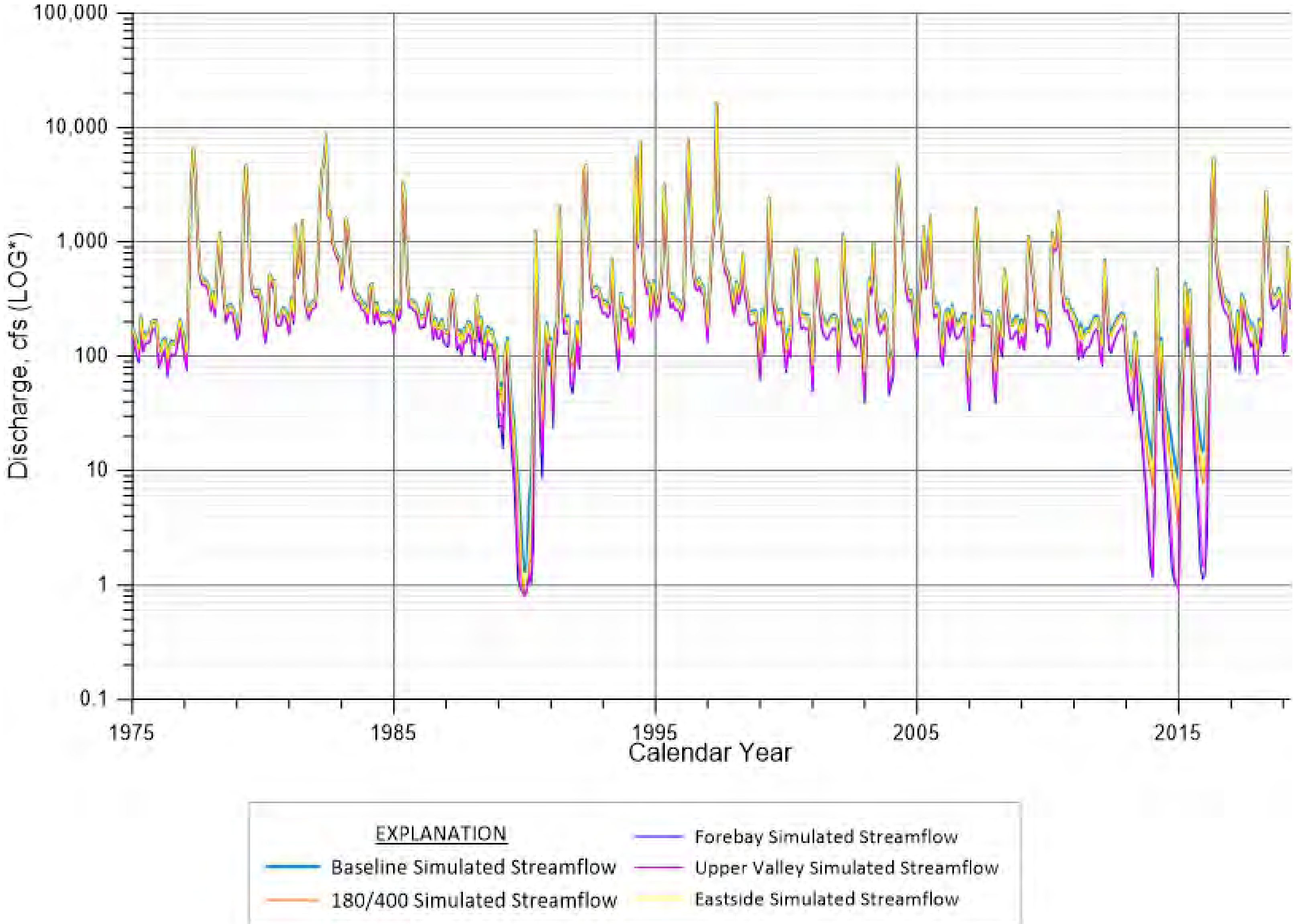

Figure 14. Pumping On Scenarios – Simulated Salinas River Streamflow at the Chualar Gage

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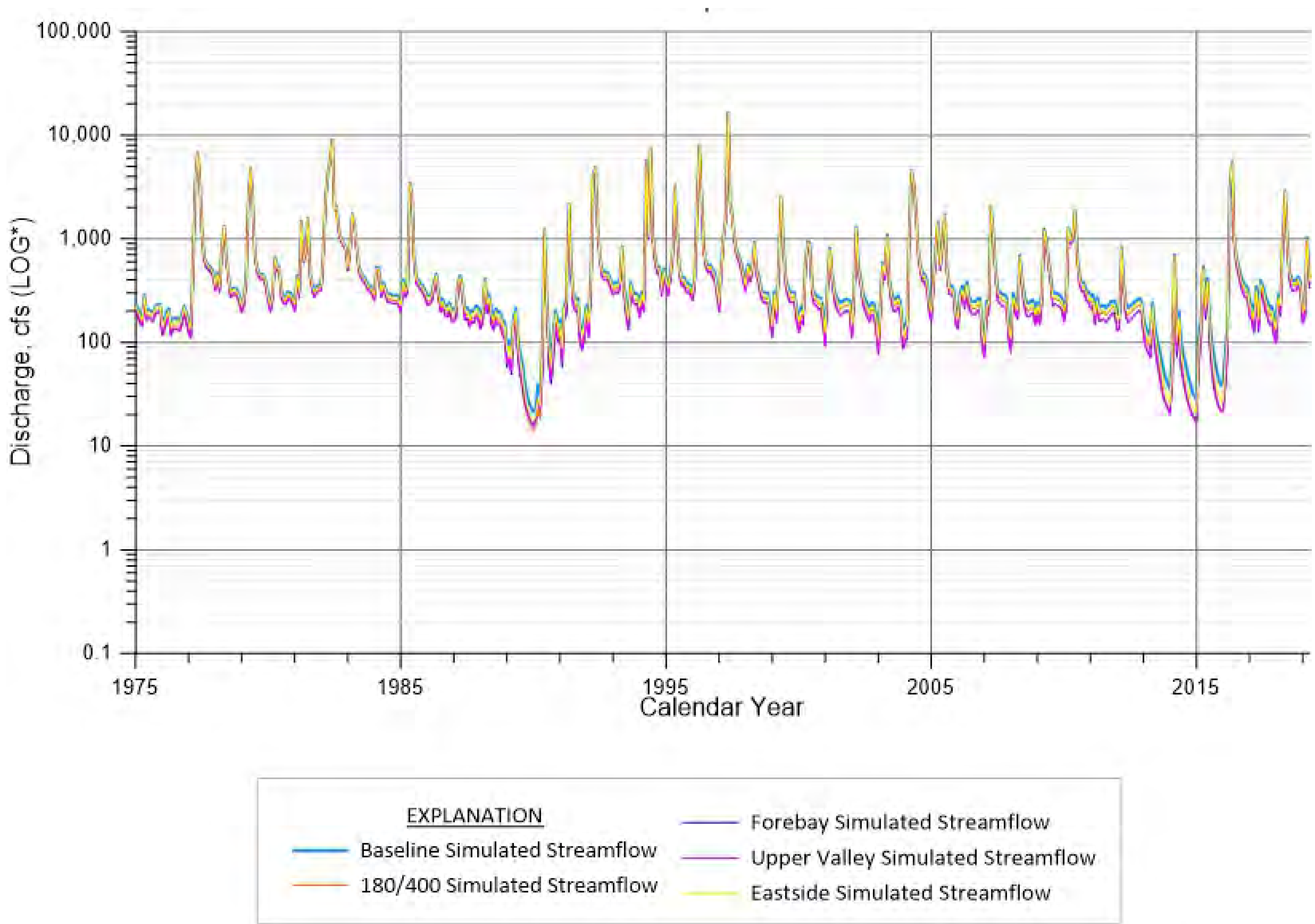

Figure 15. Pumping On Scenarios – Simulated Salinas River Streamflow at the Spreckels Gage

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SUMMARY NOTES

As noted in the Approach TM, modifications to the SVIHM beyond those explicitly outlined in this project were outside the scope of work. Therefore, the resulting model outputs and interpretations presented herein should be considered with caution.

The Approach TM noted that the no pumping scenarios had the potential to flood large portions of the model area. The USGS' addition of drains to layer 1 in the public release version of the SVIHM prevented flooding of layer 1. The water budgets indicate drain flows increased from -256,012 acre-ft/year to -610,967 acre-ft/year between the pumping baseline and no-pumping baseline.

In general, turning off pumping in the pumping baseline scenarios resulted in an increase in water levels compared to the baseline. Turning on pumping in the no-pumping baseline scenarios generally resulted in a decrease in water levels compared to the baseline. In some localized areas the opposite trend was observed (i.e., water levels decreased in the subbasin when the pumping was turned off, and vice versa). Nuances of the Farm Process may be the cause of the counterintuitive simulated water level changes. In the SVIHM Farm Process, any active well assigned to the WBS can supply water to meet the aggregate crop demand of the entire WBS. Groundwater pumping in one part of a WBS may be used to meet crop demand in another part of the WBS. This can exacerbate spatial differences between groundwater pumping and deep percolation during the summer from irrigation. Additionally, it was observed that in the public release version of the SVIHM a small number of groundwater wells were assigned to supply water for a WBS in which it was not physically located.

As outlined in the Approach TM, reservoir releases were kept specified at historical rates. Therefore, the simulations do not reflect that when pumping is turned off, stream infiltration may decrease, resulting in less water needing to be released from the reservoirs to achieve the same diversion at the Salinas River Diversion Facility. In predictive modeling with the Salinas Valley Operational Model, the Surface Water Operations package accounts for this by dynamically changing reservoir releases according to the Nacimiento Dam Operation Policy.

M&A is currently undertaking an update and recalibration of the SVIHM. This effort includes revising the model layering to align with recent updates to the basin's hydrogeologic conceptual model, which will improve the accuracy of future simulations and analyses. The update also includes revising the distribution of groundwater pumping based on the revised layering and updated well locations. These updates may result in different simulated results than presented in this memorandum.

REFERENCES

Henson, W.R., R. Hanson, S. Boyce, J. Hevesi, and E.R. Jachens. 2025 [pre-print]. Salinas Valley Integrated Hydrologic and Reservoir Operations Models, Monterey and San Luis Obispo Counties, California; prepared by United States Geological Survey in cooperation with Monterey County Resources Agency, Monterey County and the Salinas Valley Basin Groundwater Sustainability Agency, preprint version released April 2, 2025.

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Attachment 1

Groundwater Level Change Maps

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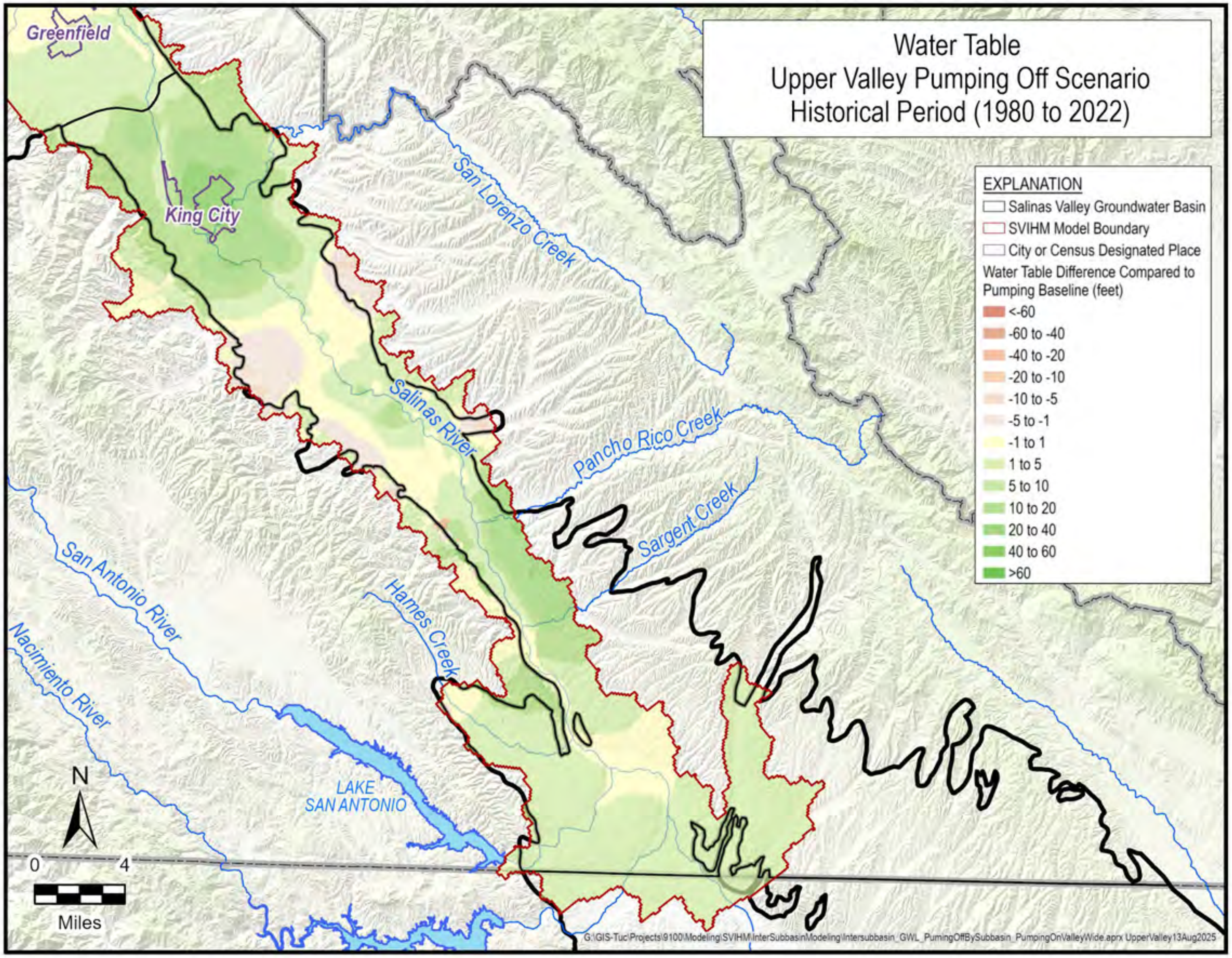

Figure 1-1. Upper Valley Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 1980-2022

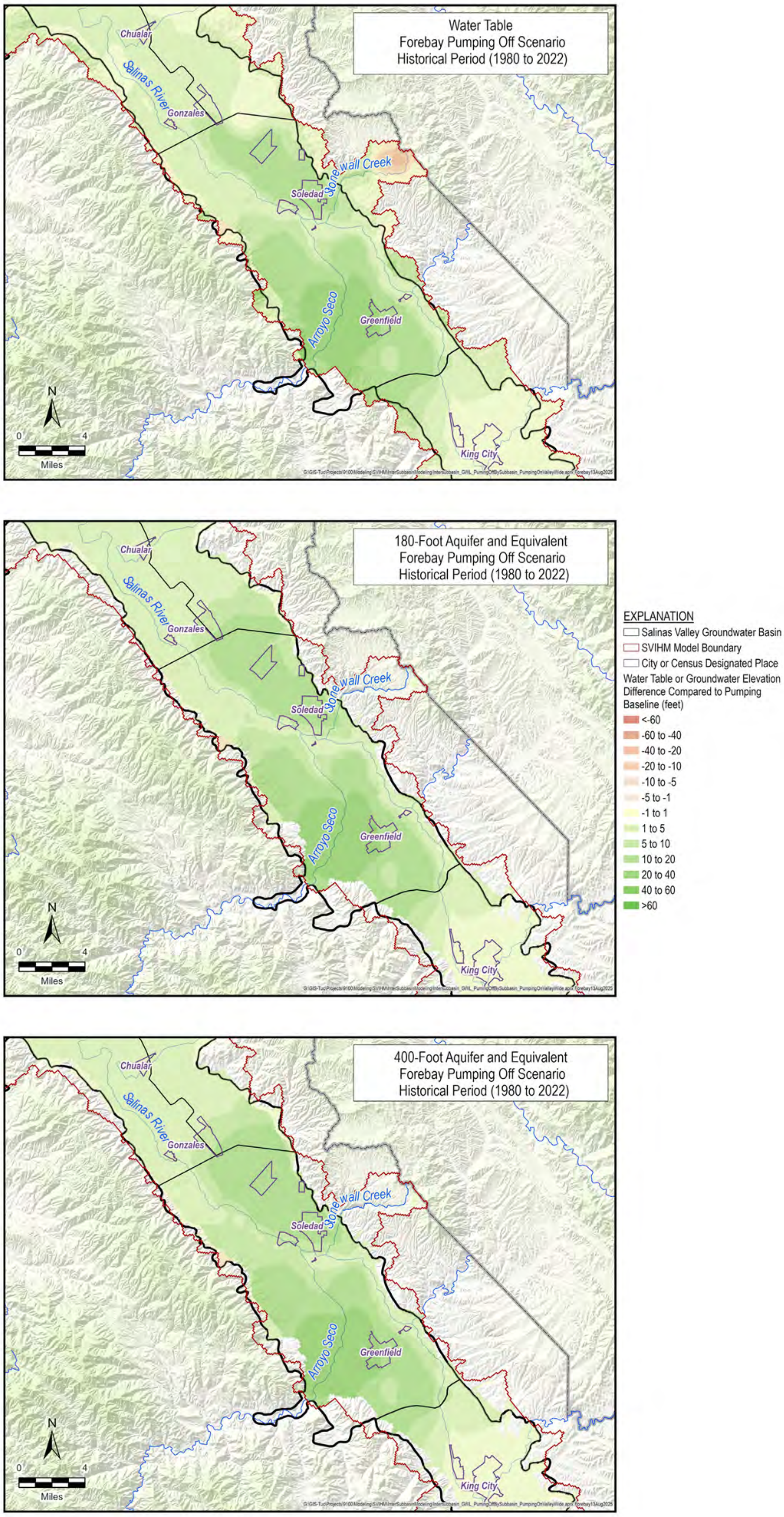

Figure 1-2. Forebay Pumping Off Scenario Compared to Pumping Baseline – Average Groundwater Level Difference for 1980-2022

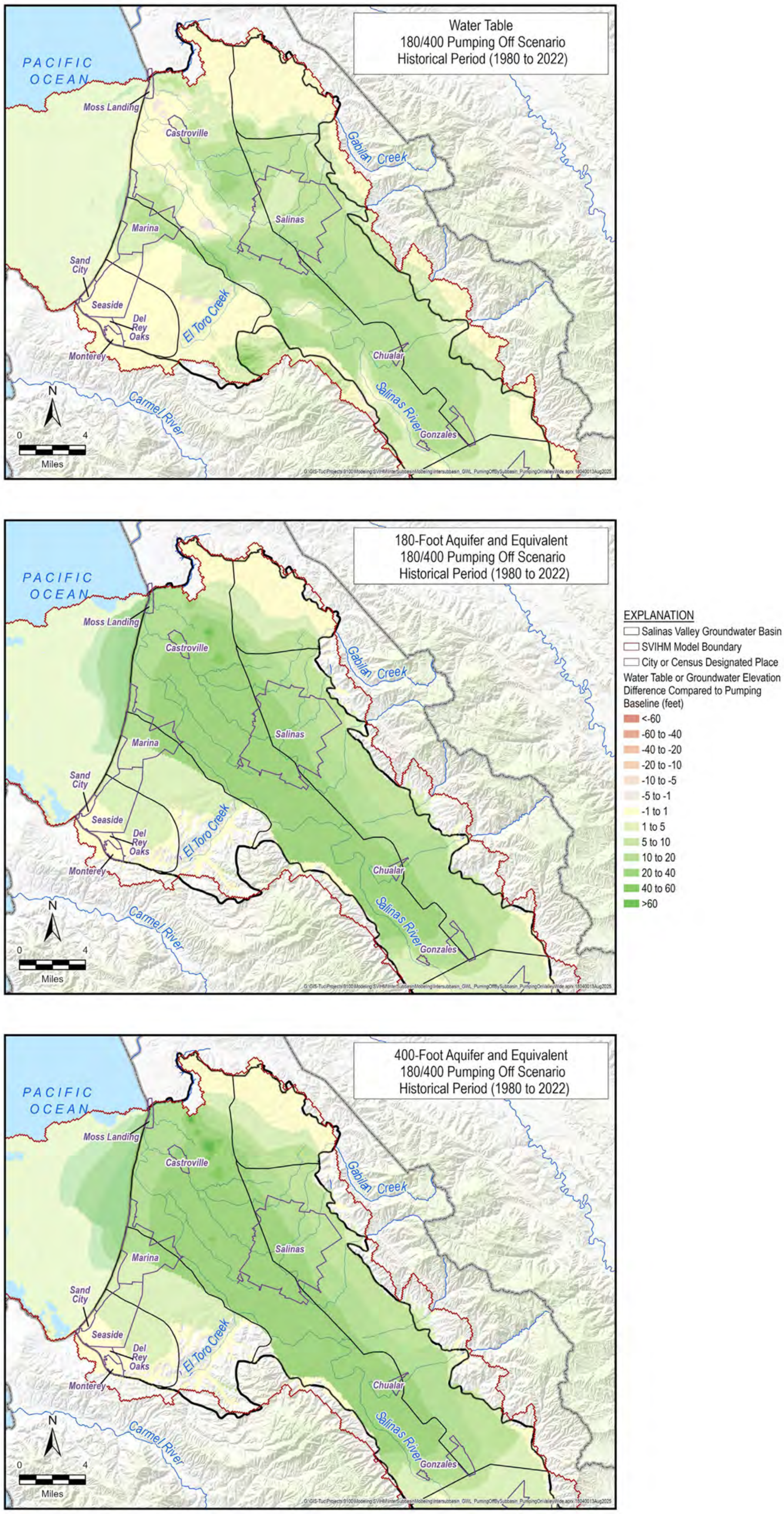

Figure 1-3. 180/400 Pumping Off Scenario Compared to Pumping Baseline – Average Groundwater Level Difference for 1980-2022

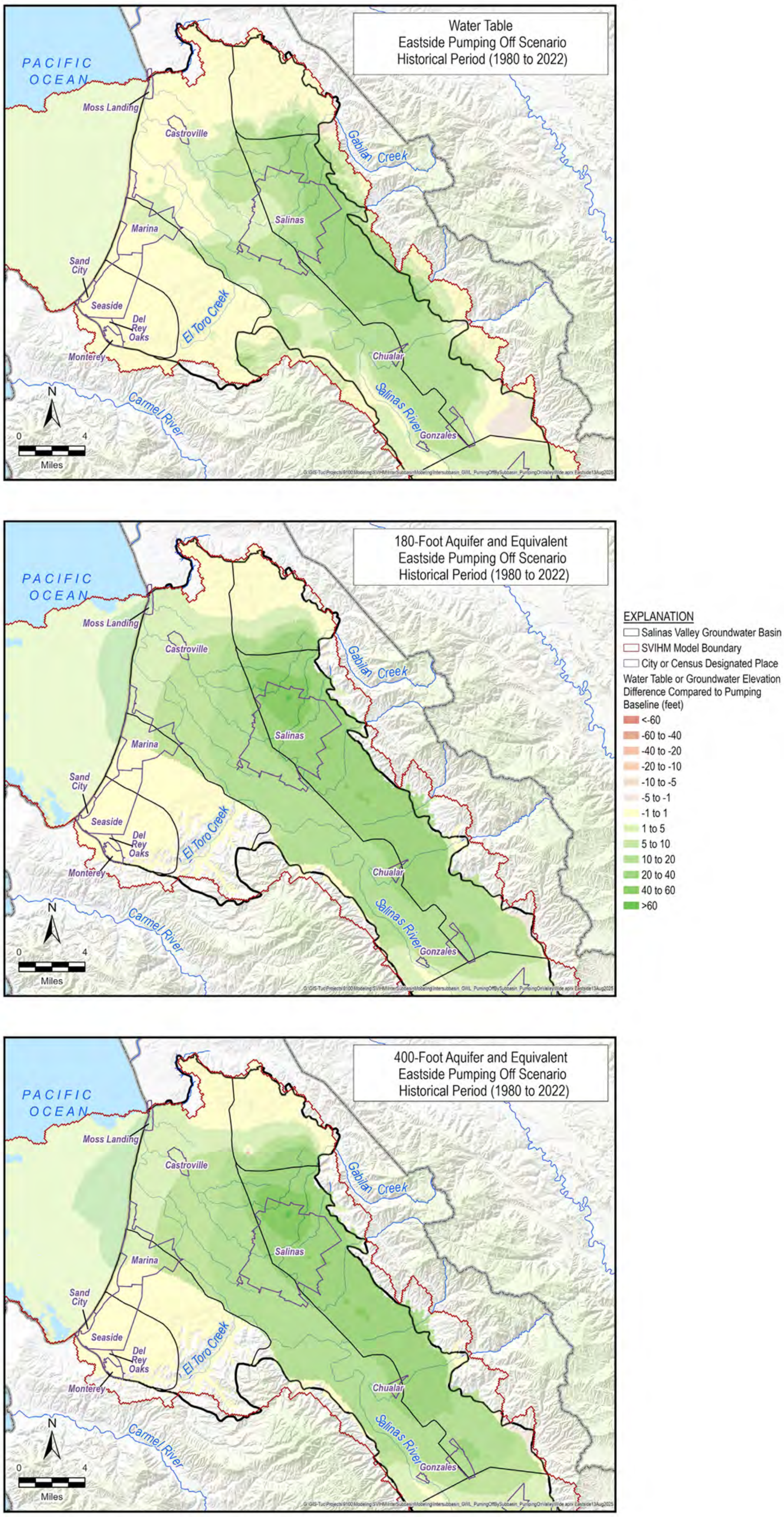

Figure 1-4. Eastside Pumping Off Scenario Compared to Pumping Baseline – Average Groundwater Level Difference for 1980-2022

