

**River Islands at Lathrop Project
Subsequent Environmental Impact Report
Addendum VI**

State Clearinghouse No. 1993112027

PREPARED FOR:
City of Lathrop
Community Development Department/
Planning Division
390 Towne Centre Drive
Lathrop, CA 95330
March 2018

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ACRONYMS AND ABBREVIATIONS

AEP	Annual Exceedance Probability
BMP	best management practice
City	City of Lathrop
EIS	Environmental Impact Statement
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency
I-5	Interstate 5
NEPA	National Environmental Protection Act
NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
RD 2062	Reclamation District 2062
RD 2107	Reclamation District 2107
SCSWSP	South San Joaquin Irrigation District South County Surface Water Supply Project
SEIR	Subsequent Environmental Impact Report
SJMSCP	San Joaquin Multi-Species Habitat Conservation and Open Space Plan
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
VTM	vesting tentative map
WLSP	West Lathrop Specific Plan
WRP	Water Recycling Plan

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1 INTRODUCTION

1.1 BACKGROUND AND ACTION TRIGGERING THE ADDENDUM

On January 28, 2003, the City of Lathrop (City) certified the Subsequent Environmental Impact Report (SEIR) for the River Islands at Lathrop Project and approved various entitlements, such as amendments to the Lathrop General Plan and West Lathrop Specific Plan (WLSP), cancellation of existing Williamson Act contracts on various parcels, and approval of a vesting tentative map (VTM). The entire project site covers approximately 4,905 acres on Stewart Tract and Paradise Cut (Exhibit 1-1). The proposed project includes, among other uses, an Employment Center, a Town Center, residential districts, golf courses, dock facilities, various flood management elements, construction of a lake system and other water features, and preservation, restoration, and creation of terrestrial and aquatic habitats (Exhibit 1-2). Project construction is split among two primary development phases, Phase 1 and Phase 2, following an approximately 20-year buildout schedule (Exhibit 1-3). The VTM approved at the time of SEIR certification is identified as the Tract 3221 VTM, which is the identifier given by San Joaquin County for the map. The Tract 3221 VTM generally encompasses the Phase 1 development area identified in the SEIR and subdivided approximately 1,500 acres of Stewart Tract to support development in this area.

1.1.1 Overview of Prior Addenda

There have been five previous addenda prepared for the River Islands at Lathrop SEIR:

- ▲ In 2005, the First Addendum was prepared to address a revised VTM, known as Tract 3491. This amendment to the original Tract 3221 VTM evaluated subdividing approximately 1,500 acres of the Stewart Tract to support development of Phase 1a and Phase 1 of the River Islands project.
- ▲ In 2007, a Second Addendum was prepared to address additional modifications to the VTM (now identified as Tract 3694), which evaluated subdividing approximately 1,793 acres of Stewart Tract to support development of Phase 1 of the project.
- ▲ In 2012, a Third Addendum was prepared to address: (1) the adoption of the Tract 3765 VTM, a large lot vesting subdivision map for development of Phase 2 of the River Islands project consistent with the West Lathrop Specific Plan; and (2) implementation of project modifications reflected in the Environment Impact Statement prepared by the U.S. Army Corps of Engineers (USACE) for Phase 2 of the River Islands at Lathrop Project;
- ▲ In 2014, a Fourth Addendum analyzed the placement of recycled water storage and disposal sites on Stewart Tract, immediately south of the project area analyzed in the SEIR.
- ▲ In 2015, a Fifth Addendum was prepared for another amendment to the Phase 1 Tract 3694 VTM (see second addendum), which analyzed minor modification to the boundaries of some zoning districts, adjustments to the alignments of some roadways, a change in the mix of single-family and multi-family housing units, increasing the number of multi-family units by approximately 140, but not altering the total unit count of 4,284 residential units in Tract 3694, replacing canals between internal lakes with paseos, open space, and parkland; changed the internal lake configuration from a “Central Lake” to smaller decentralized lakes connected hydraulically by underground pipe (“lake system”); placed a possible Lathrop Landing Marina on the water side of the San Joaquin River project levee, rather than in a back bay; made minor changes to park land and open space locations with a small net increase in the acreage of land within the parks and open space land use category; and refined the implementation of Mitigation Measure 4.4-m related to peak hour vehicle trips on the Manthey Road/Interstate 5 (I-5) interchange and timing for completion of the River Islands Parkway bridge.