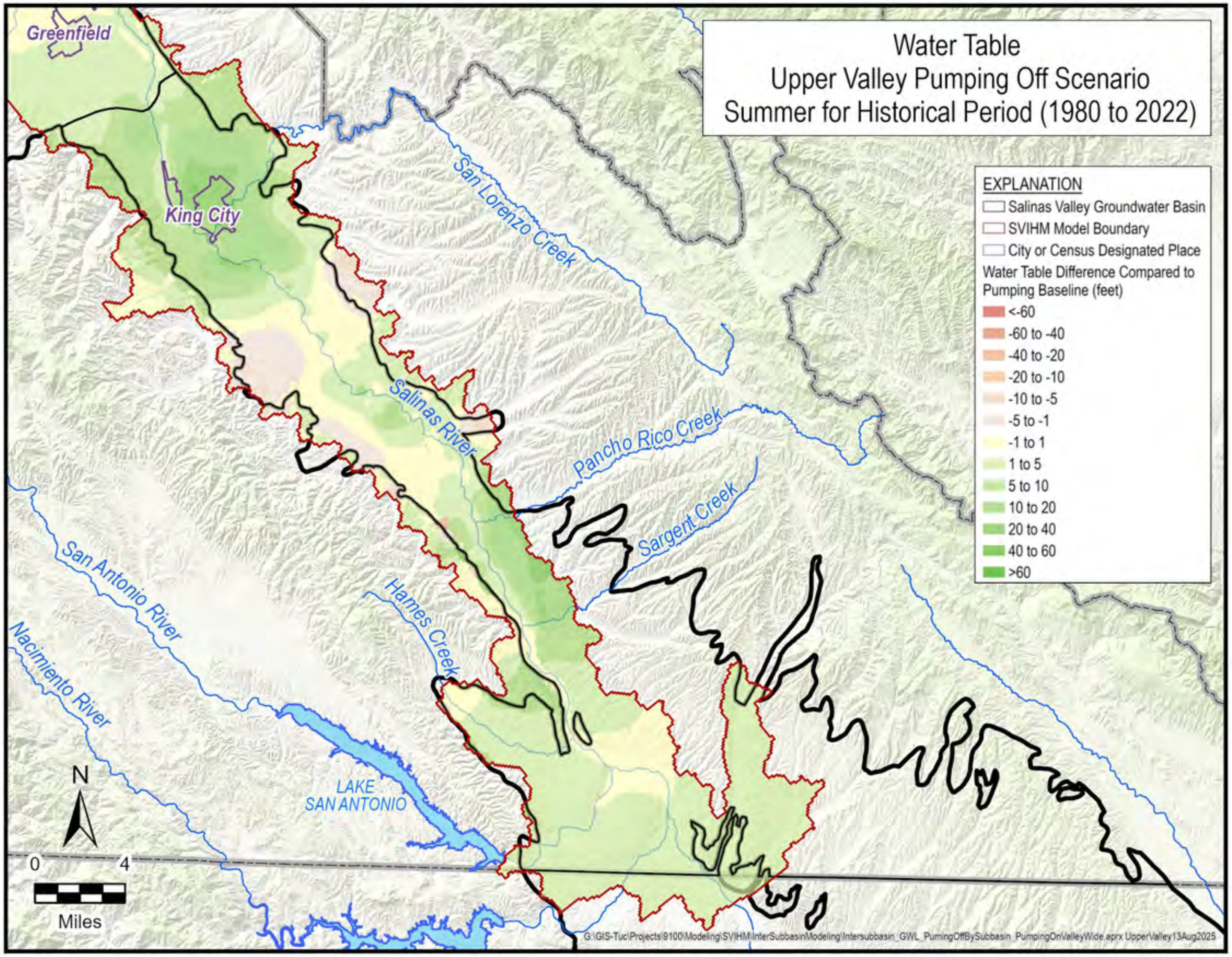

Figure 1-5. Upper Valley Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

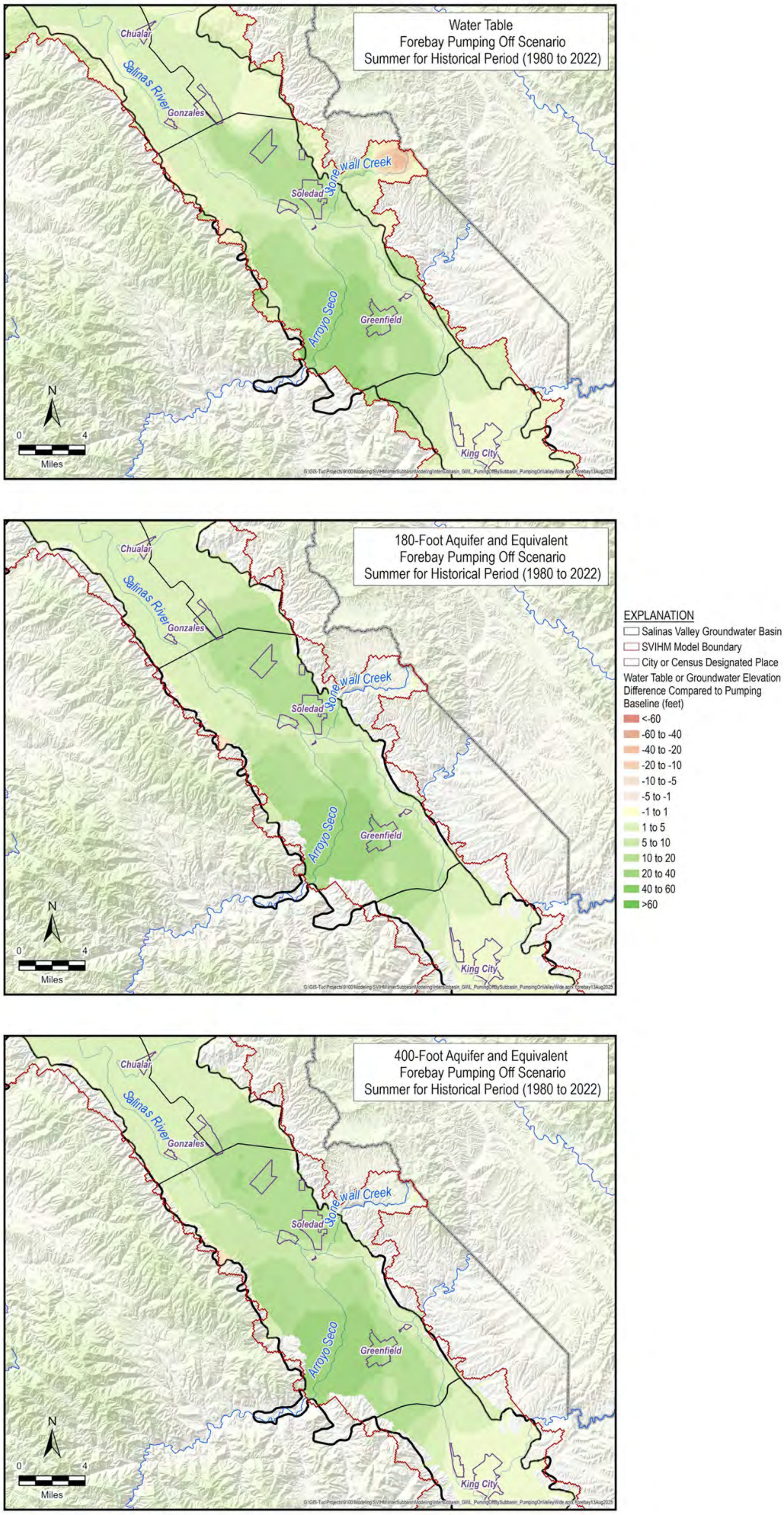

Figure 1-6. Forebay Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

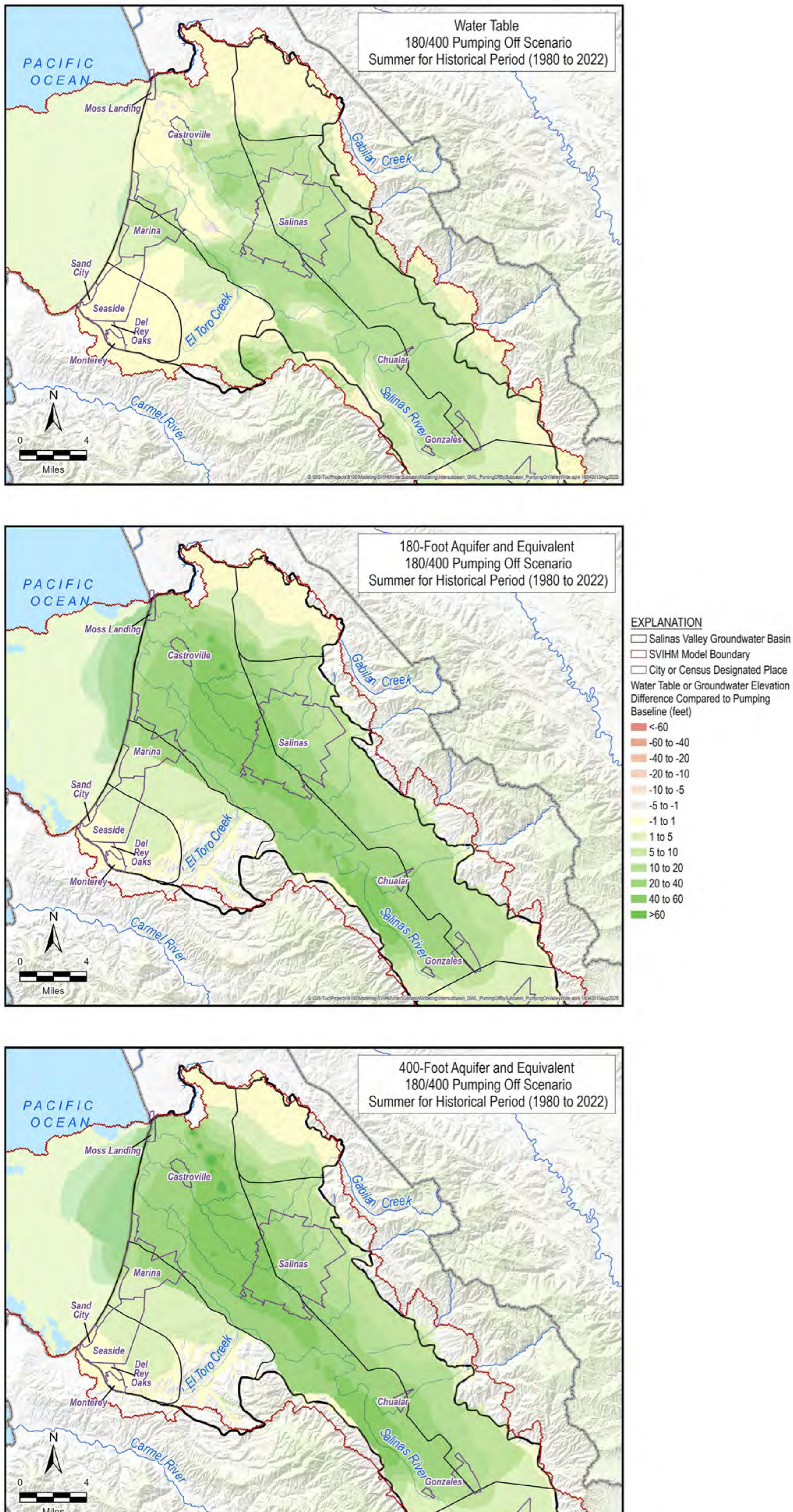

Figure 1-7. 180/400 Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

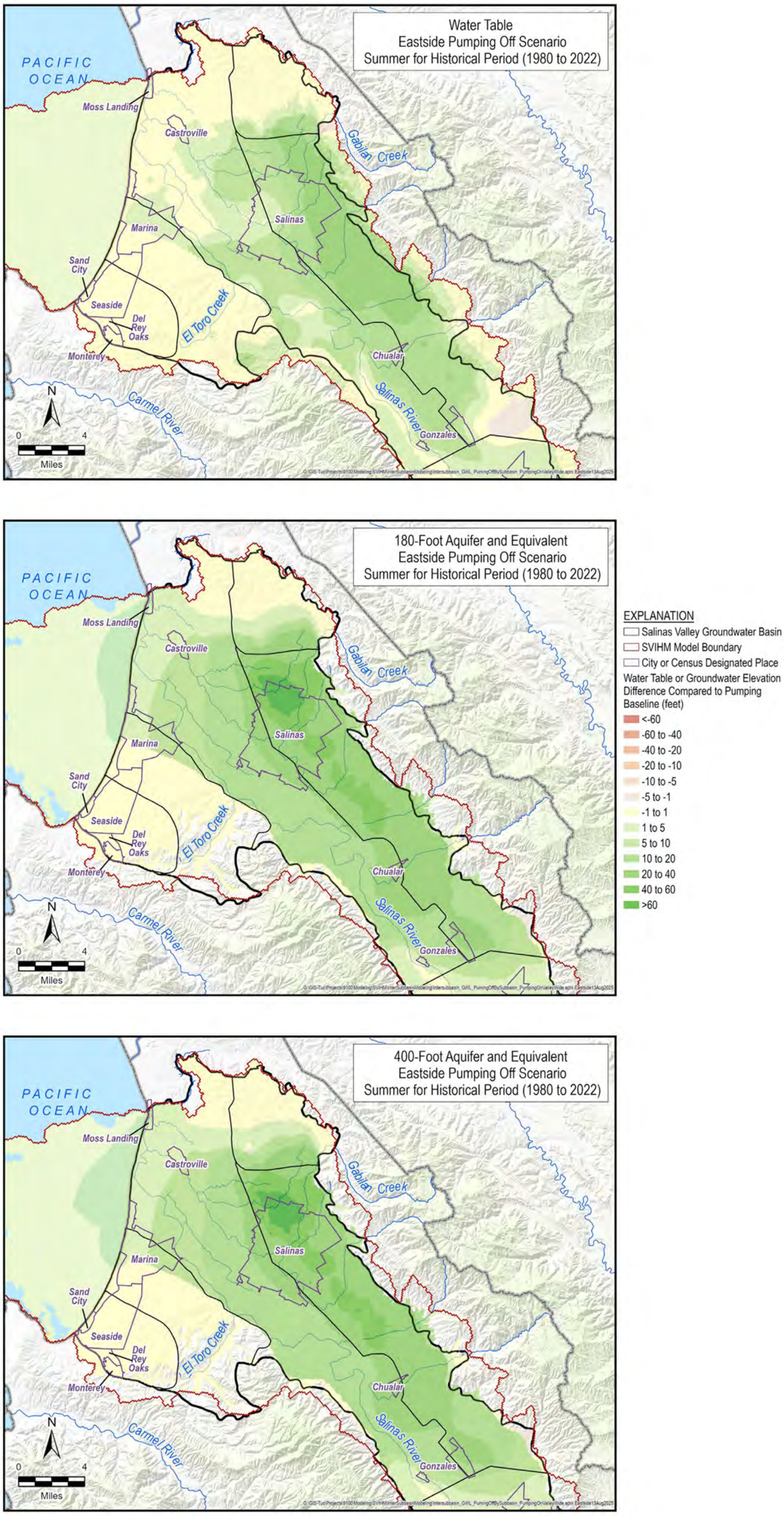

Figure 1-8. Eastside Pumping Off Scenario Compared to Pumping Baseline - 180 Average Groundwater Level Difference for Summer 1980-2022

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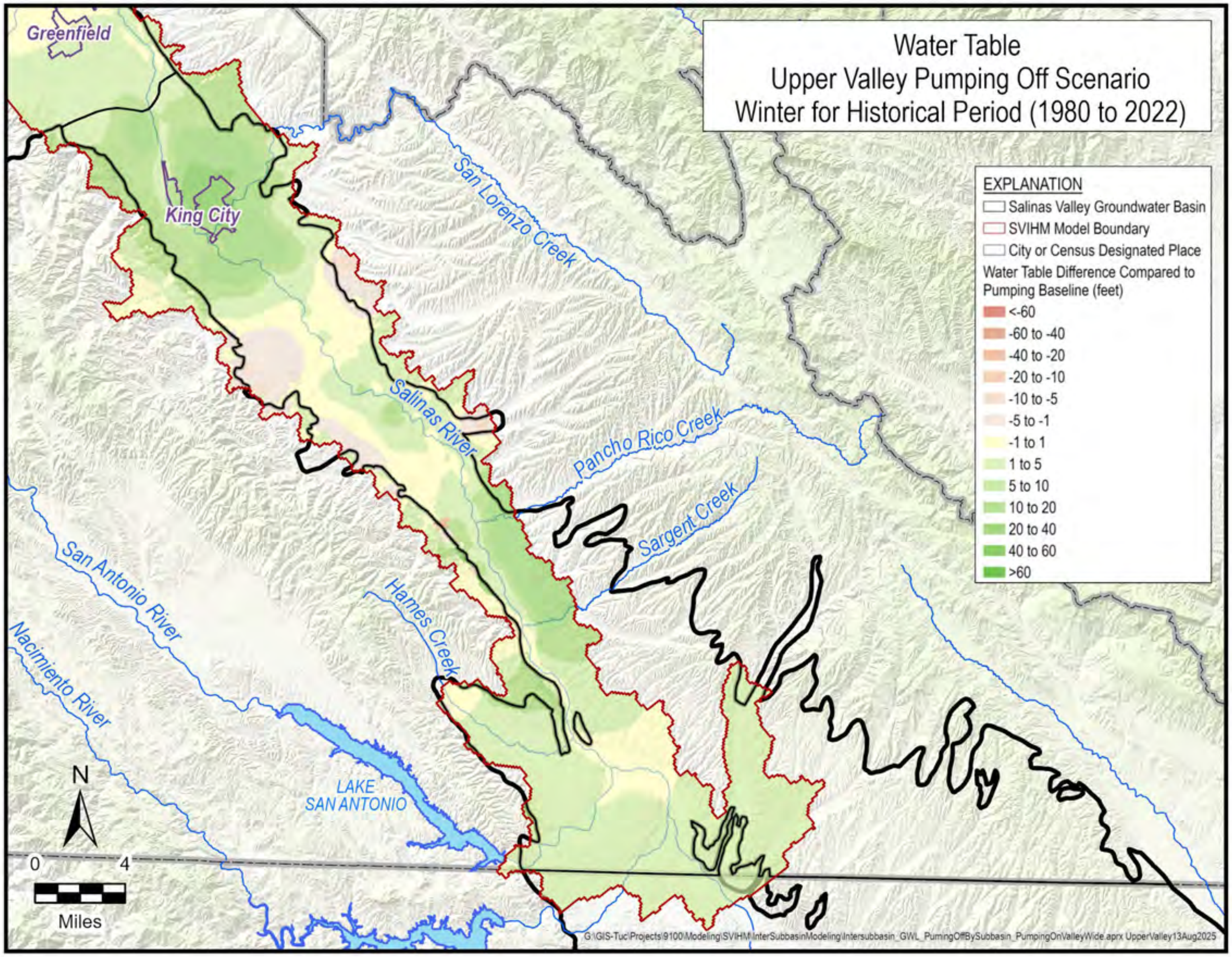

Figure 1-9. Upper Valley Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

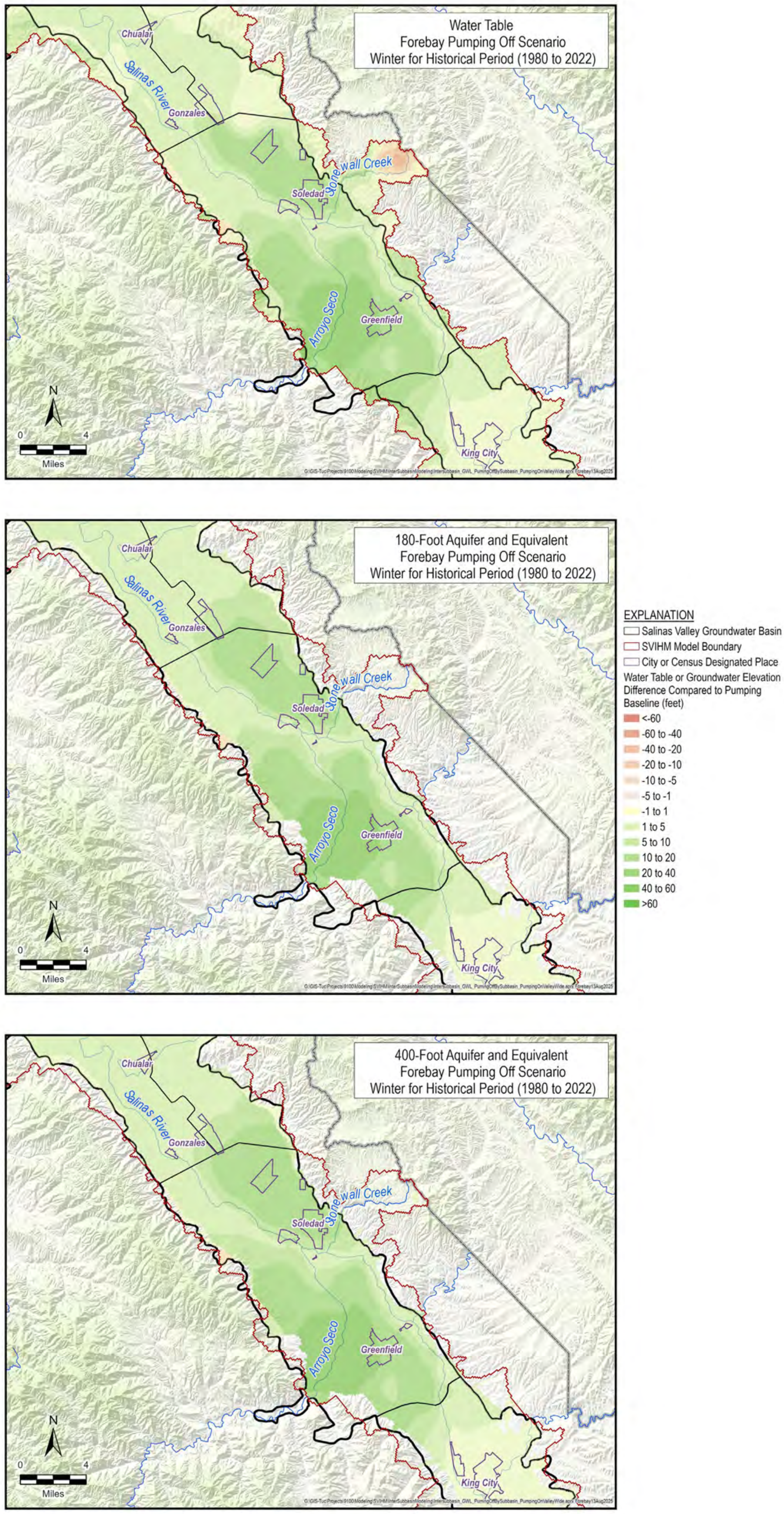

Figure 1-10. Forebay Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

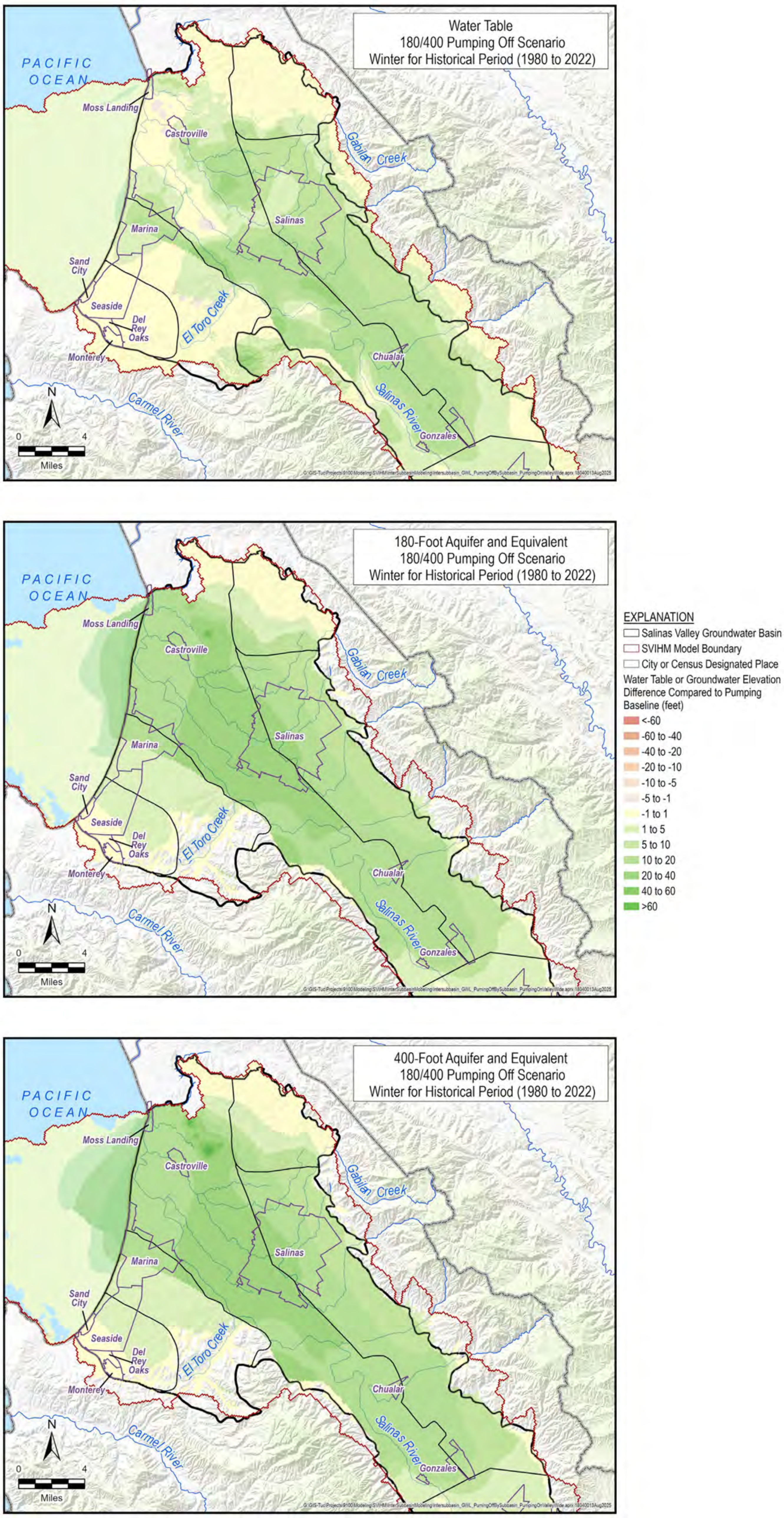

Figure 1-11. 180/400 Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

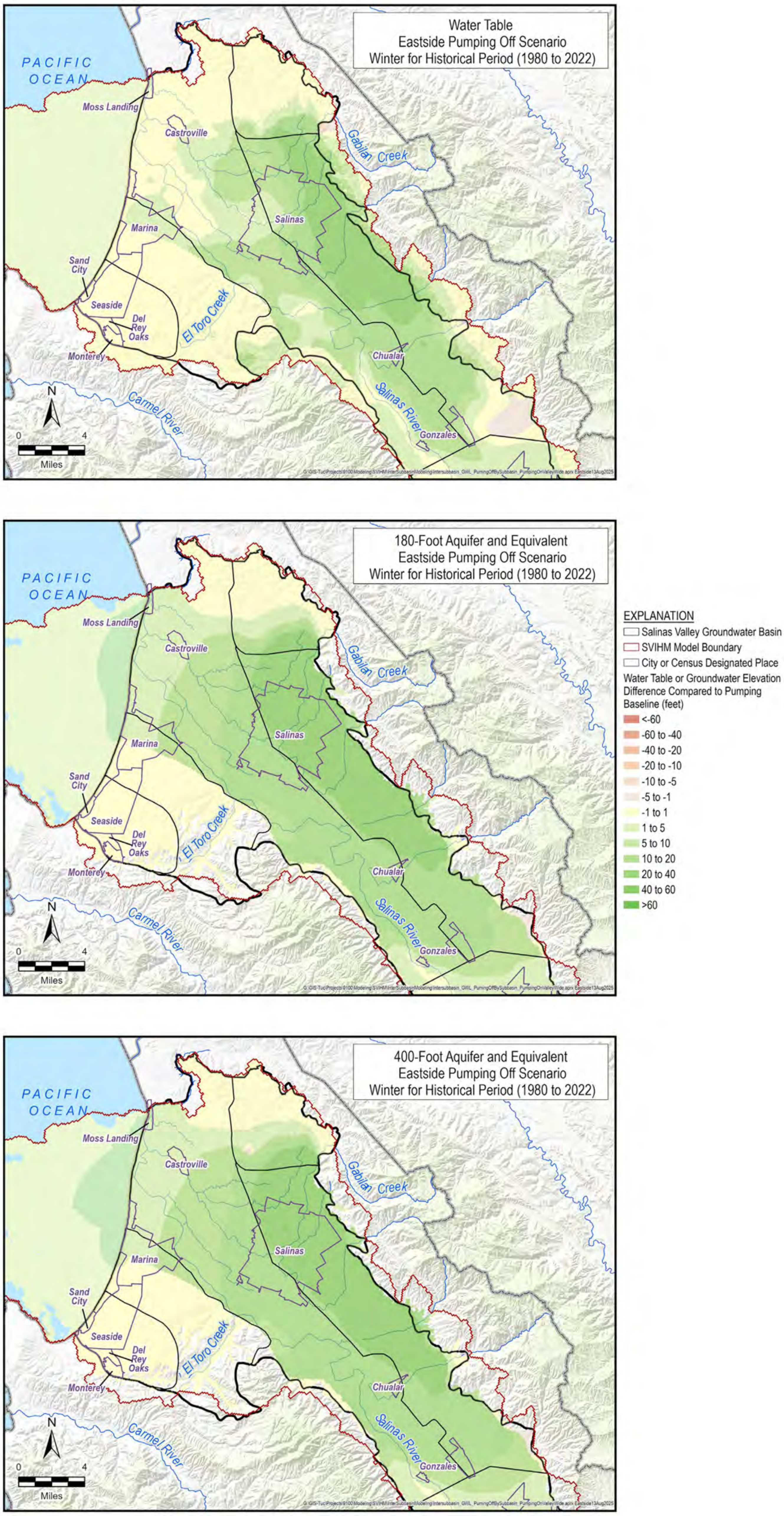

Figure 1-12. Eastside Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

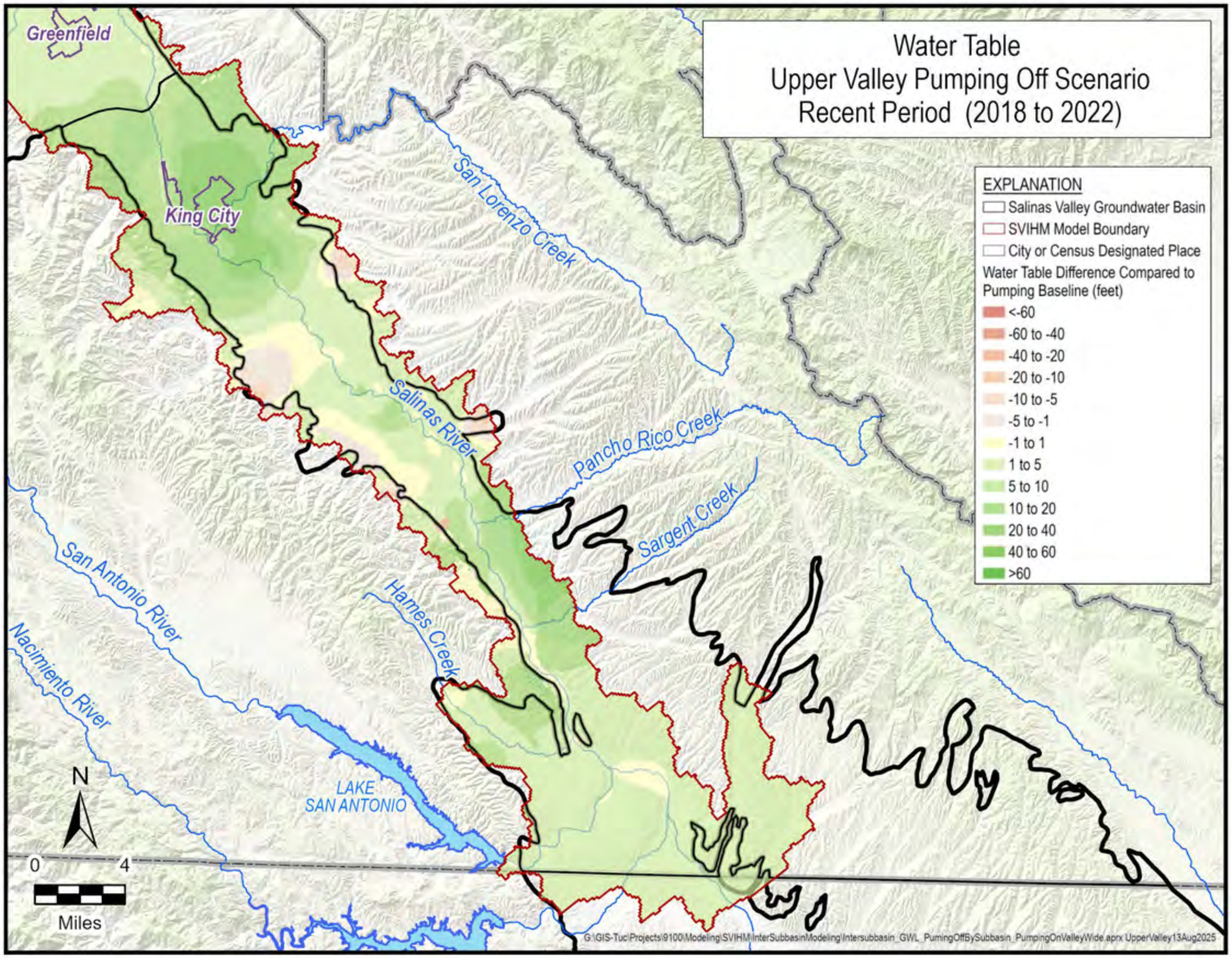

Figure 1-13. Upper Valley Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 2018-2022

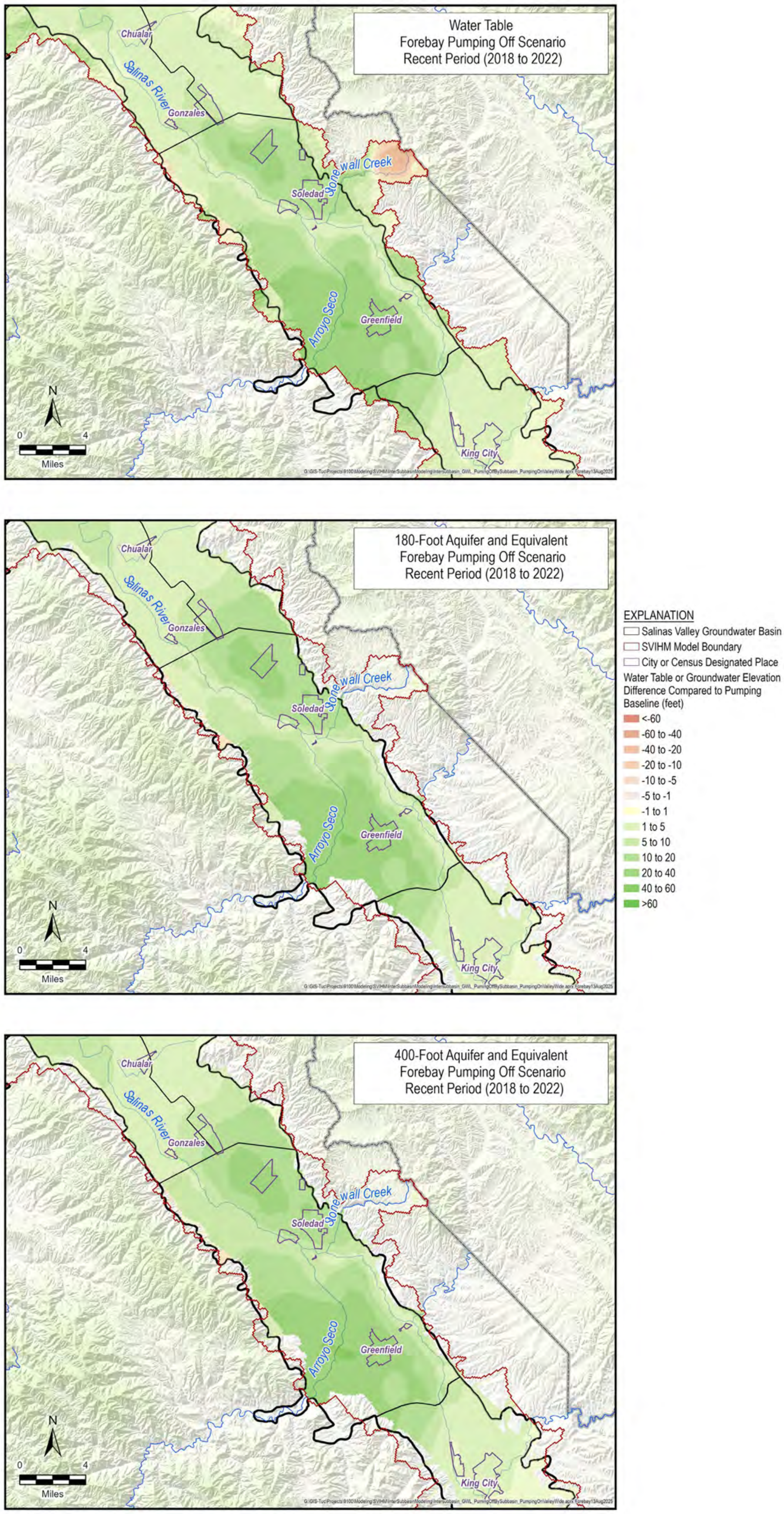

Figure 1-14. Forebay Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 2018-2022

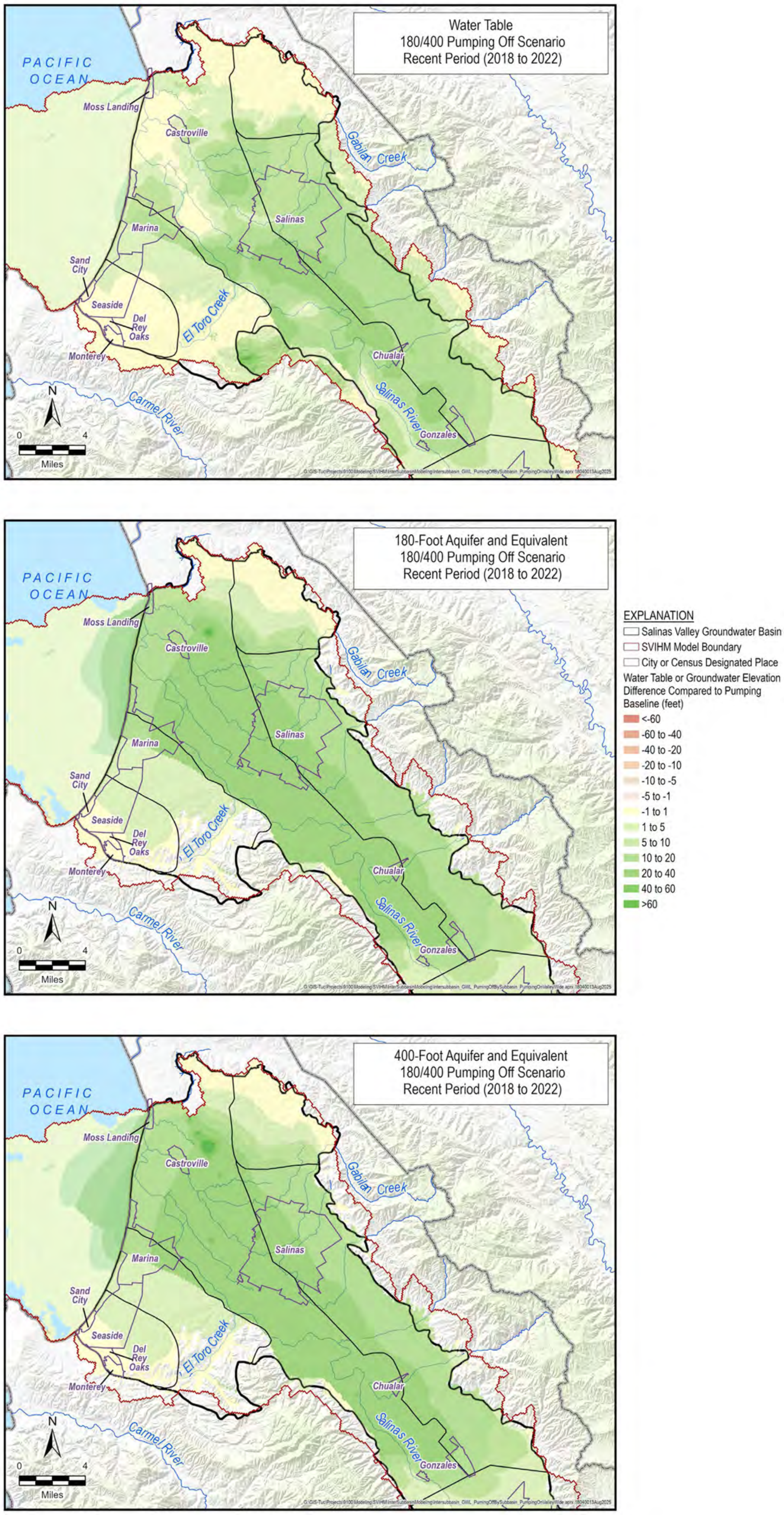

Figure 1-15. 180/400 Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 2018-2022

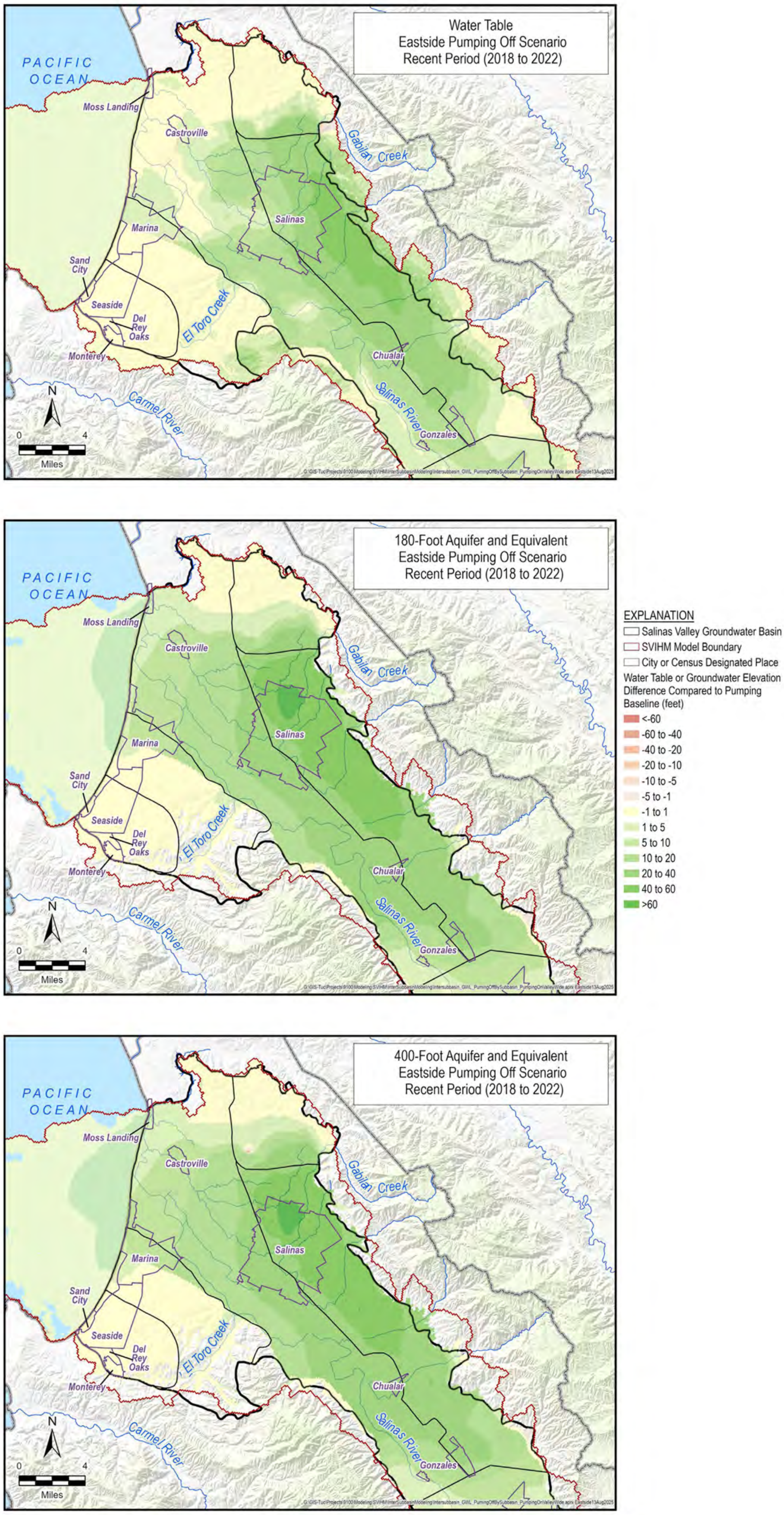

Figure 1-16. Eastside Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for 2018-2022