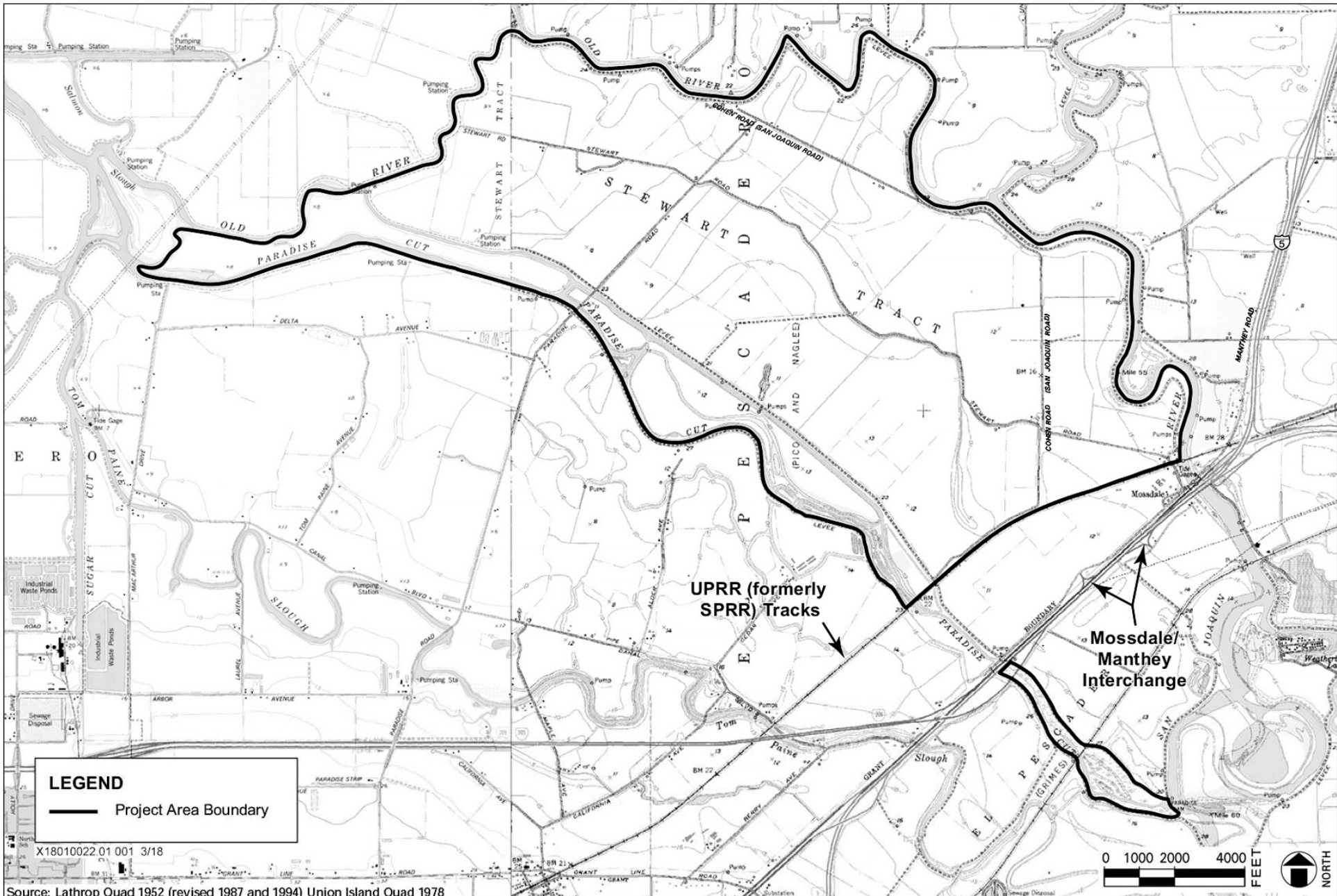