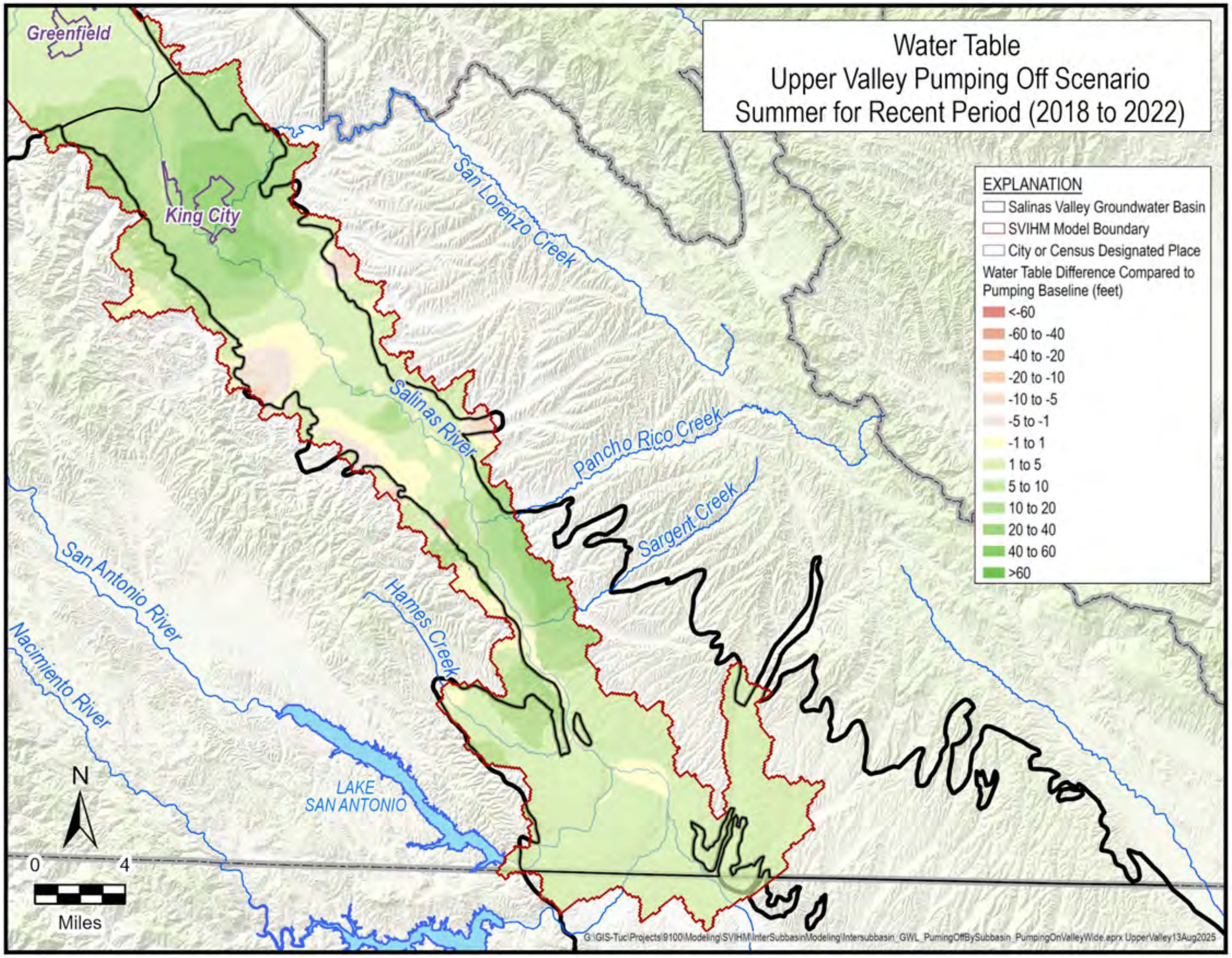

Figure 1-17. Upper Valley Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

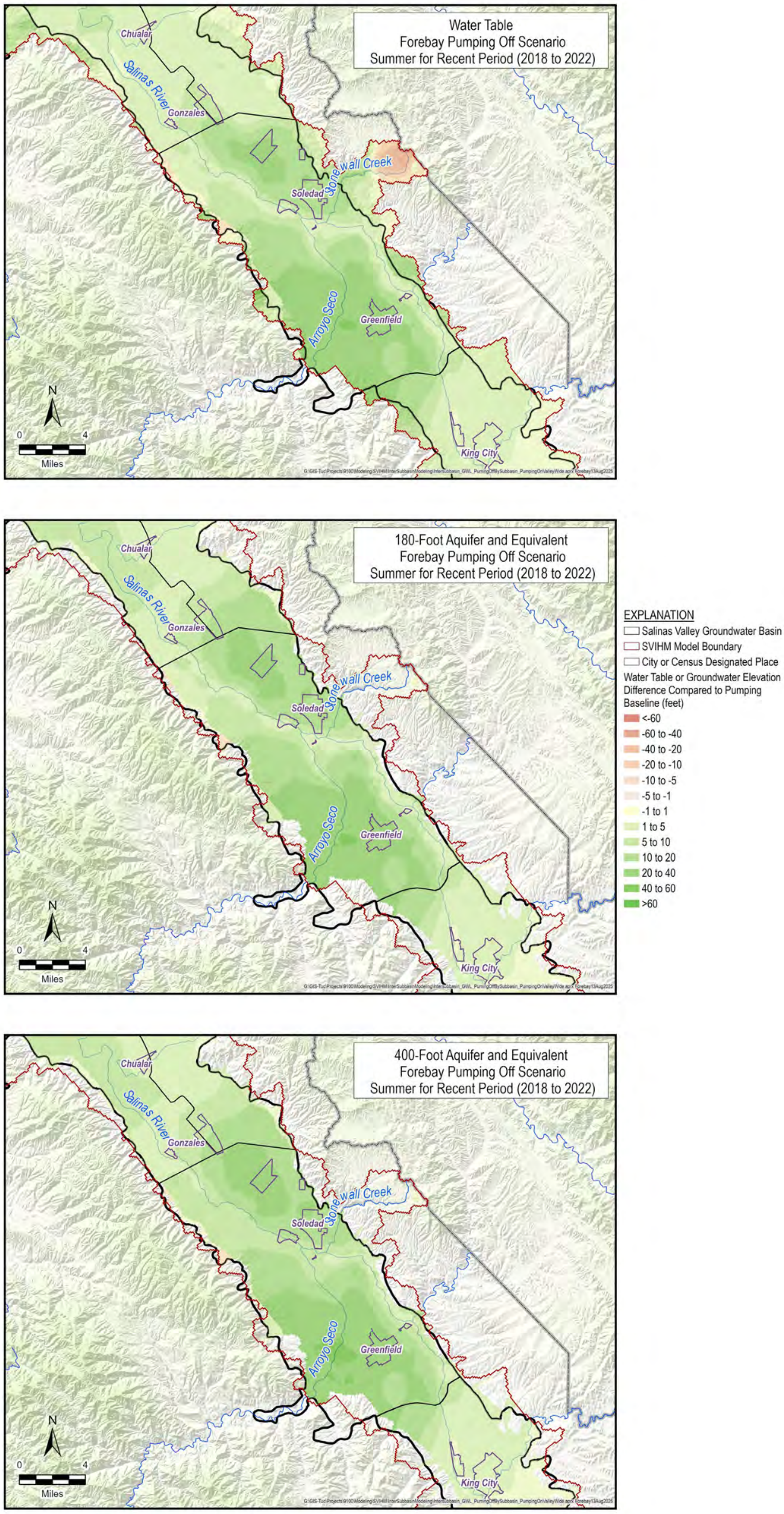

Figure 1-18. Forebay Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

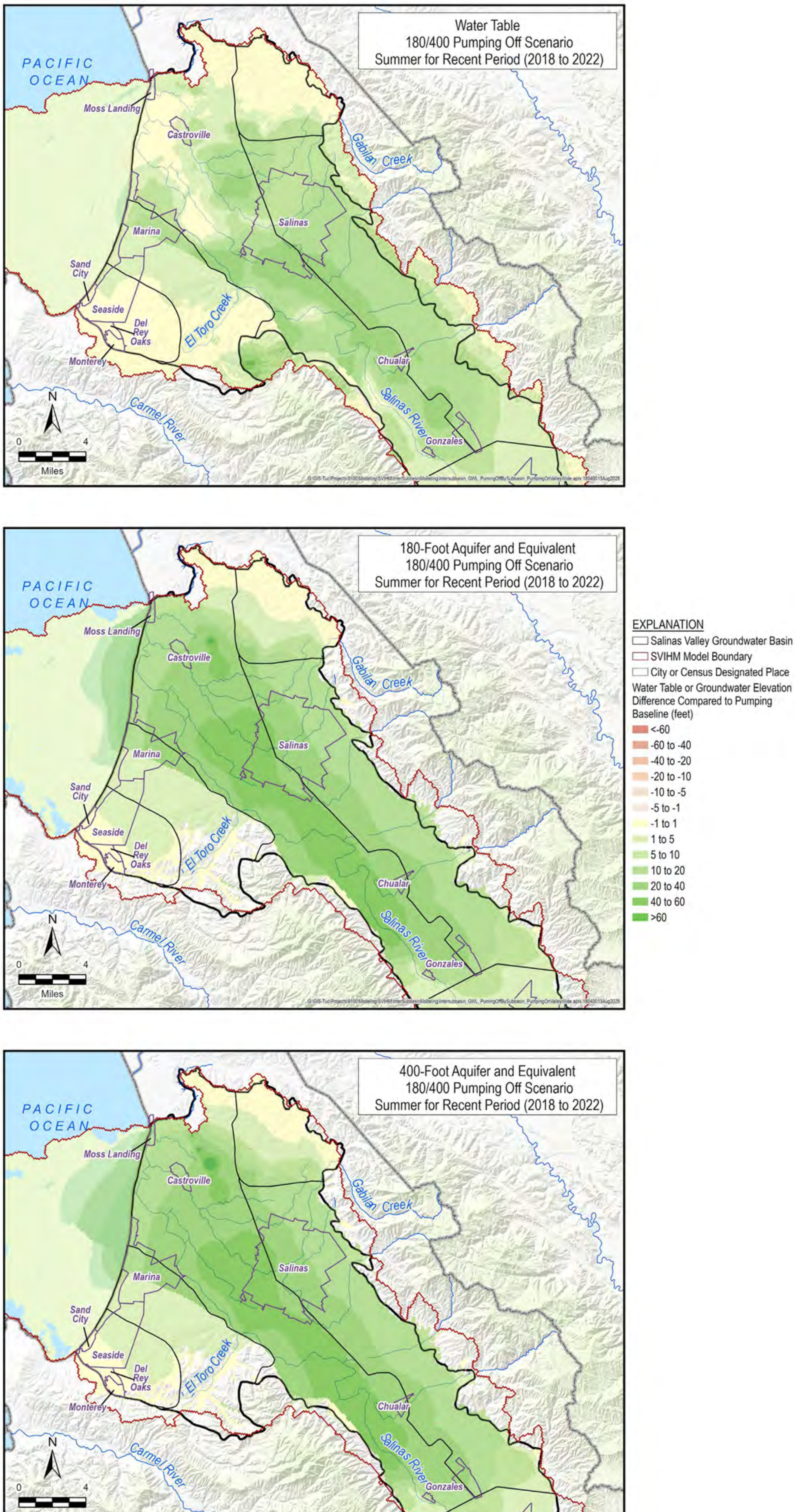

Figure 1-19. 180/400 Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

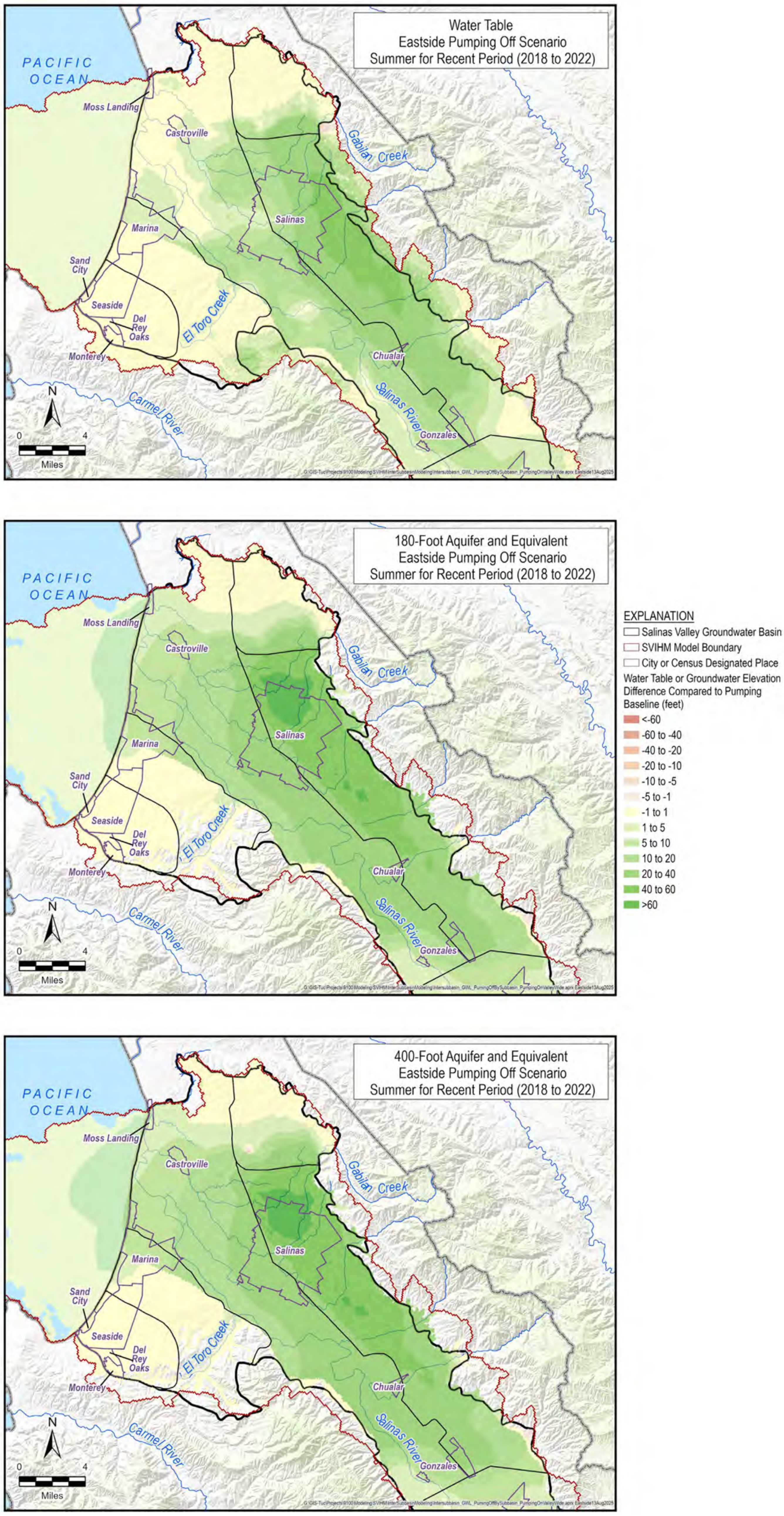

Figure 1-20. Eastside Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

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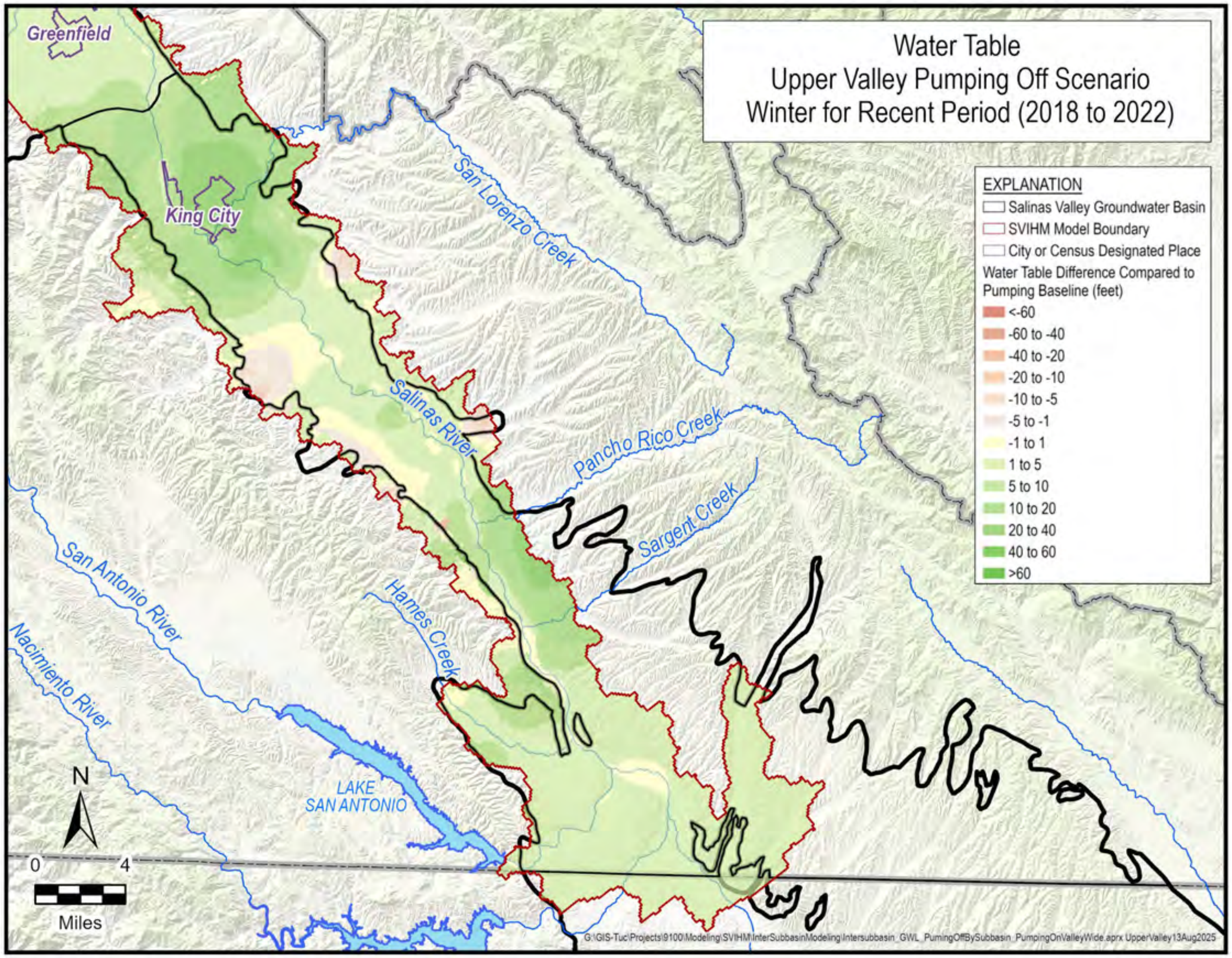

Figure 1-21. Upper Valley Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

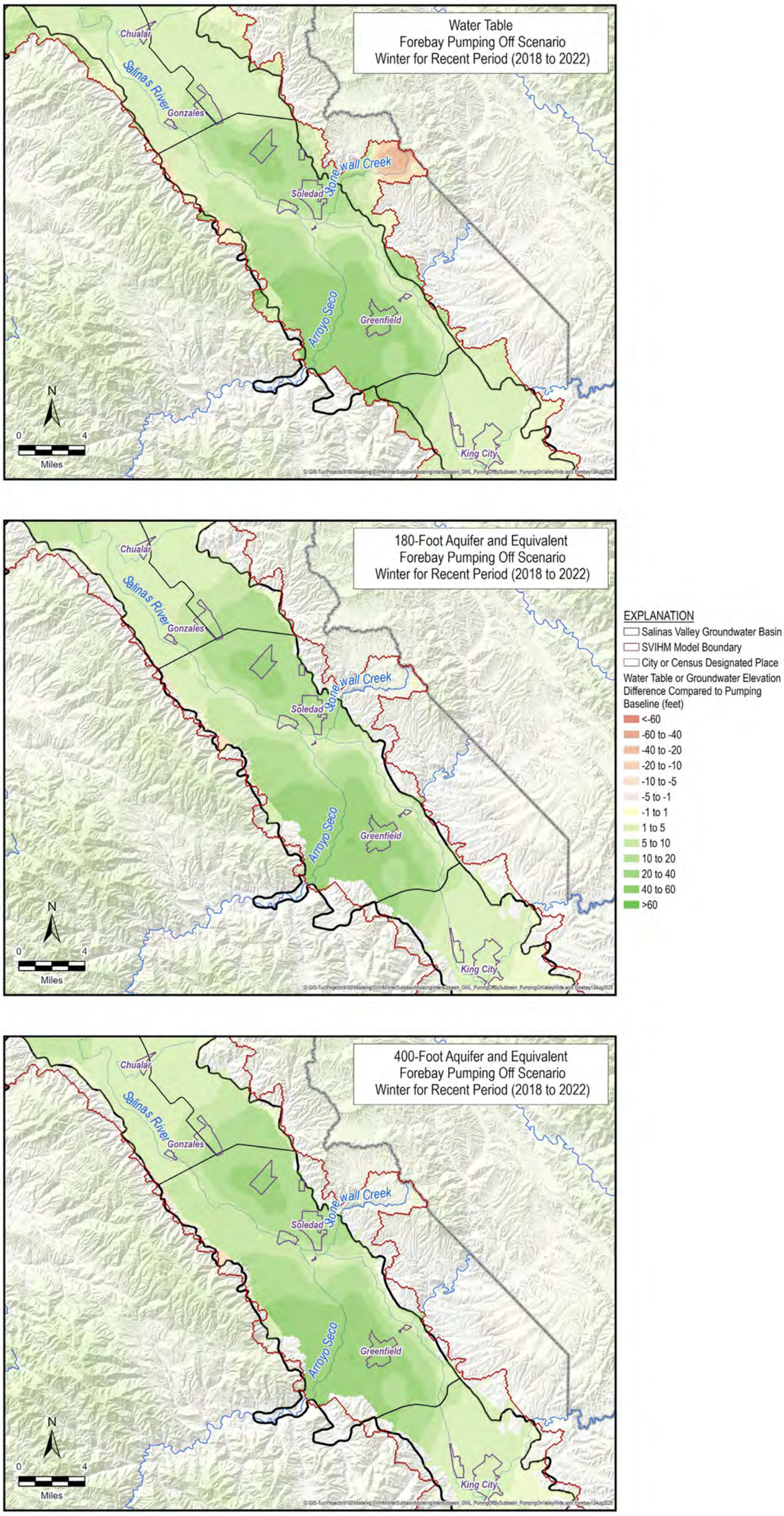

Figure 1-22. Forebay Pumping Off Scenario Compared to Pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

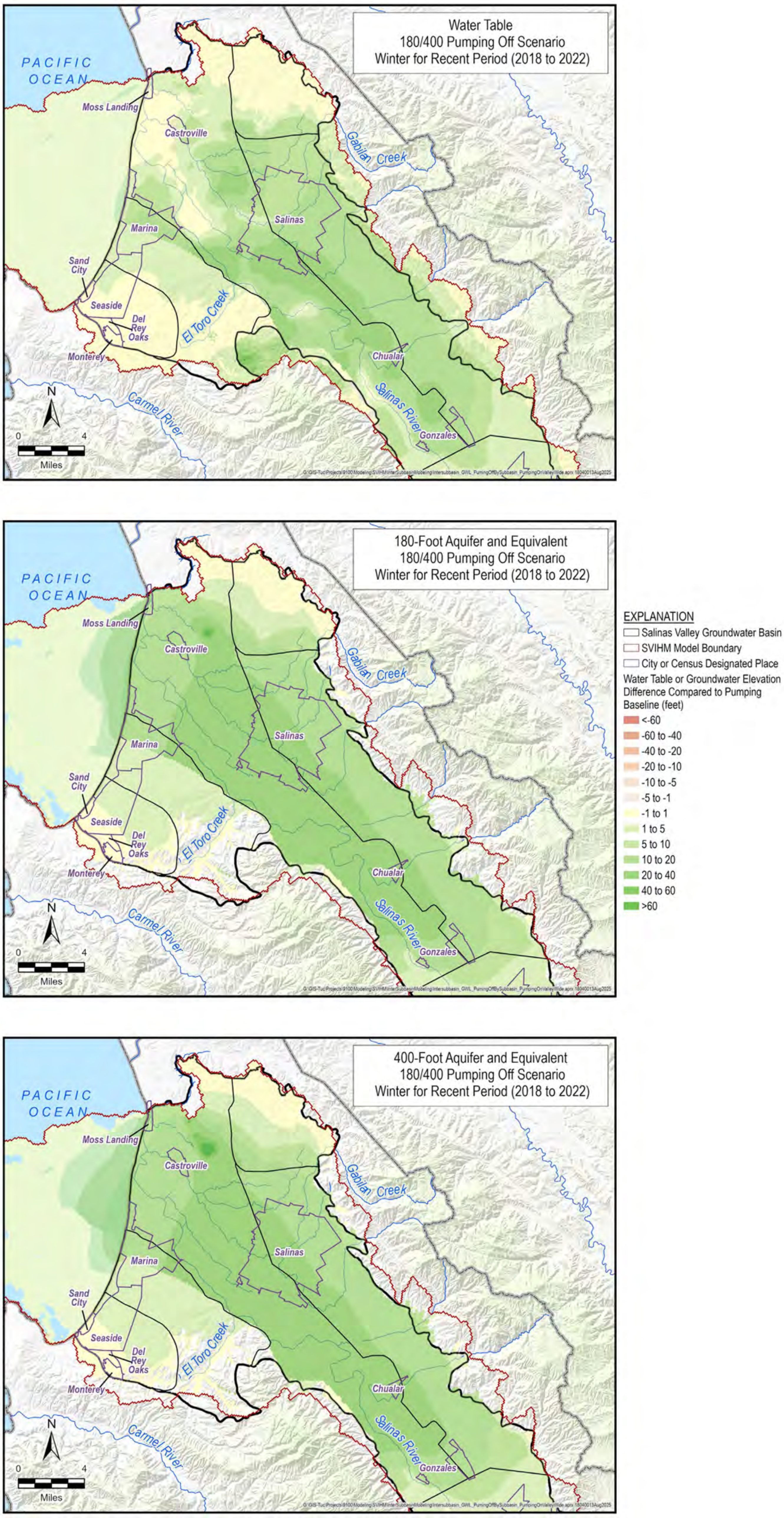

Figure 1-23. 180/400 Pumping Off Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