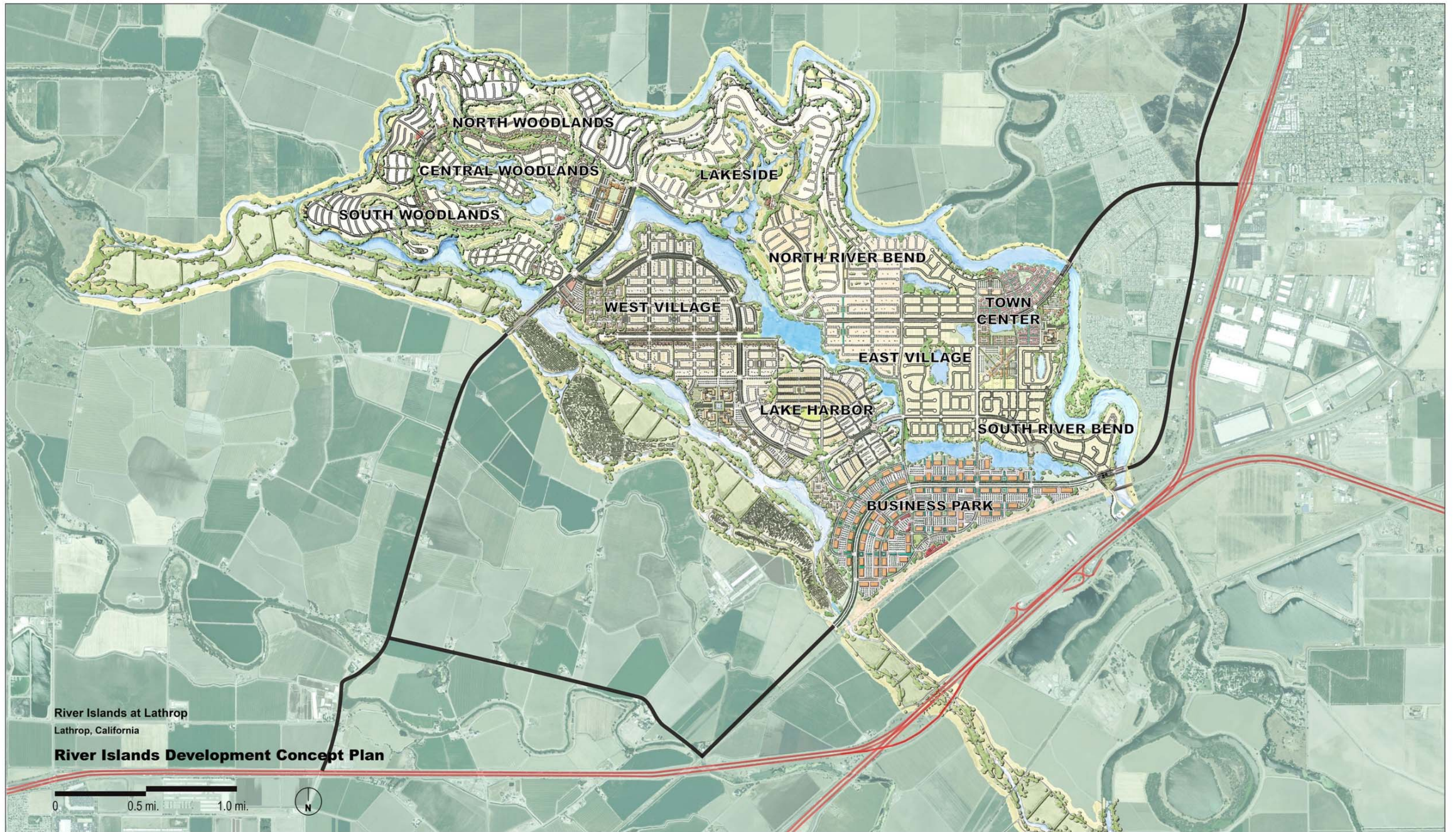