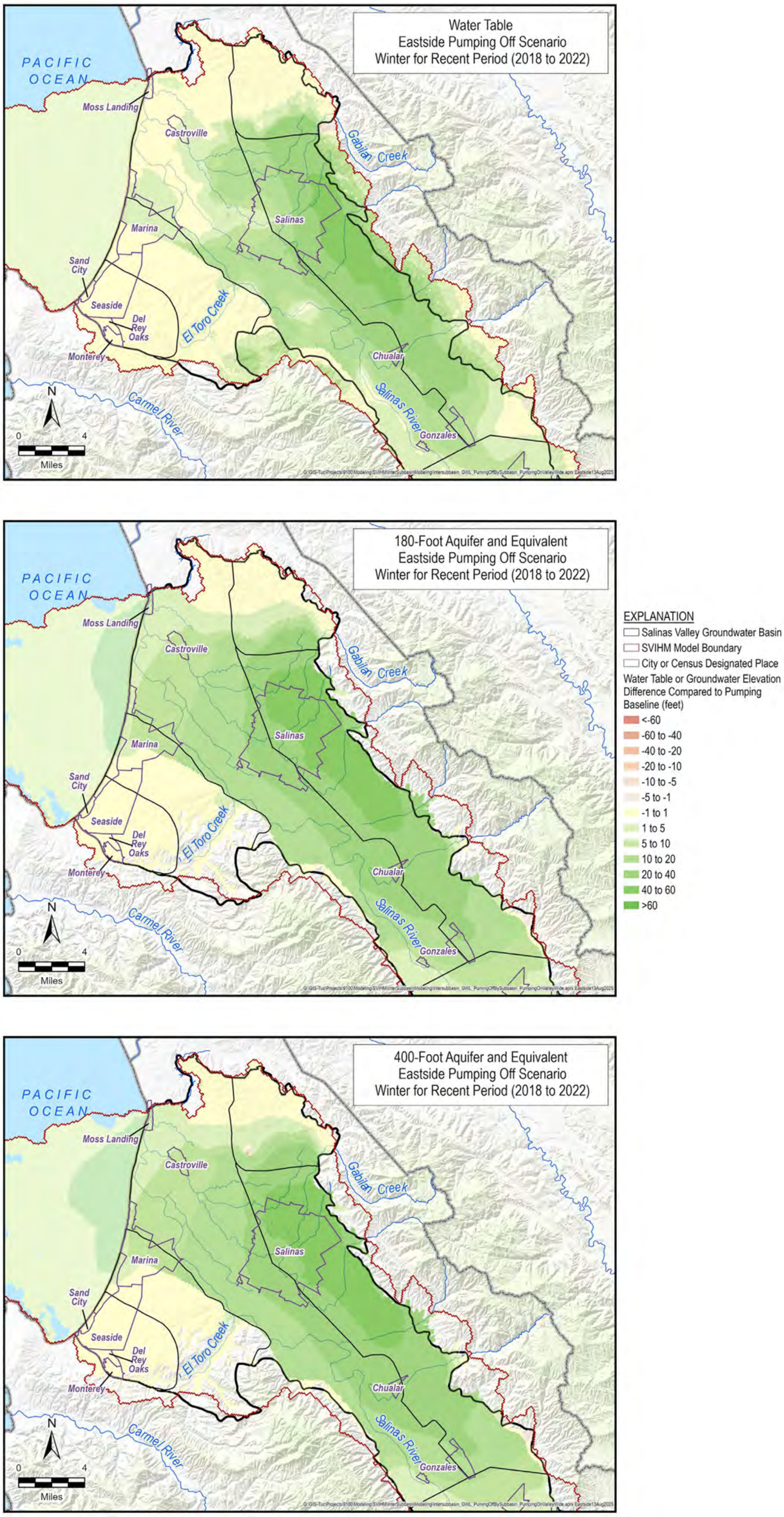

Figure 1-24. Eastside Pumping Off Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

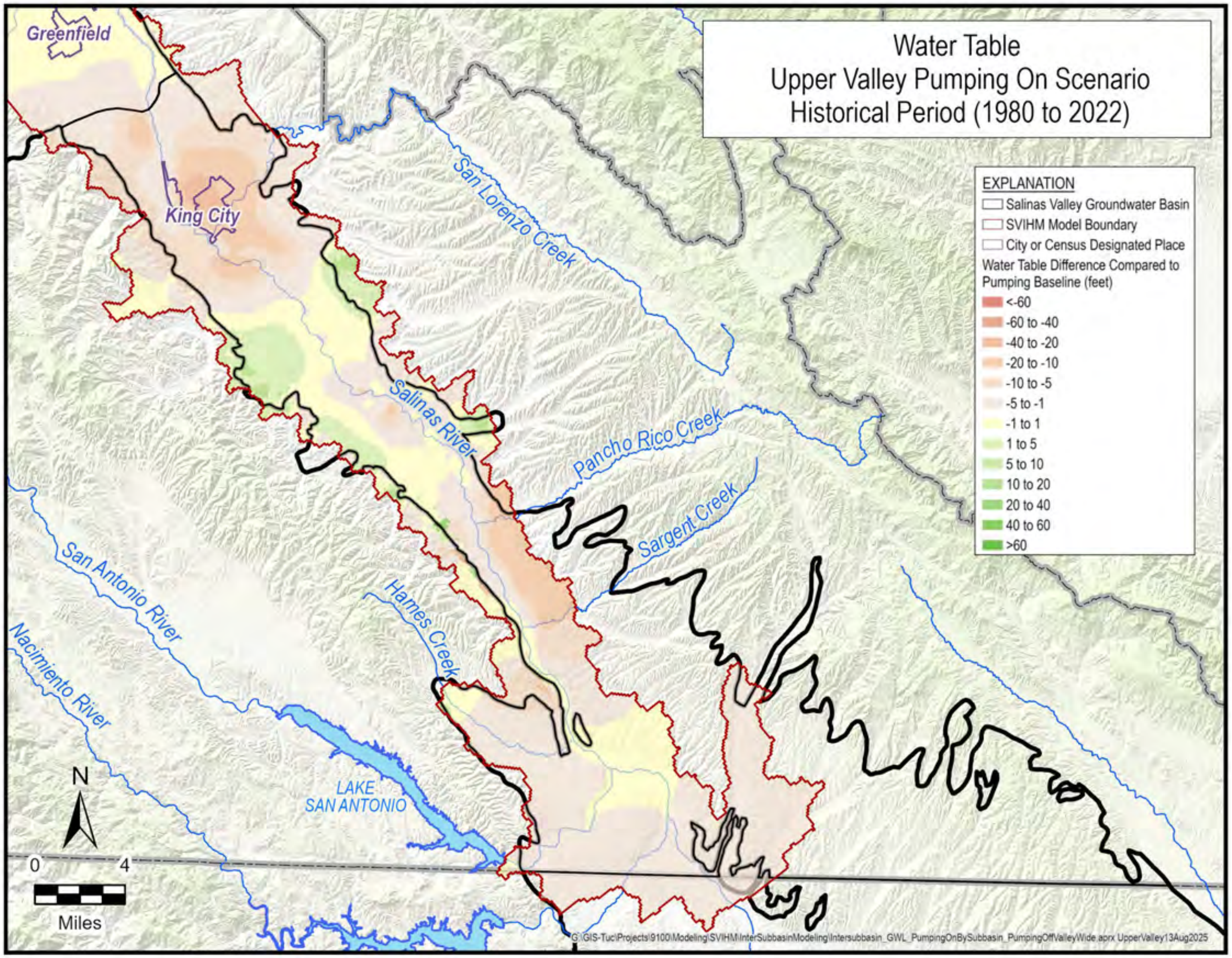

Figure 1-25. Upper Valley Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 1980-2022

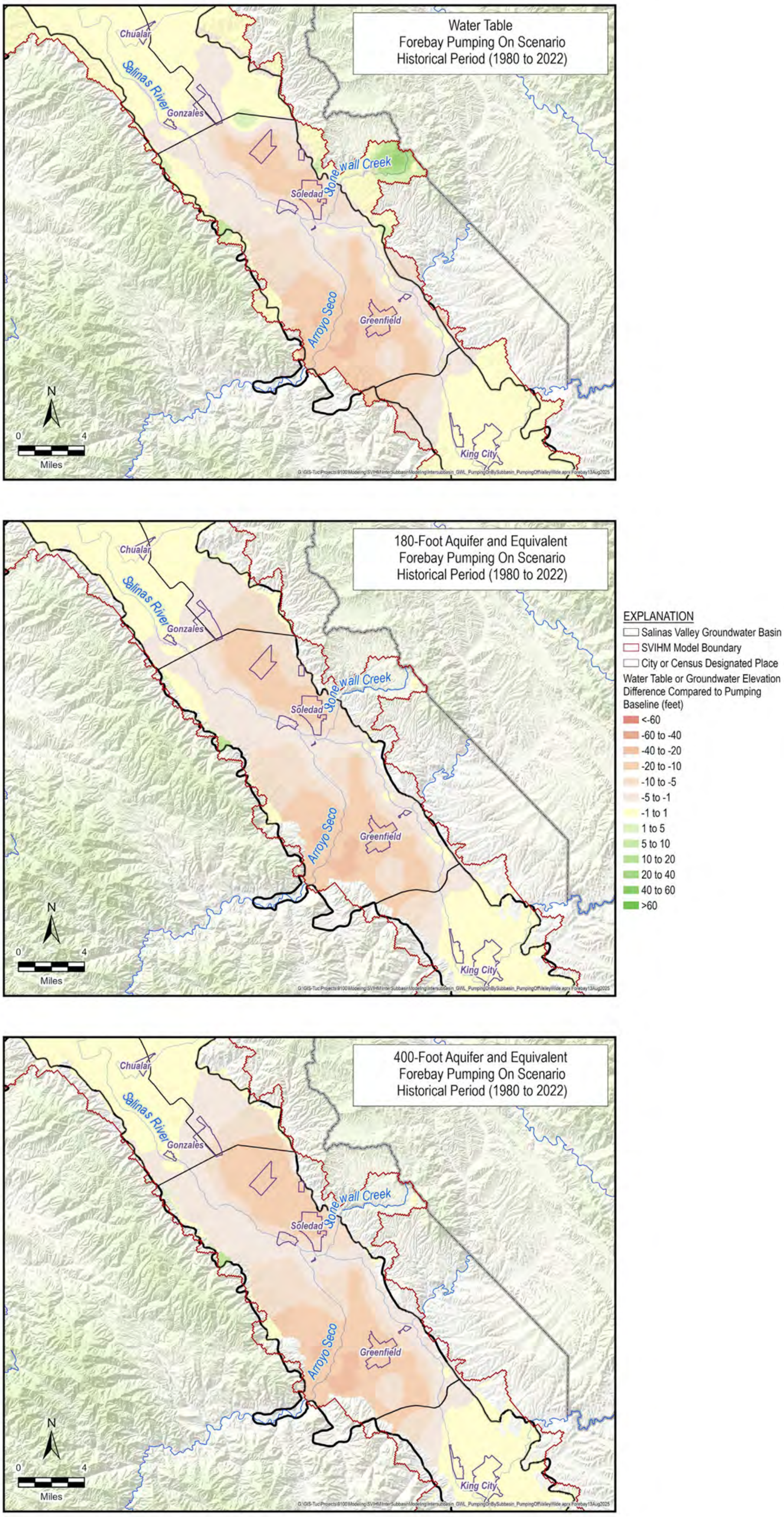

Figure 1-26. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 1980-2022

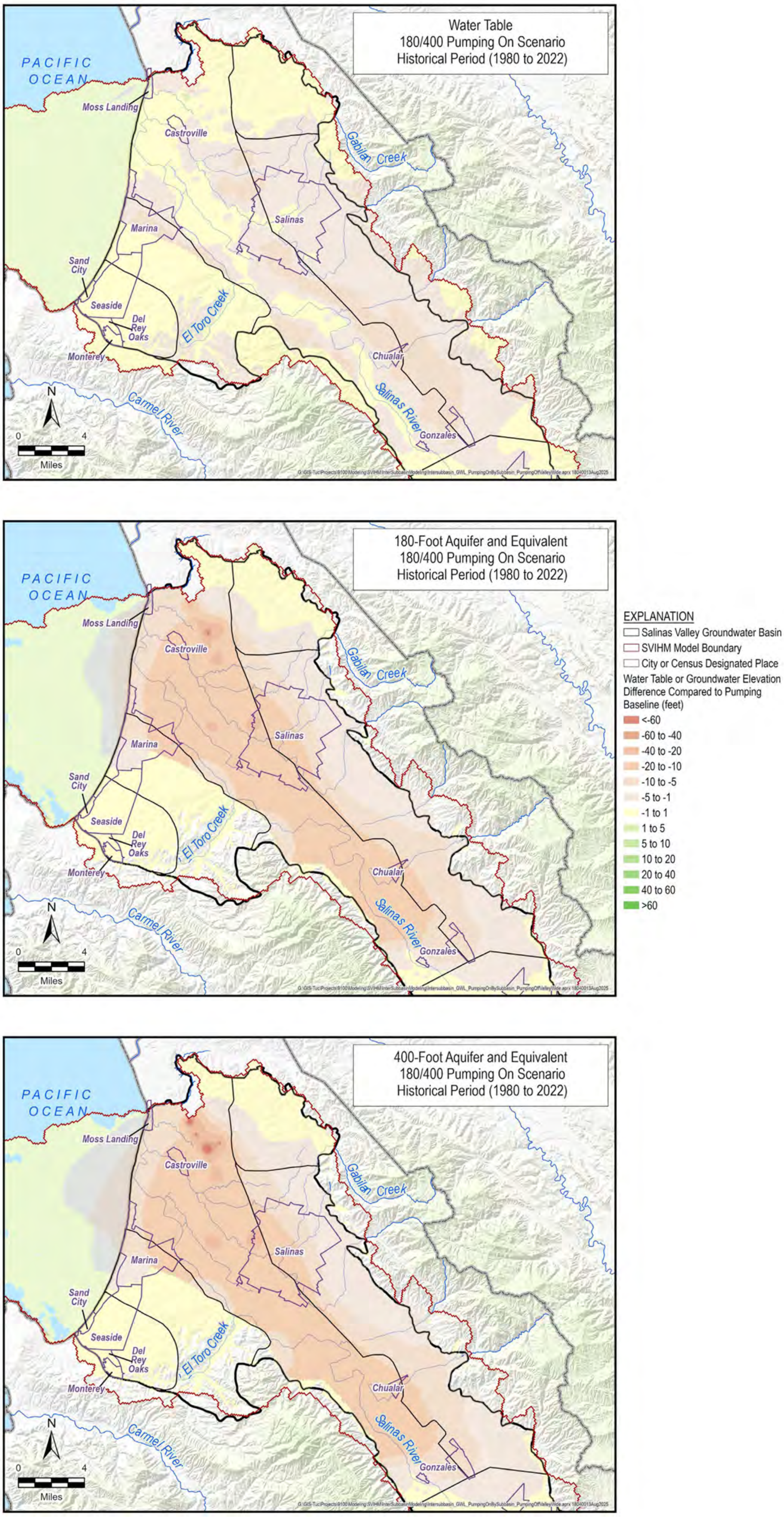

Figure 1-27. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 1980-2022

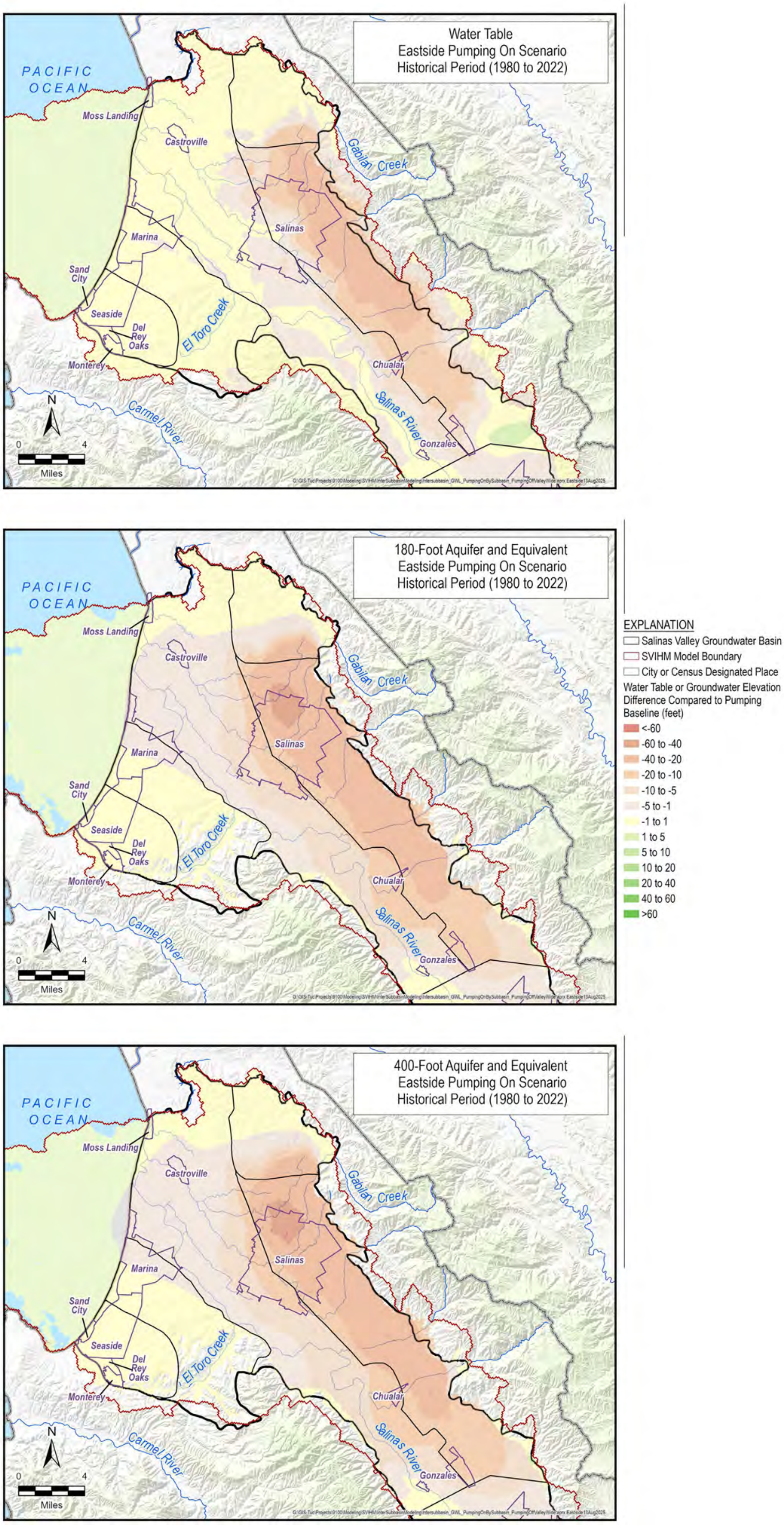

Figure 1-28. Eastside Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 1980-2022

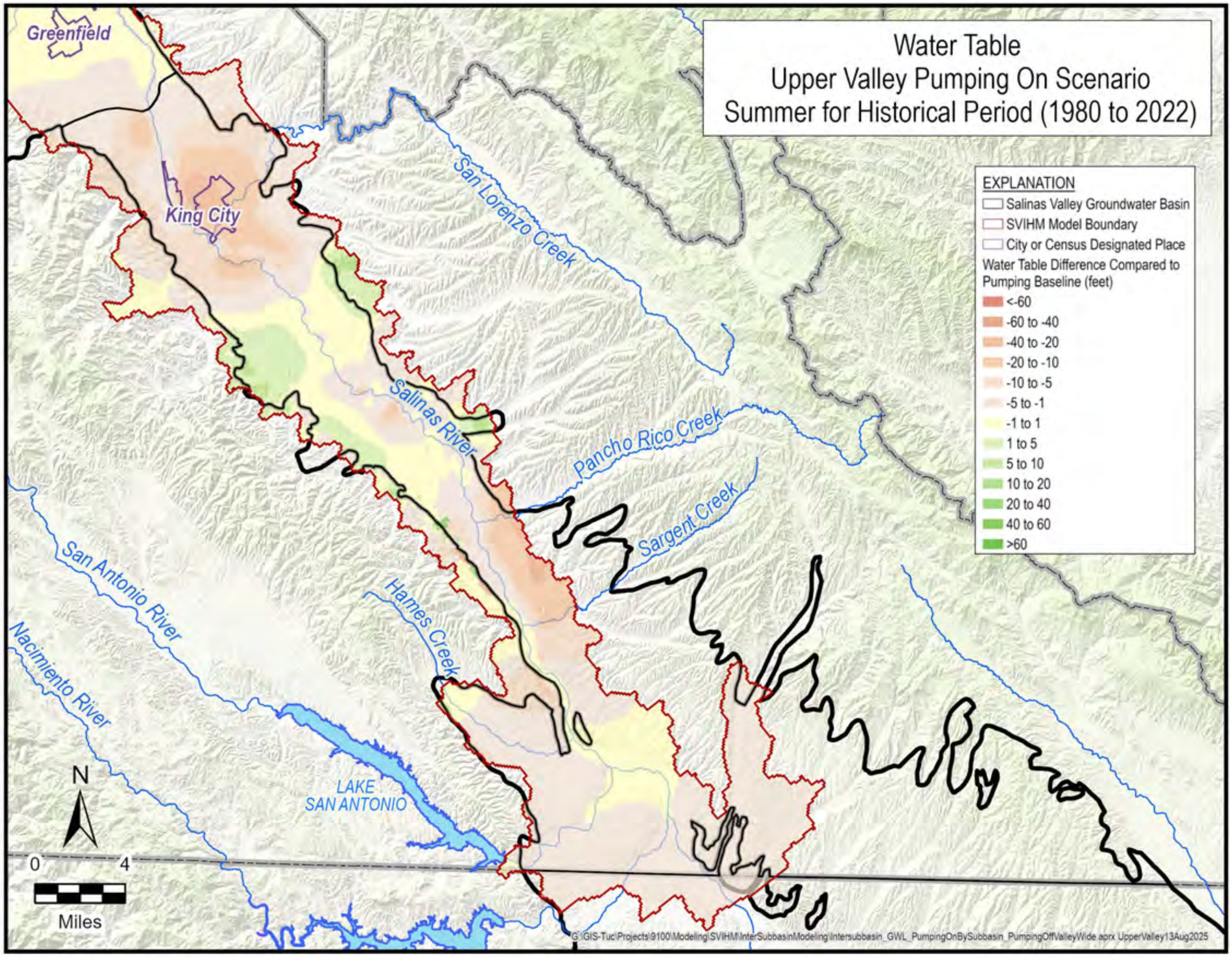

Figure 1-29. Upper Valley Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

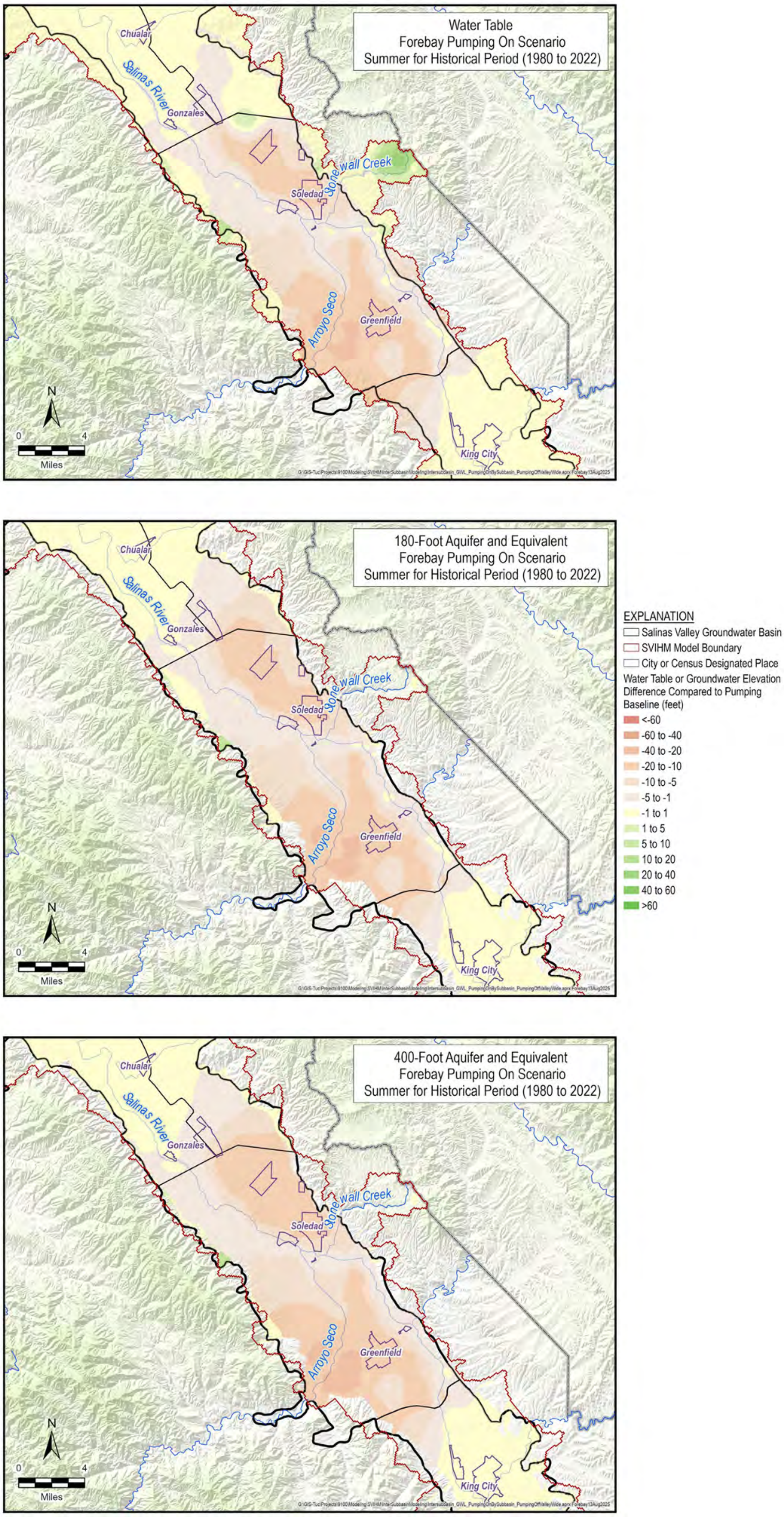

Figure 1-30. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

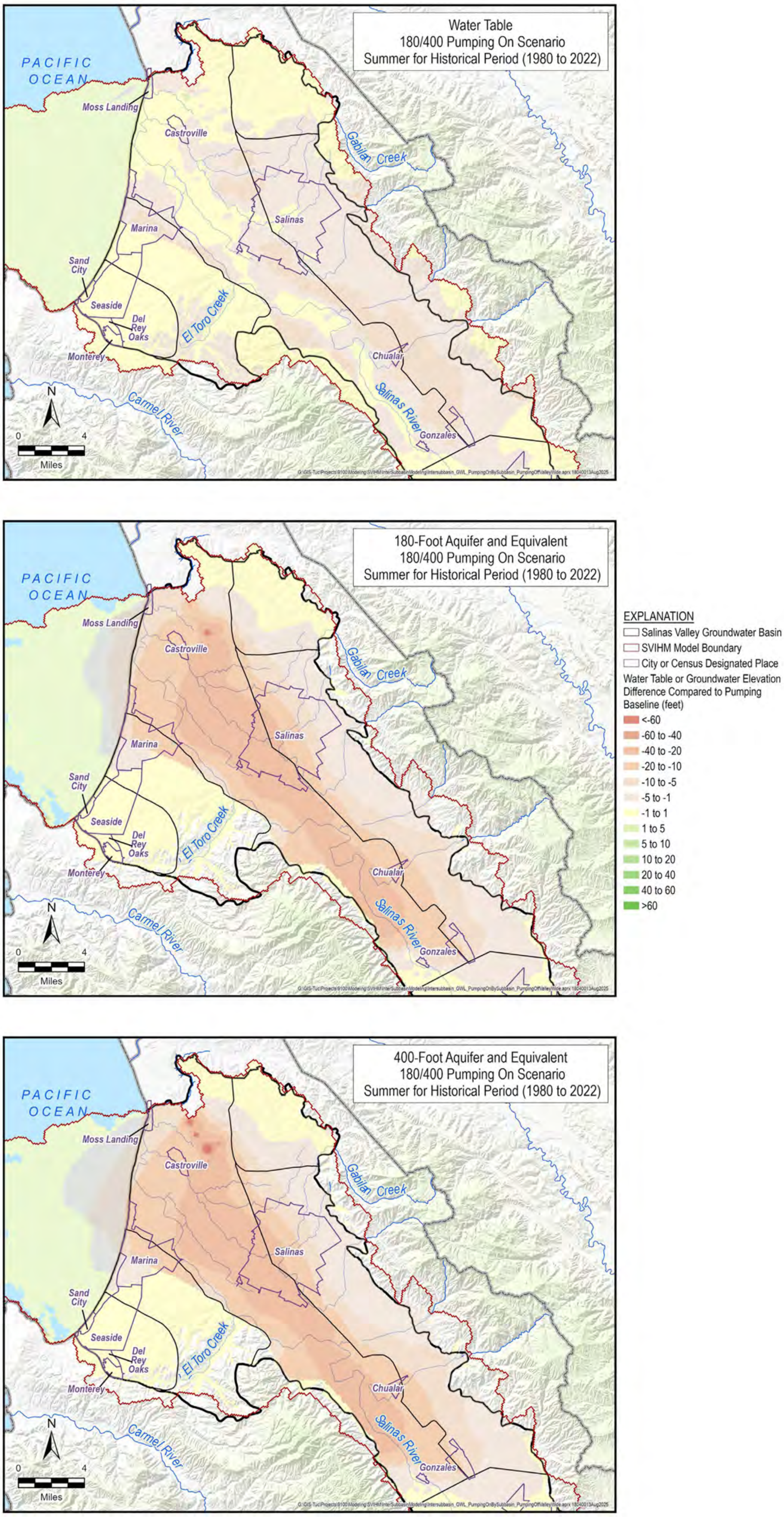

Figure 1-31. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

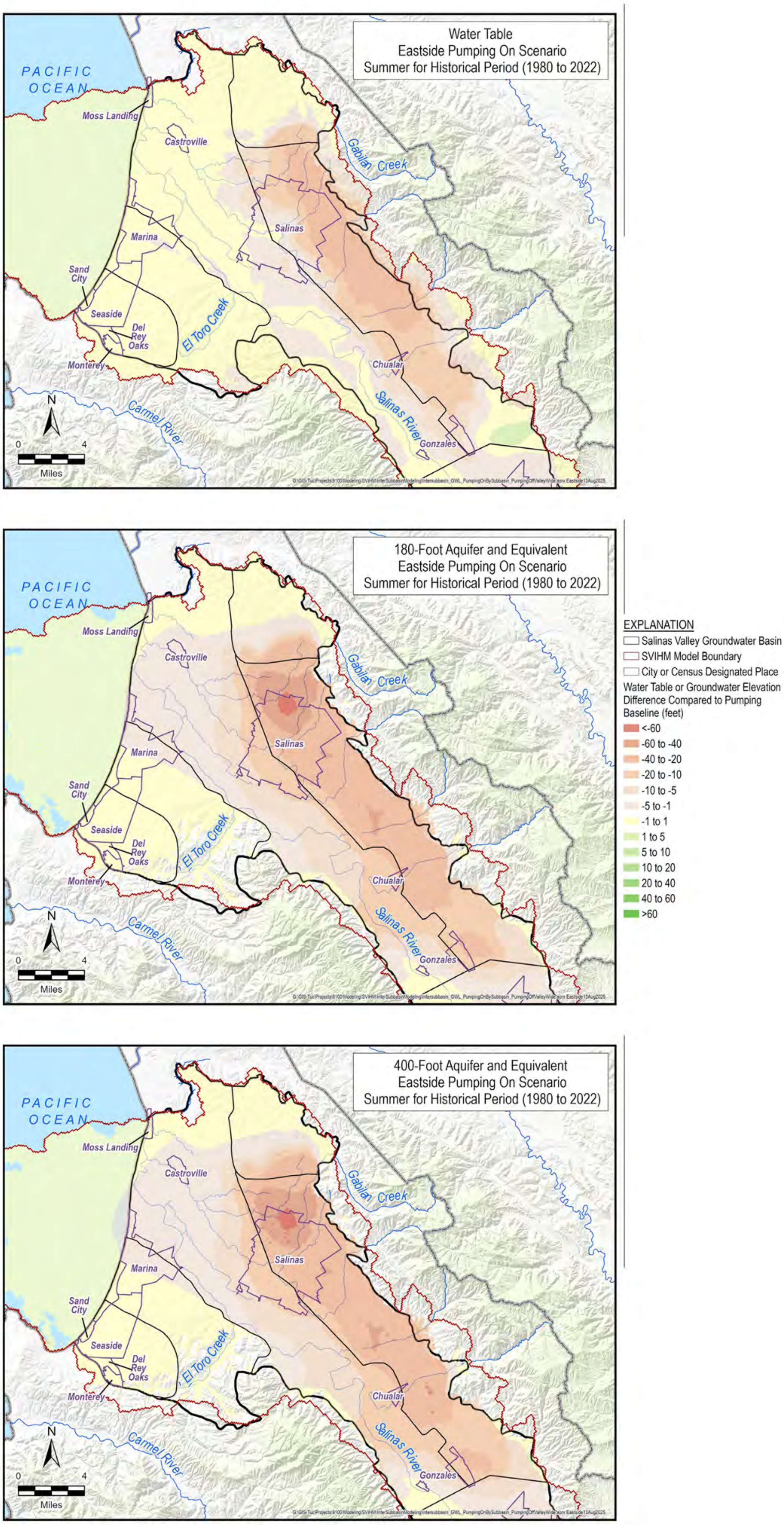

Figure 1-32. Eastside Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 1980-2022

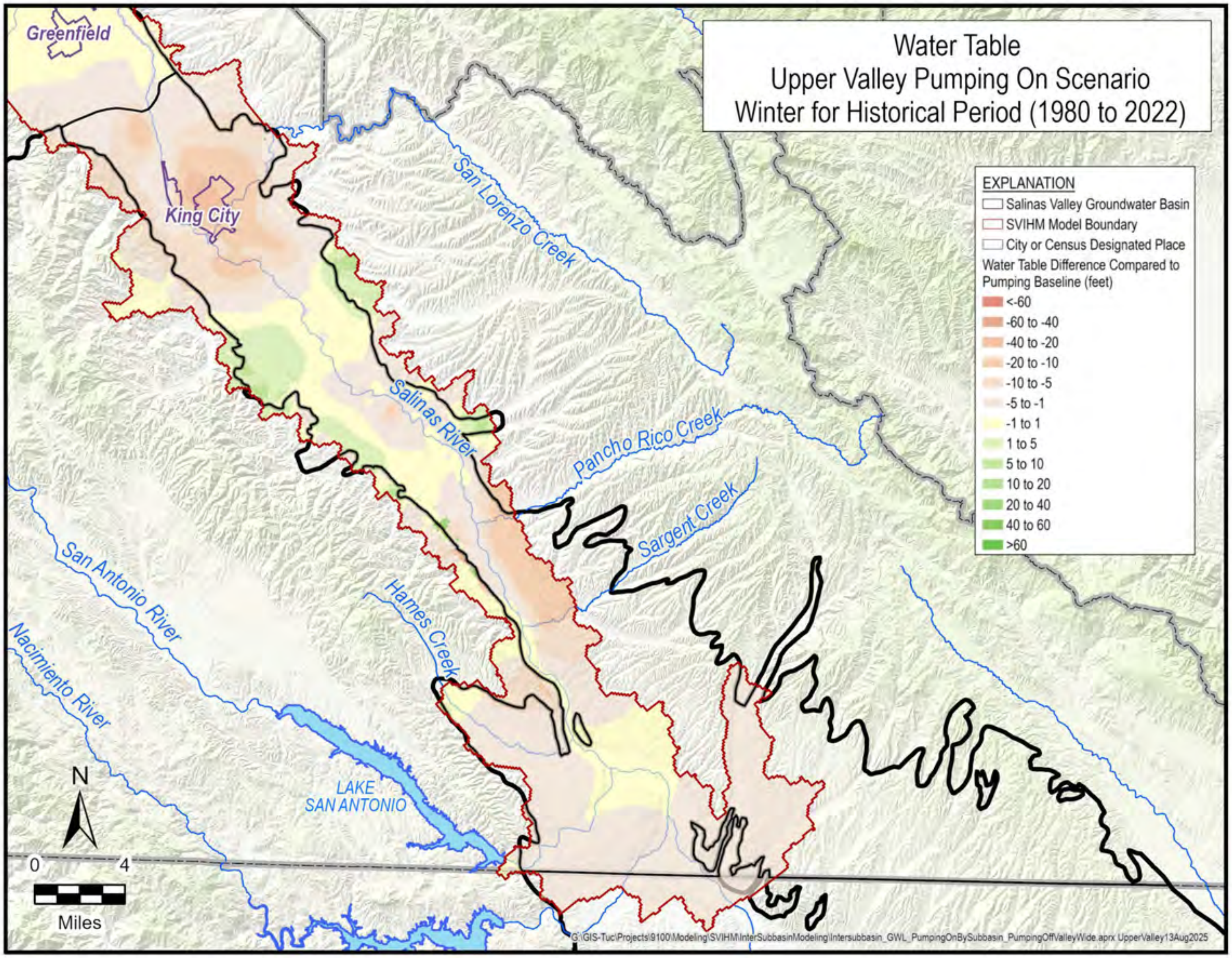

Figure 1-33. Upper Valley Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

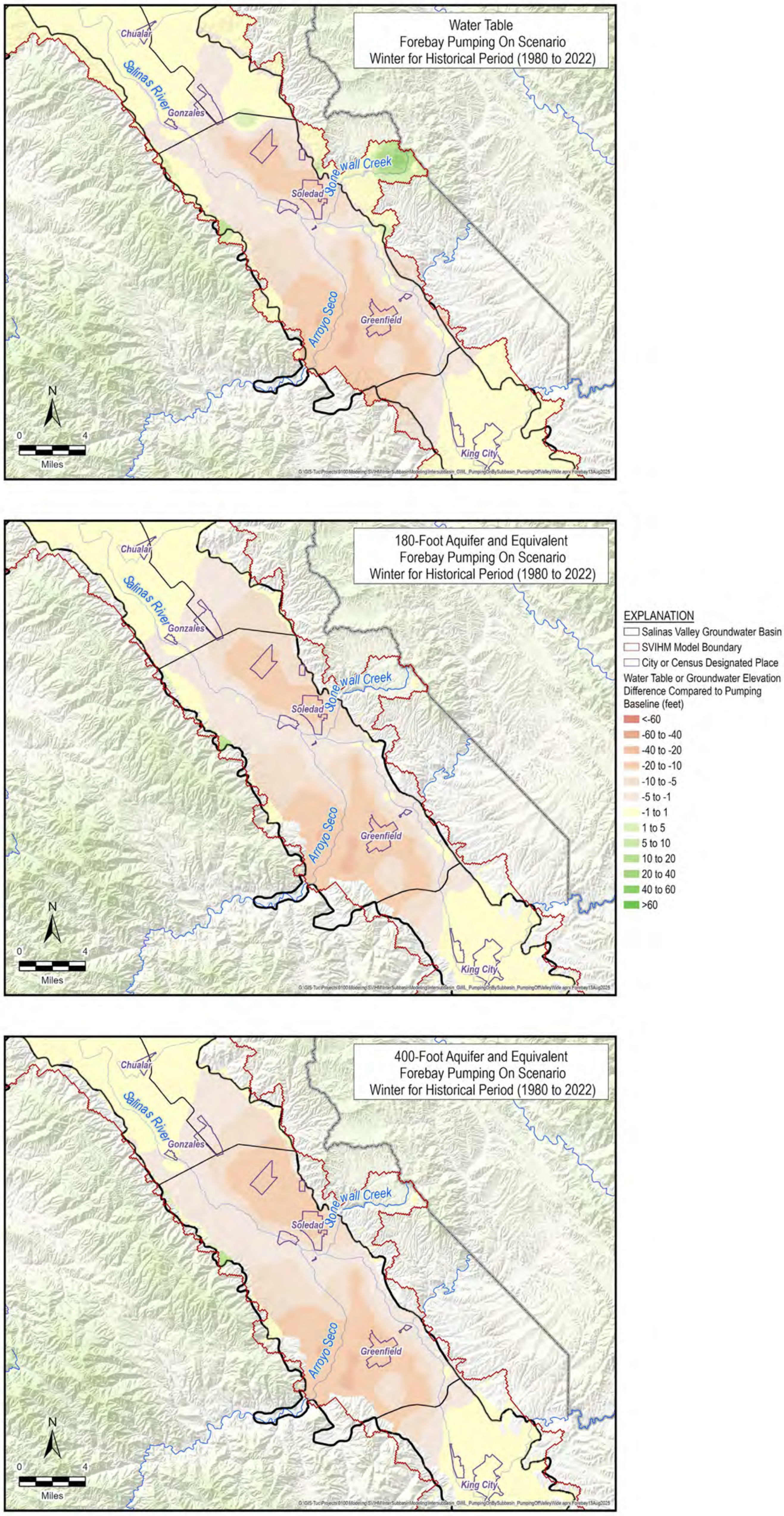

Figure 1-34. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

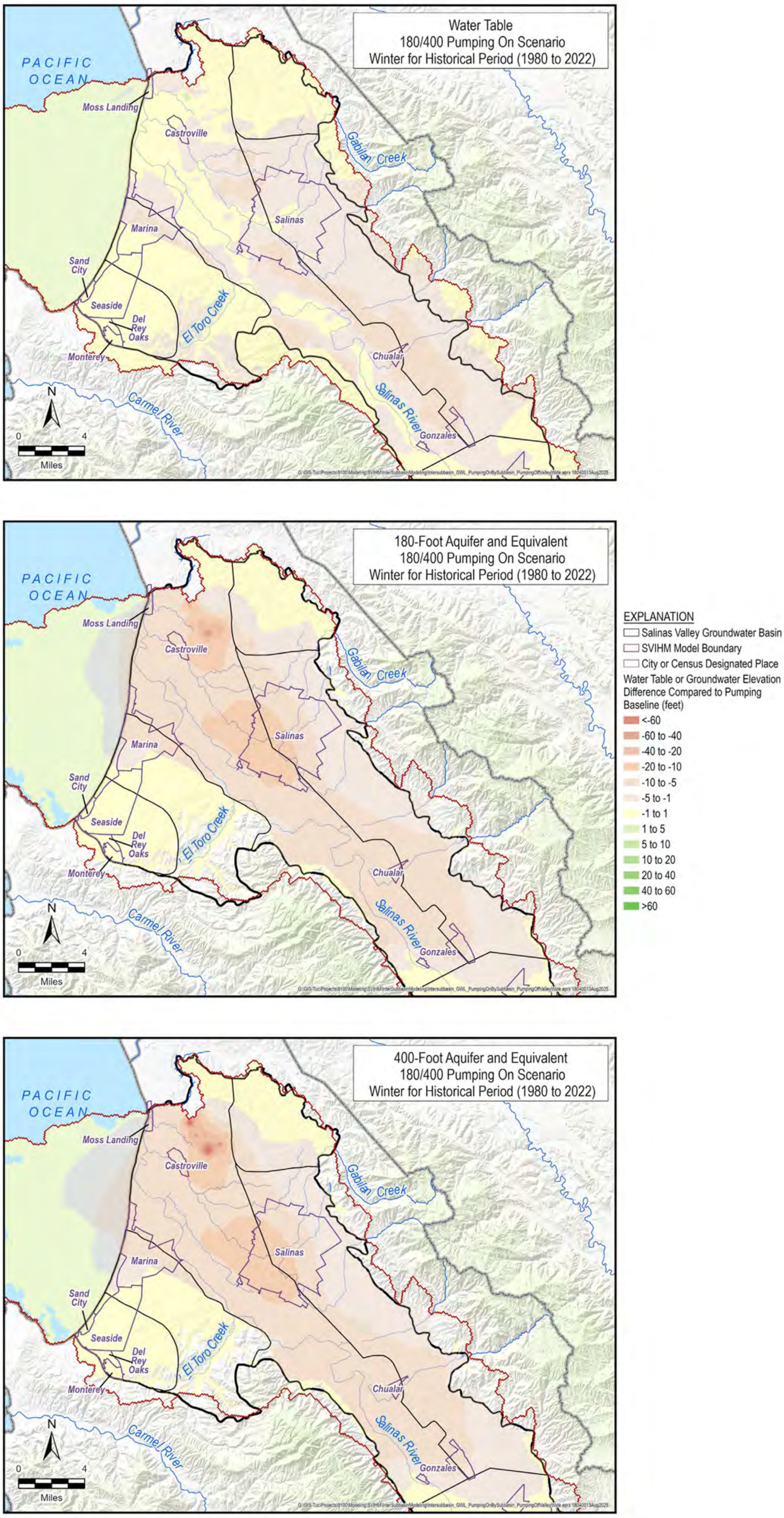

Figure 1-35. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

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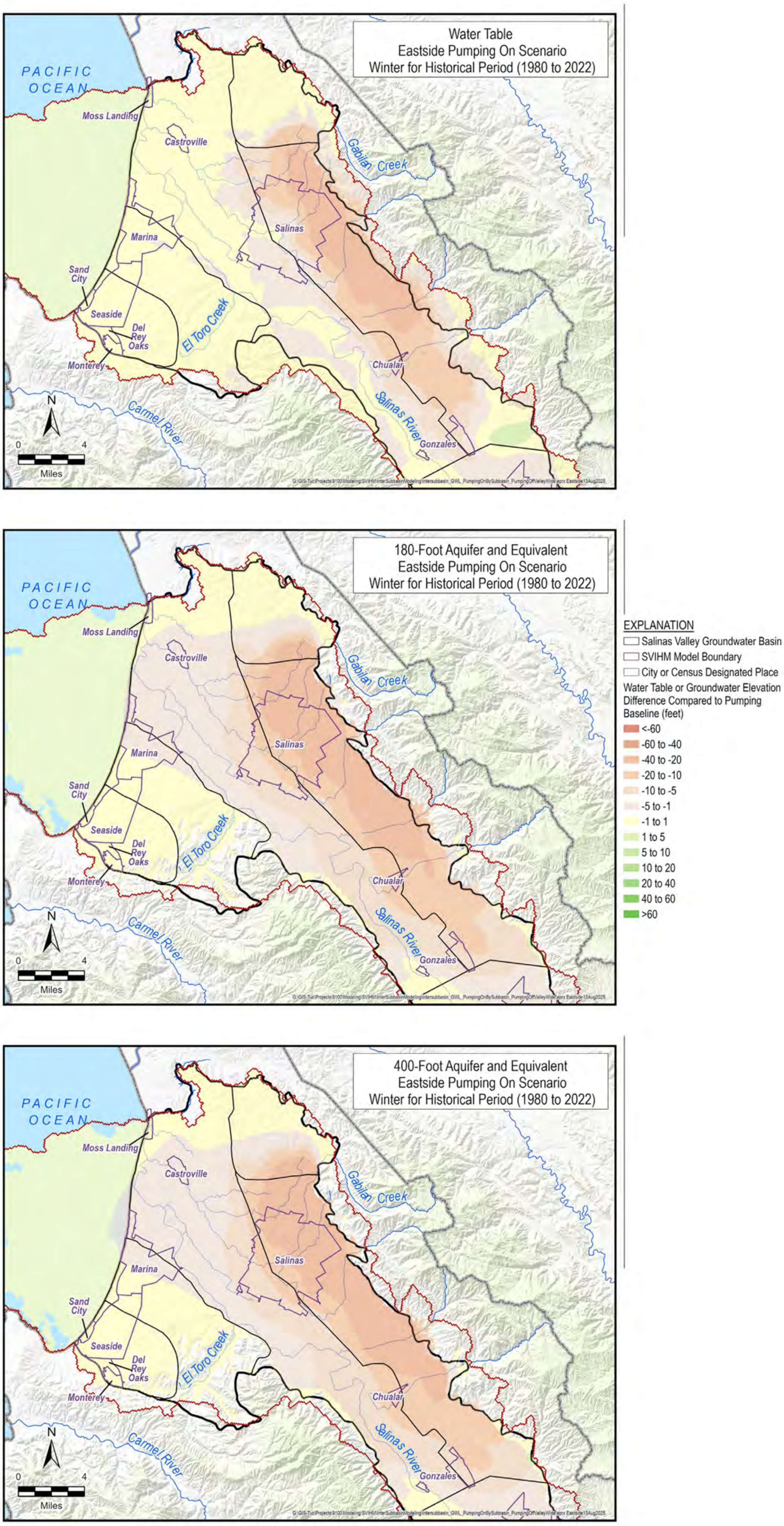