Exhibit 1-1

Project Vicinity





River Islands at Lathrop
Lathrop, California

River Islands Development Concept Plan



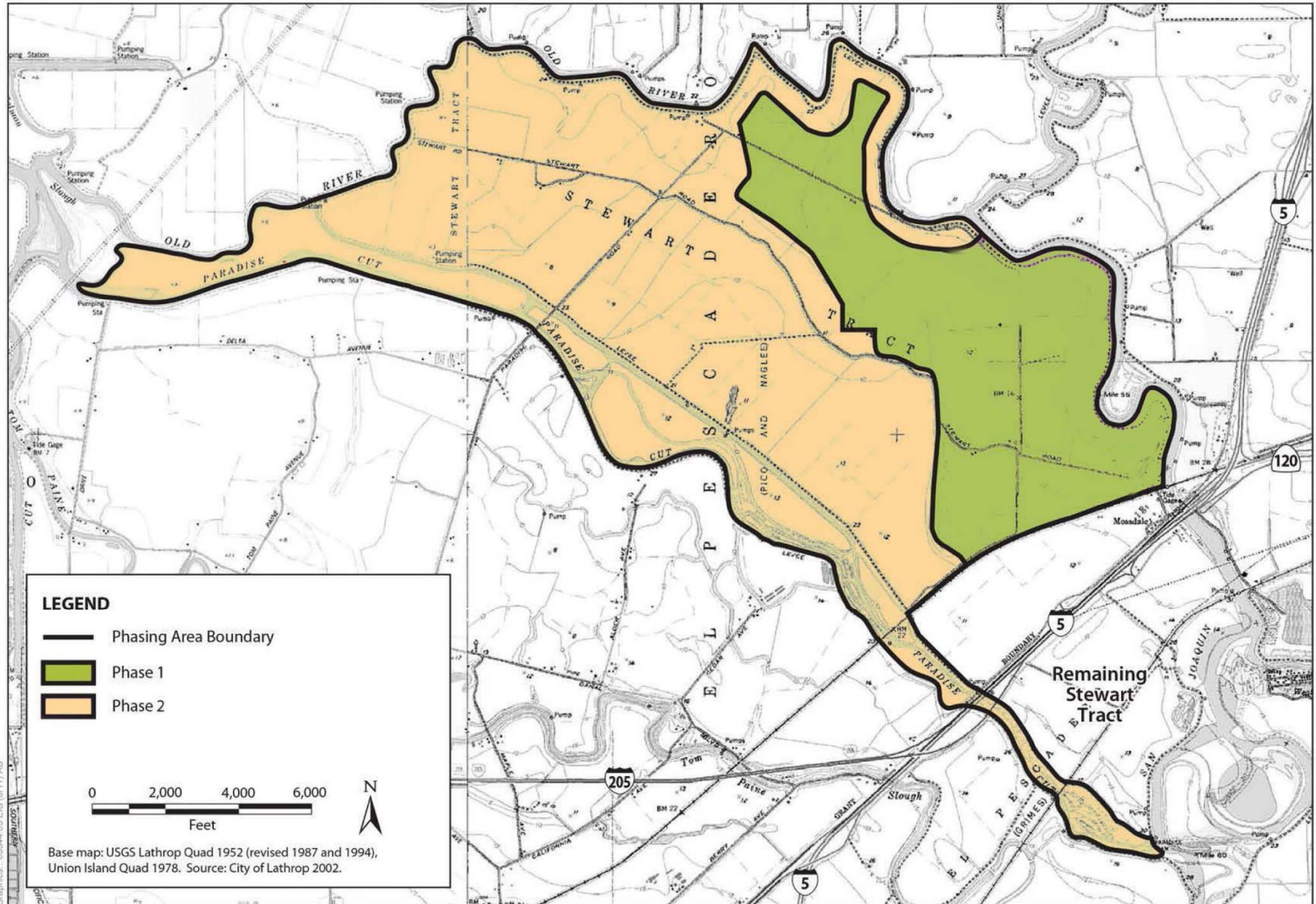


Exhibit 1-3

Development Phasing

This sixth addendum to the SEIR for the River Islands project (“Sixth Addendum”) will analyze minor changes to the Tract 3765 map first approved in 2012 and addressed in the third addendum and other minor project modifications described further in Chapter 2, Description of the Proposed Action.

Note that Section 15182 of the CEQA Guidelines outlines a process where an EIR is not needed for residential projects undertaken pursuant to, and in conformity with, a specific plan if the project meets various requirements described in Section 15182. The amended West Lathrop Specific Plan was approved in 2003 and the Specific Plan contemplates the same residential mixed-use development that would be implemented within the various VTMs associated with the River Islands project. However, because the River Islands project also includes non-residential uses and there are some minor changes or additions to the SEIR certified for the amended West Lathrop Specific Plan, the City of Lathrop has decided to not rely solely on the Specific Plan exemption. Accordingly, the City has prepared addenda to the prior River Islands SEIR rather than using the Section 15182 exemption, and within each addendum has included an analysis to confirm that there would be no new significant or substantially more severe environmental impacts. The City anticipates continuing this approach where modifications to the River Islands project consistent with the use of addenda for CEQA compliance are proposed.