Figure 1-36. Eastside Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 1980-2022

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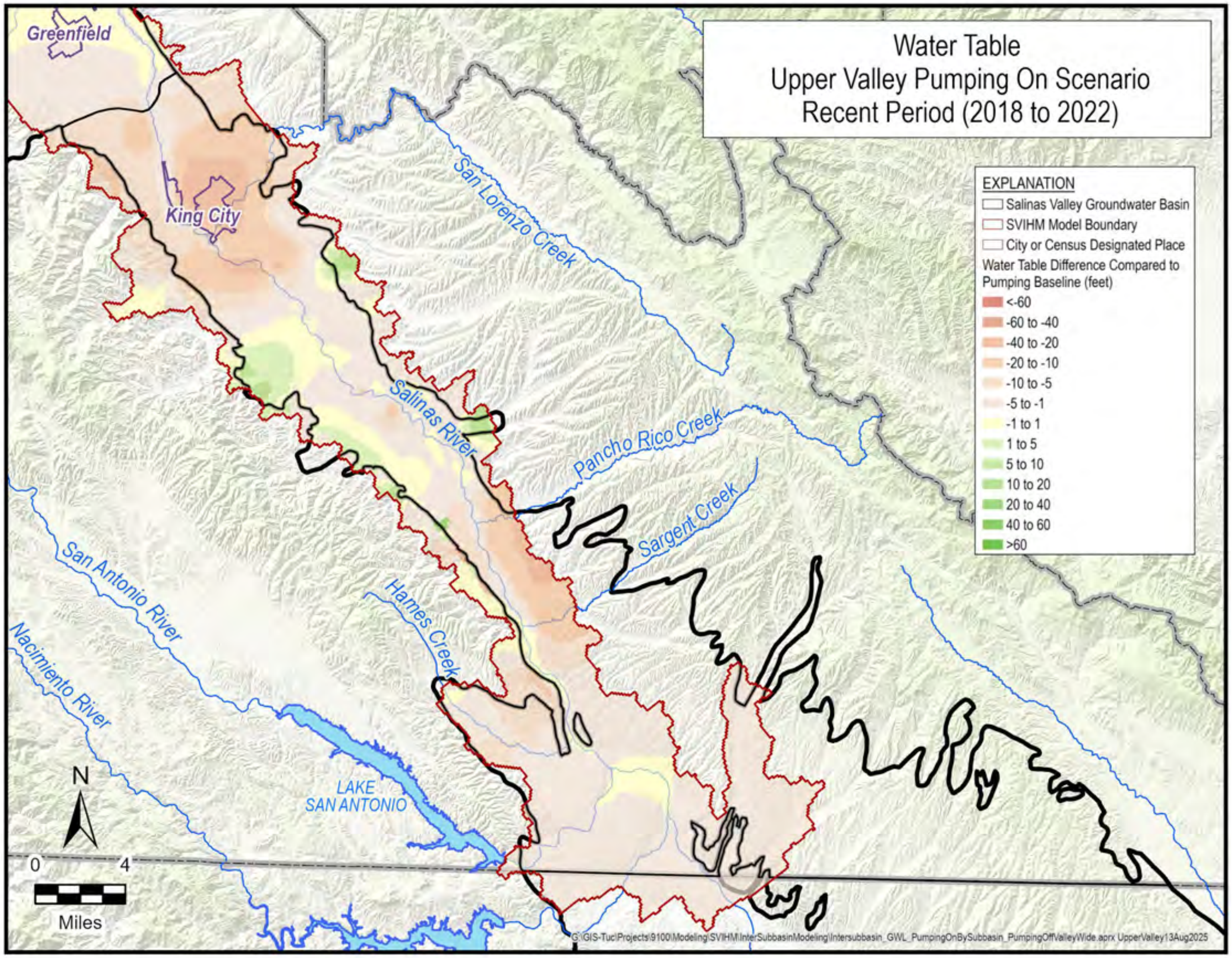

Figure 1-37. Upper Valley Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 2018-2022

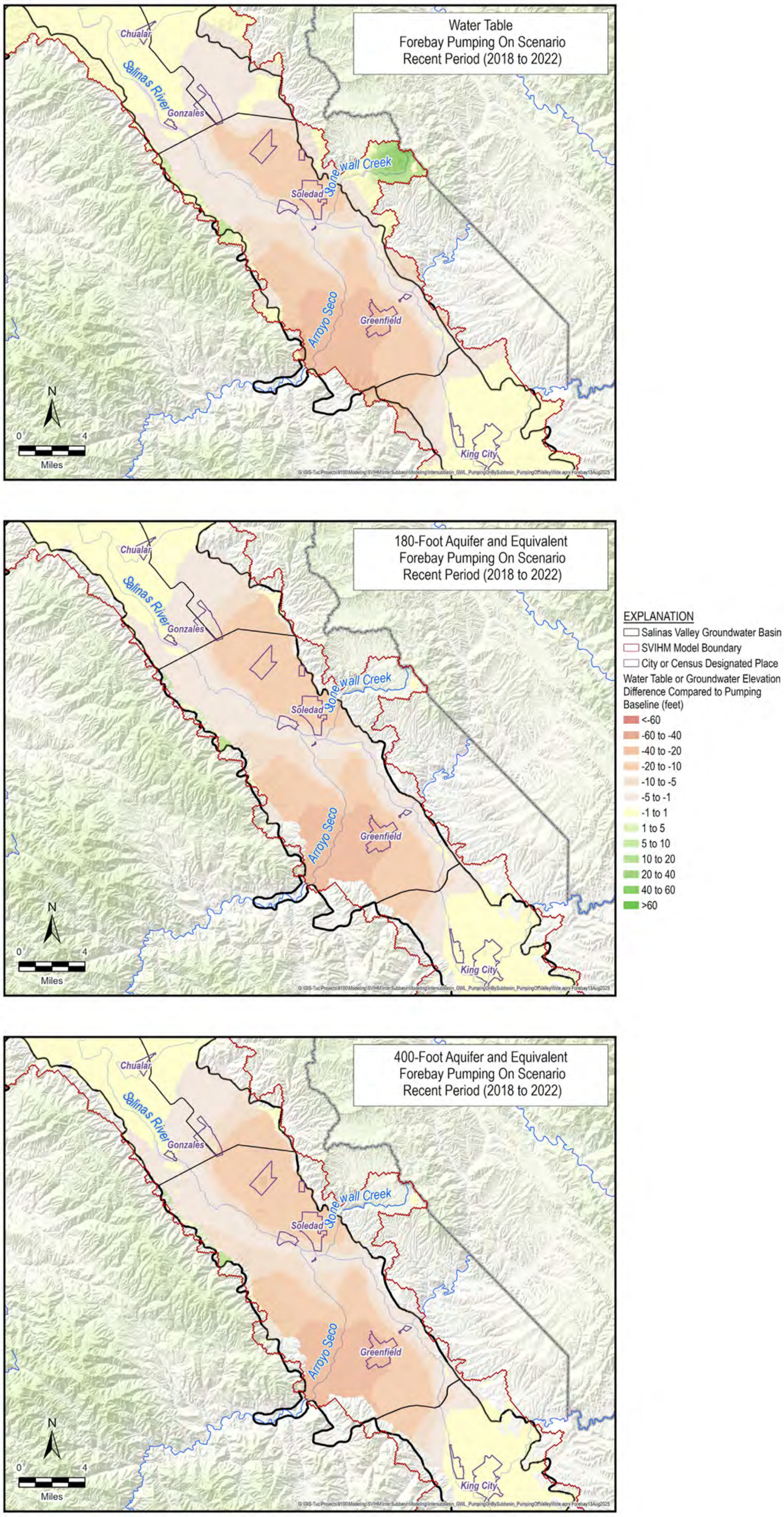

Figure 1-38. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 2018-2022

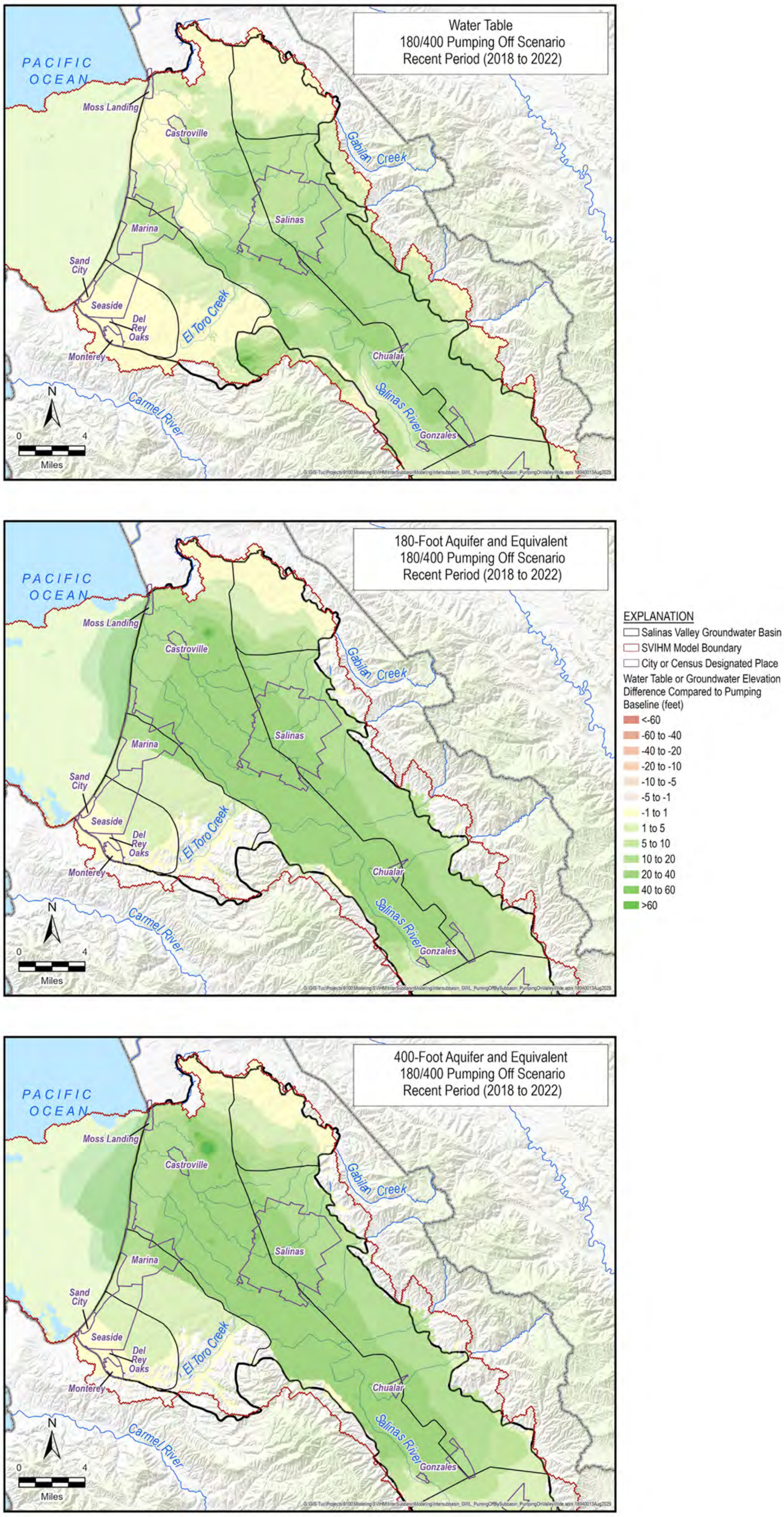

Figure 1-39. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 2018-2022

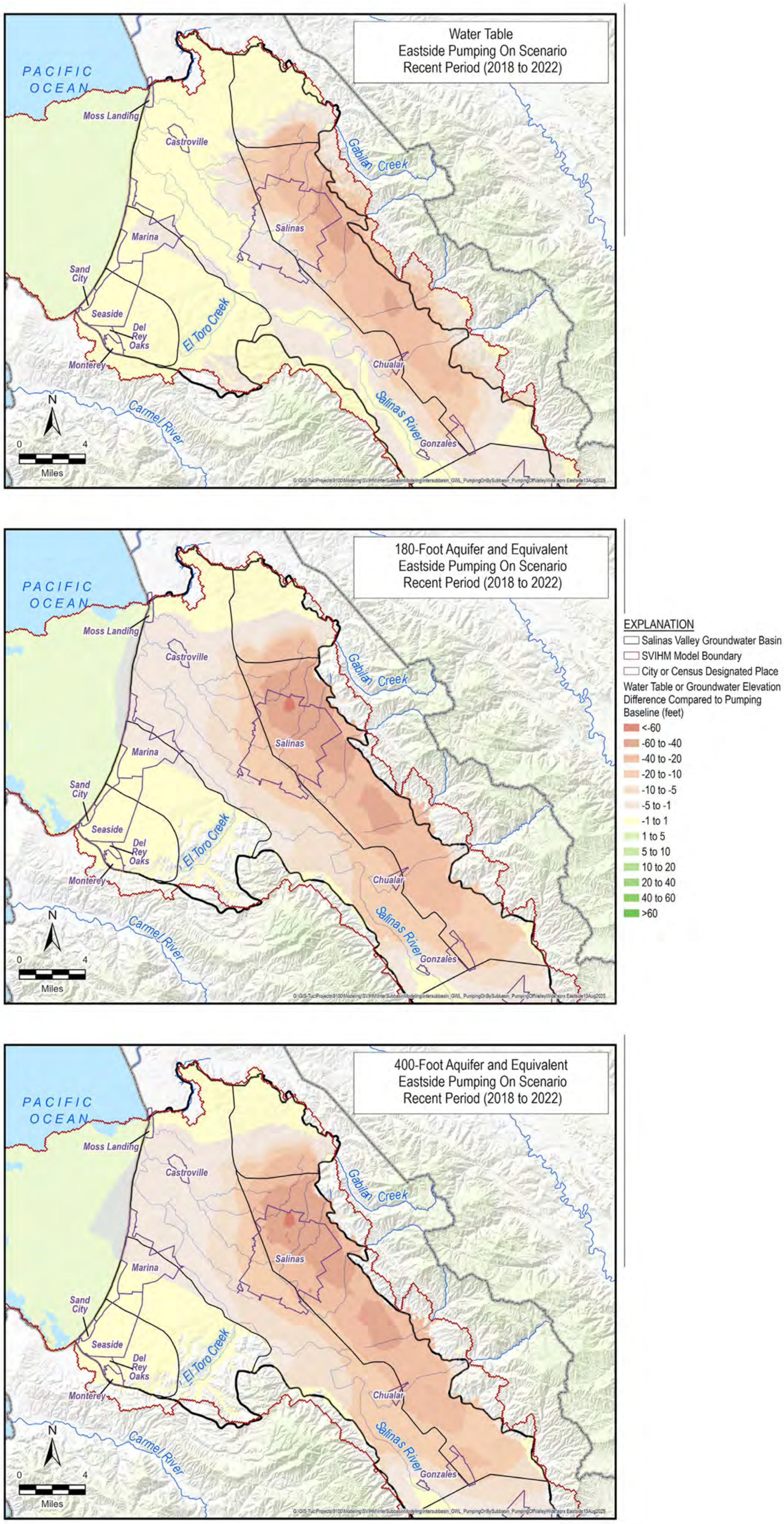

Figure 1-40. Eastside Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for 2018-2022

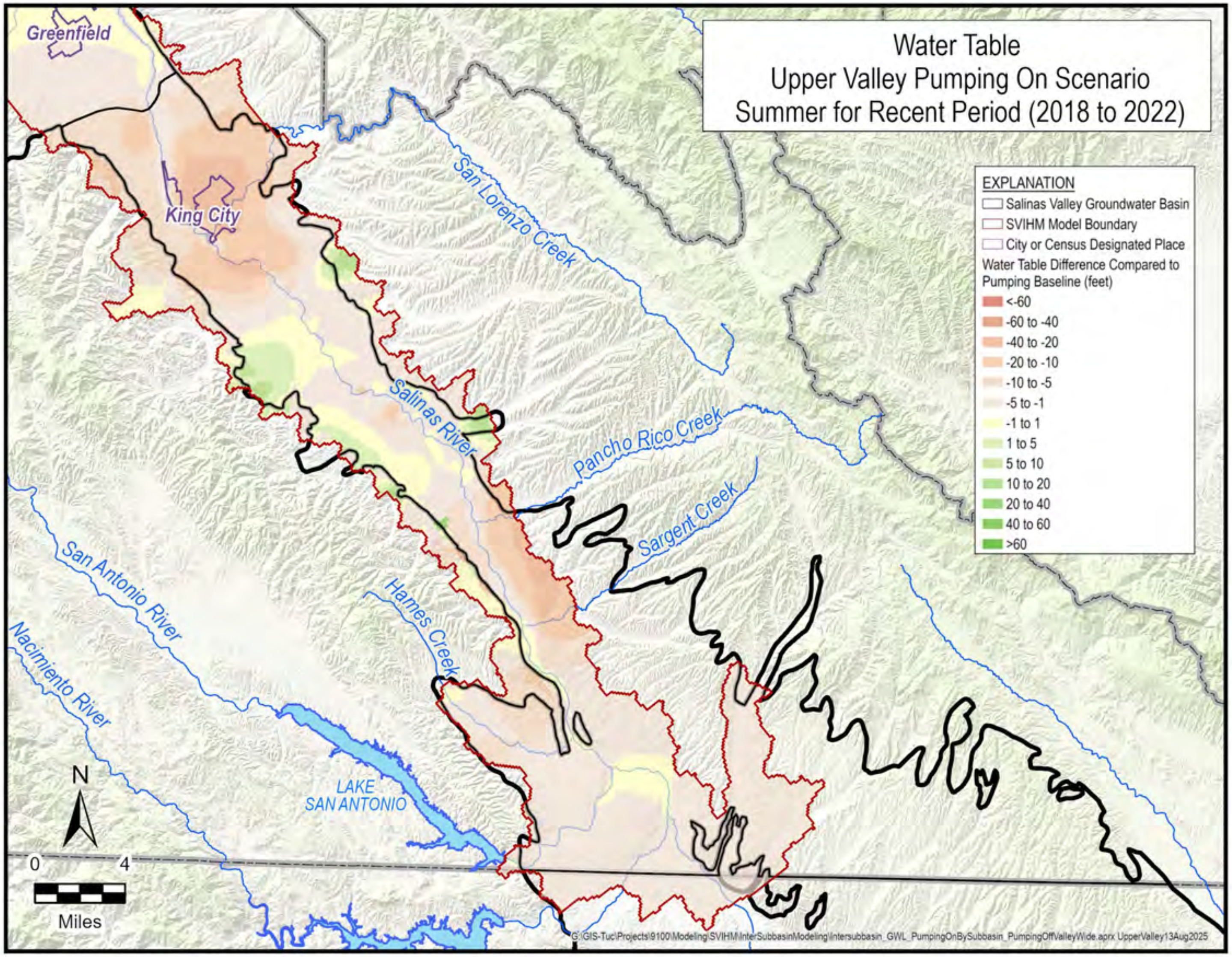

Figure 1-41. Upper Valley Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

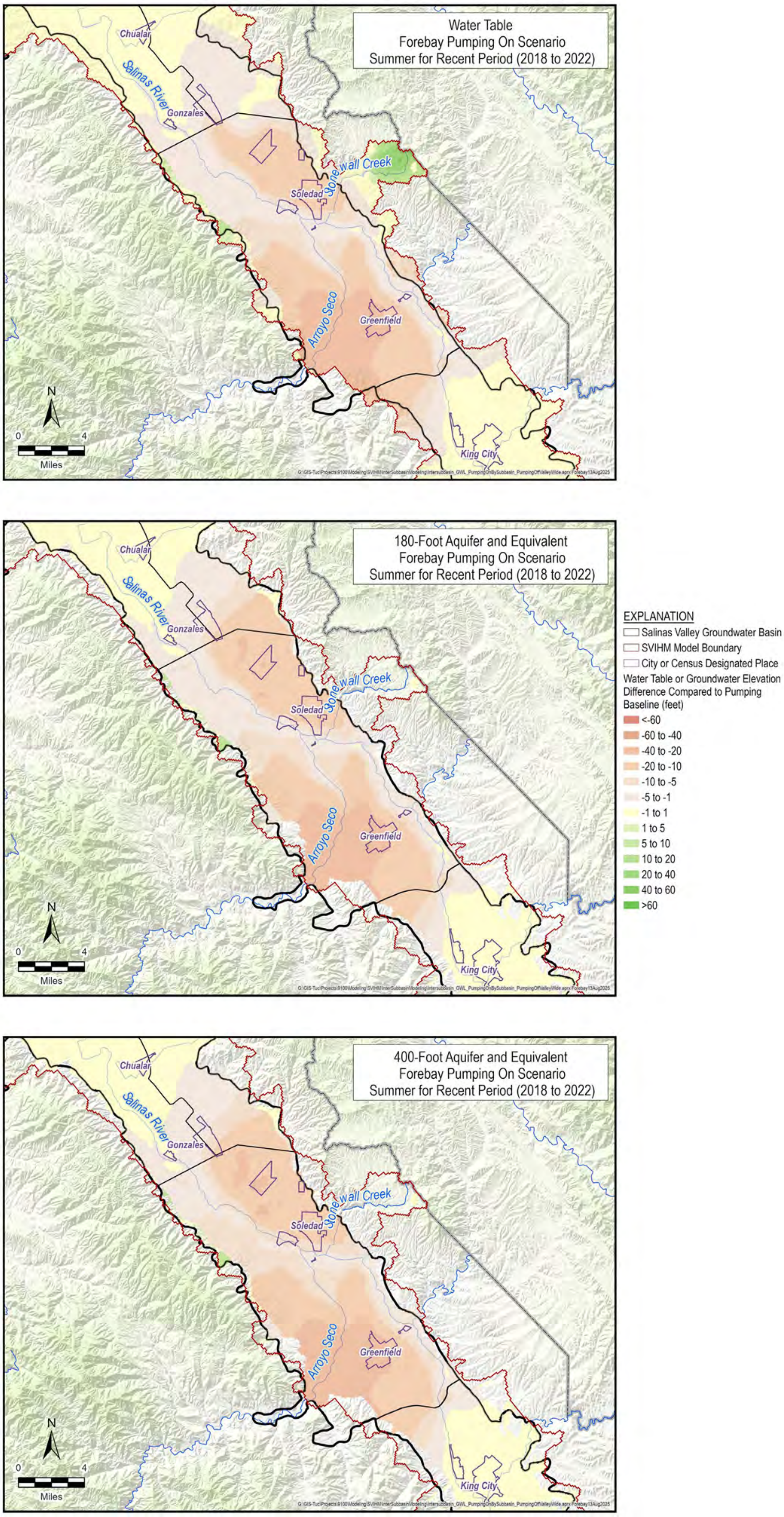

Figure 1-42. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

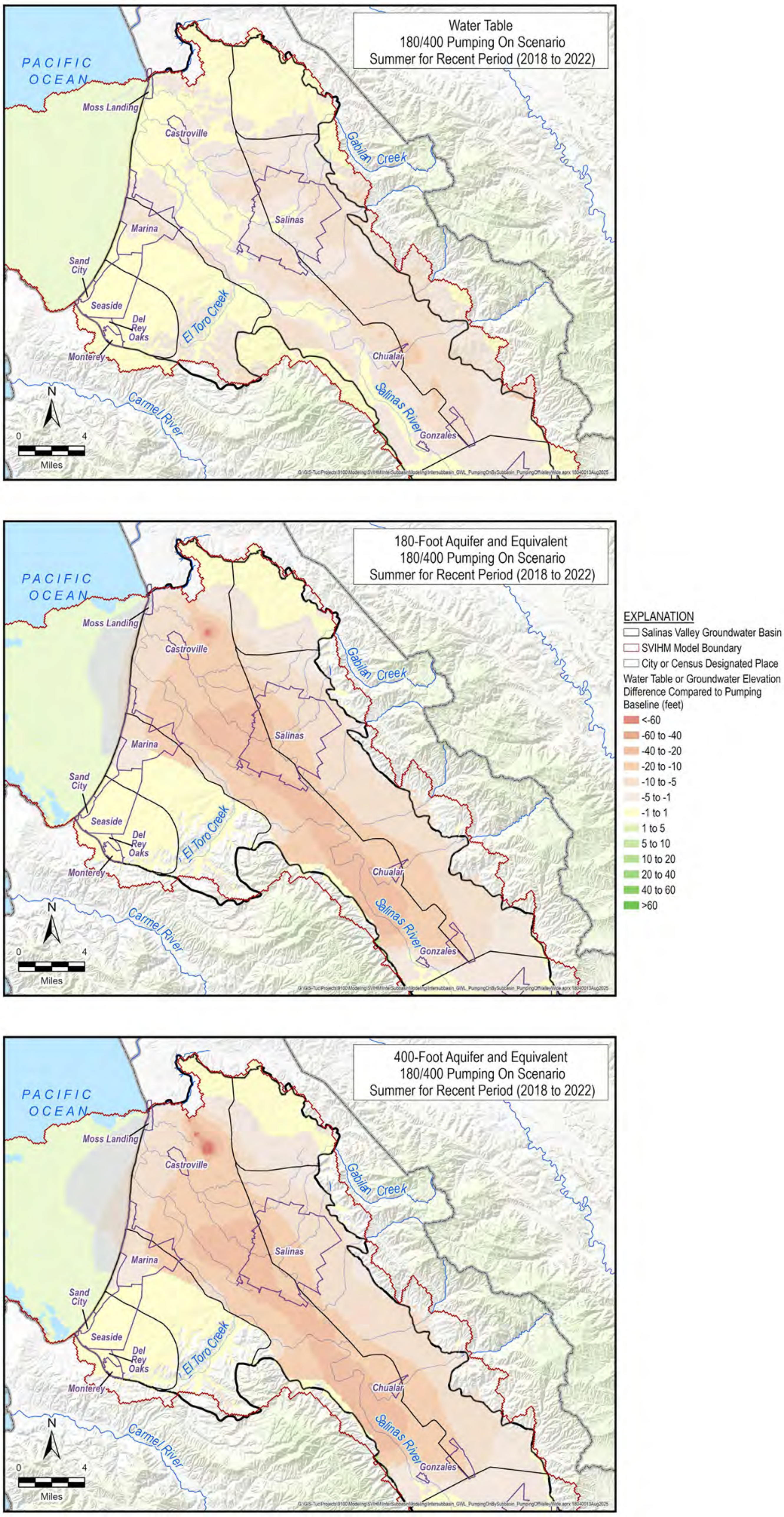

Figure 1-43. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

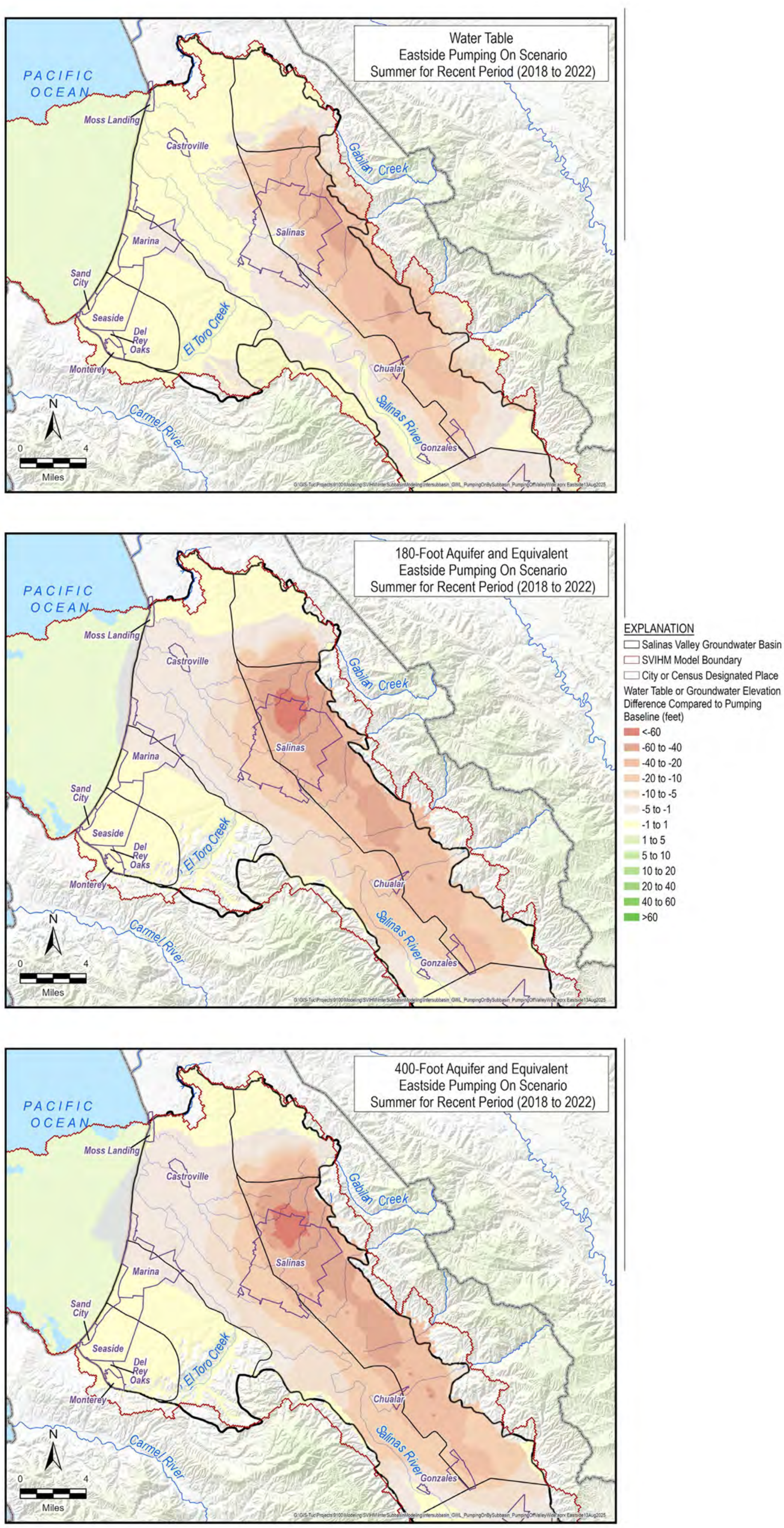

Figure 1-44. Eastside Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Summer 2018-2022

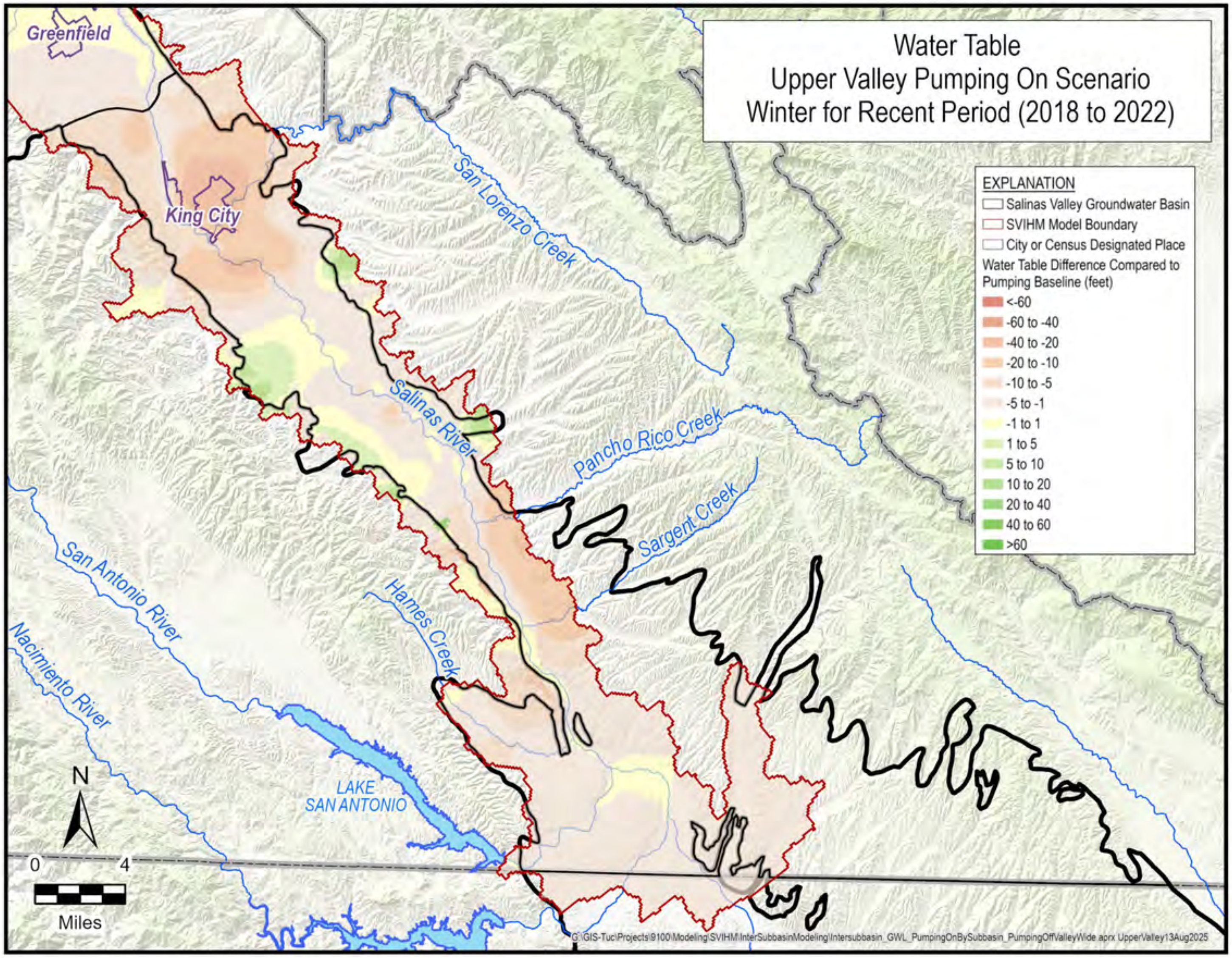

Figure 1-45. Upper Valley Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

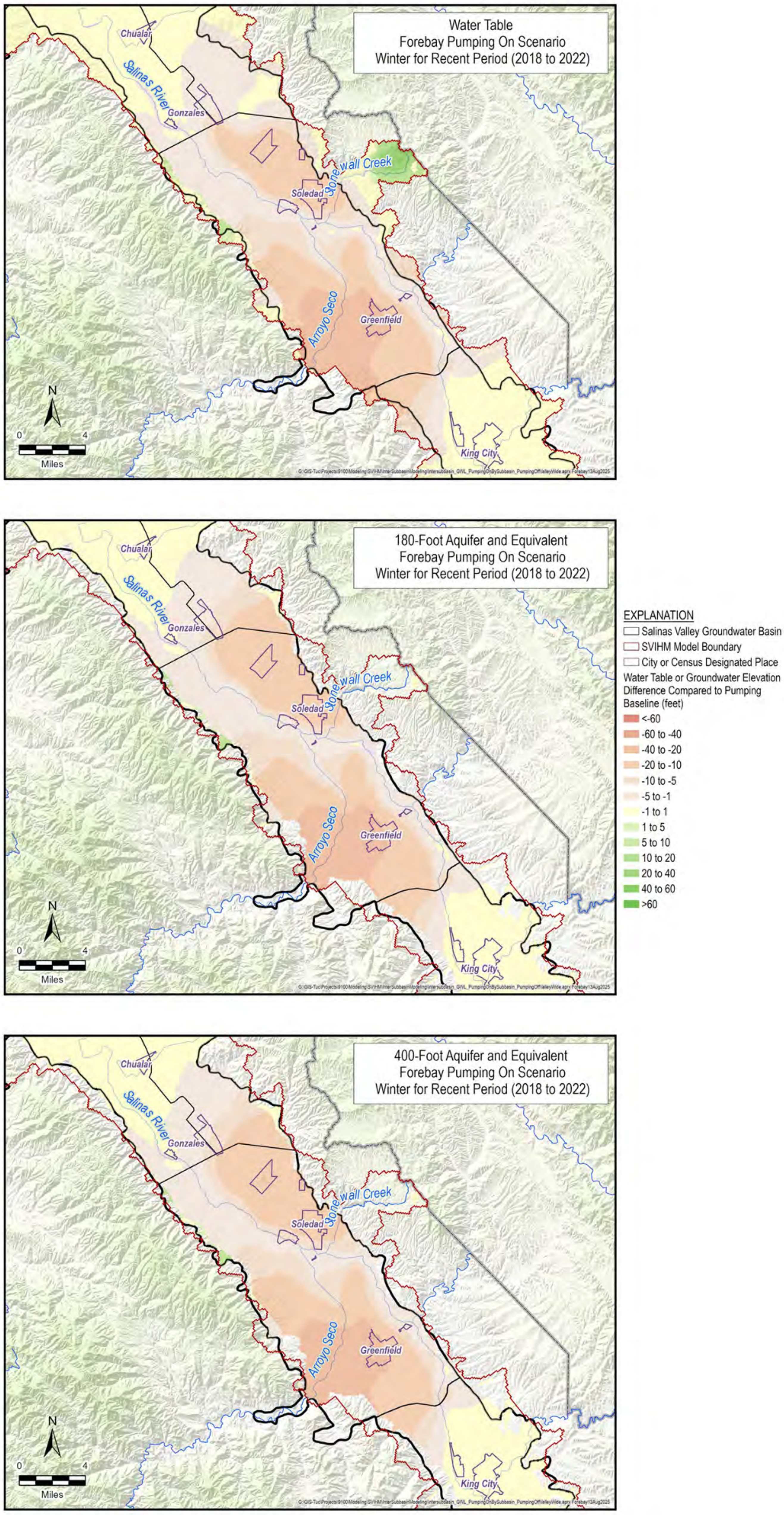

Figure 1-46. Forebay Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

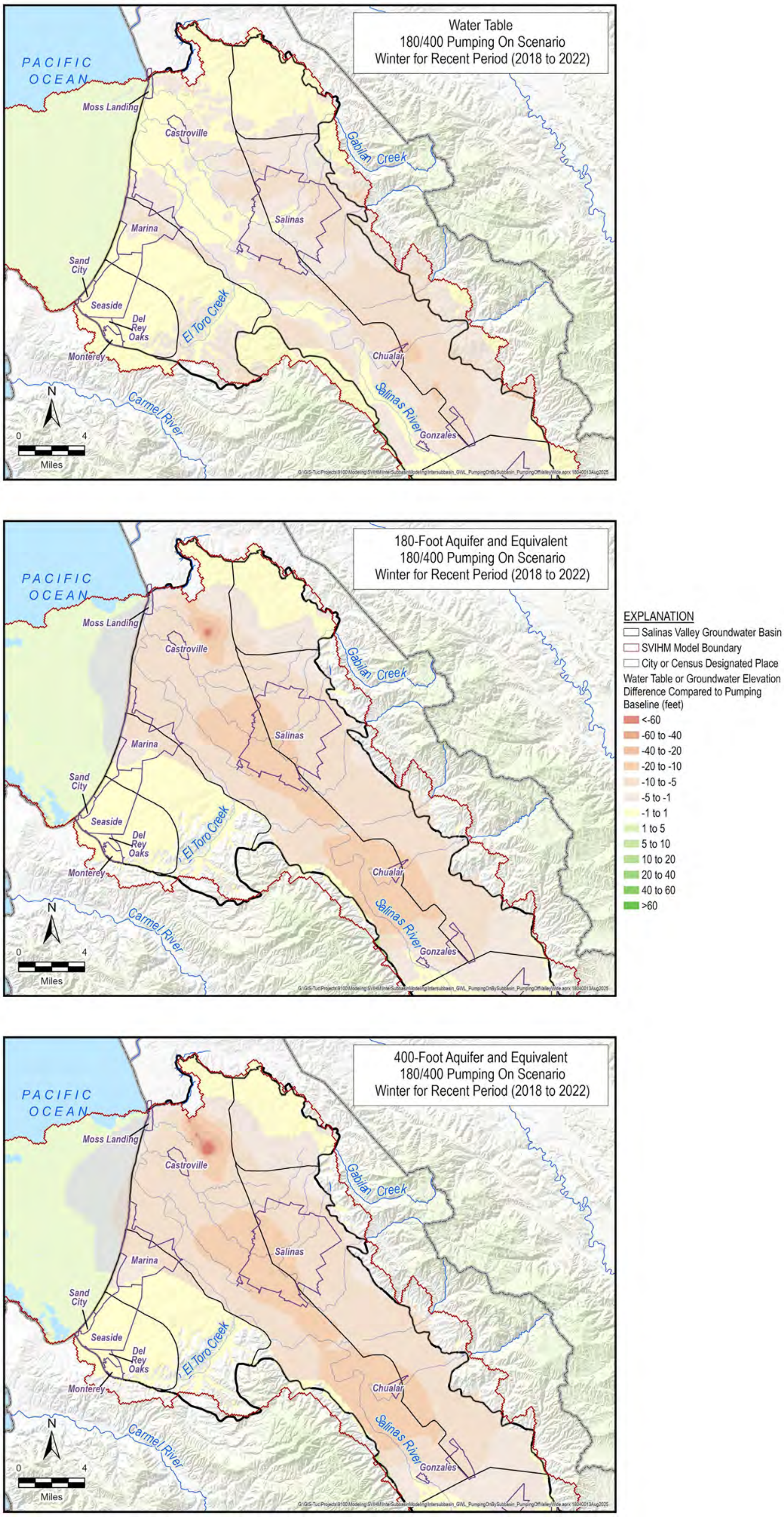

Figure 1-47. 180/400 Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022

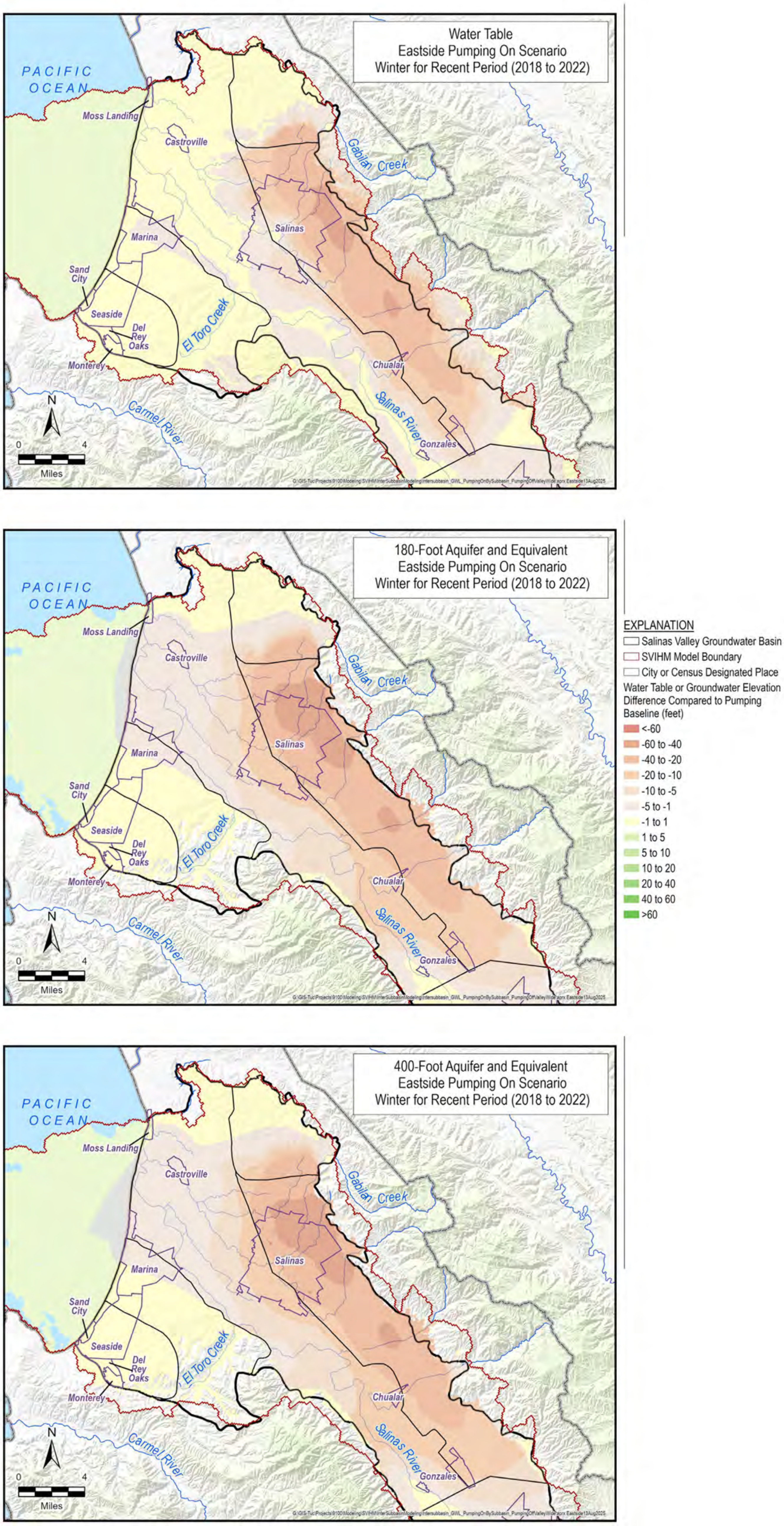

Figure 1-48. Eastside Pumping On Scenario Compared to No-pumping Baseline - Average Groundwater Level Difference for Winter 2018-2022