1.1.2 Phase 2 Overview and Proposed Changes to Tract 3765 VTM

In May 2010, Califa, LLC submitted a large lot VTM for the second phase of development on the Stewart Tract. Identified as the Tract 3765 VTM, it would subdivide 25 existing parcels in the Phase 2 area into 55 large lots and would encompass 2,470 total acres. The proposal was considered a “large lot subdivision,” since it would create “blocks” of land that could be incrementally developed by the applicant or subsequent home builder/developers that could purchase these blocks of land. The Tract 3765 VTM would also set the alignment of major roadways in the Phase 2 area (River Islands Parkway, Golden Valley Parkway and Paradise Road) and clarify the phasing of flood protection improvements for the overall River Islands project. As previously described, a Third Addendum was prepared under CEQA in 2012. The Third Addendum addressed: (1) the original adoption of the Tract 3765 VTM, a large lot vesting subdivision map for development of Phase 2 of the River Islands project consistent with the West Lathrop Specific Plan; and (2) implementation of project modifications reflected in the Environmental Impact Statement (EIS) prepared by USACE for Phase 2 of the River Islands at Lathrop Project, defined as the “NEPA Modifications.”

This Sixth Addendum will analyze minor changes in the existing Tract 3765 VTM (“Updated Tract 3765 VTM”) with regards to the development envelope between Phase 2 and Phase 1 (Tract 3694 VTM), along with a minor change in the National Environmental Protection Act (NEPA) Modifications, which include a change in the location and length of the extended Cross Levee, along with a change in configuration of the proposed Paradise Cut Setback Levee. The Updated Tract 3765 VTM submitted to the City for review would only revise the following items when compared to the approved Tract 3765 VTM:

- **Modification of the Development Envelope:** City administrative actions regarding the Phase 1 Tract 3694 VTM have caused changes in the boundary and development envelope of Phase 2 relative to Phase 1. This includes the finding of substantial conformance made by the City for the Stage 2A sub-development area of Phase 1, which “shifted” the boundary of Phase 1 and Phase 2 in a southerly direction from what was approved with the Original Tract 3765 VTM. The result is a decrease of approximately 145 acres within the Phase 2 area. Additionally, the proposed Cross Levee setback more particularly described in this section, would decrease the Phase 2 area by approximately 20 acres in the Employment Center District, but would not affect the overall anticipated amount of office and commercial development of the project overall. Similarly, while the development envelope for both Phase 1 and Phase 2 will change with the Updated Tract 3765 proposal, the total number of dwelling units for the project would not change (11,000) and the total number of units within each phase staying the same (4,284 for Phase 1 and 6,716 for Phase 2). The boundaries between the two phases will also not affect construction sequencing of improvements, only the geographic location of the improvements. It is important to note also, that the Employment Center District will also contain the same amount development as first envisioned

(approximately 4 million square feet of office/commercial space), despite a decrease in overall acreage (approximately 50 acres).

- Modification of the Cross Levee Extension (Setback): The Original Tract 3765 assumed that a 500-foot-long trestle along the Union Pacific Railroad (UPRR) right of way would be constructed that would have allowed historic flood flows from the Southeast Stewart Tract area in Reclamation District 2107 (RD 2107) through and into the River Islands project site within the Islands Reclamation District 2062 (RD 2062) flood protection area. Since the timing of this improvement is not controlled by the reclamation districts, the City or the applicant, it must be assumed that the existing 48-inch box culverts in the UPRR embankment would remain in place and the applicant and RD 2062 would need to accommodate flood flows from the RD 2107 area without benefit of a trestle. The result is a modification of the applicant's proposed extension of the Cross Levee first built with Stage 1 of the River Islands project in 2005 to accommodate the eventual flood flows from RD 2017. The Cross Levee would be setback as much as 3,600 feet from the UPRR railroad embankment and reinforced with revetment on the waterside slope to mitigate for initial flood flow velocities that would could potentially impact the waterside slope in the form of erosion and scour. This modified Cross Levee would divert flows into a widened Paradise Cut channel and eventually back into the Old River system in a similar fashion proposed in the 2012 Original Tract 3765 VTM. The existing 48" box culverts in the UPRR embankment are assumed to fail in a 100 year or above flood scenario, with the flood flows overtopping and possibly breaking the existing UPRR embankment, similar to what occurred in the flood event of 1997, which was a less than 100-year flood event.

It is important to note also, that there is an increased capacity in Paradise Cut from land leveling that has occurred within Paradise Cut from previous farming operations, which helps accommodate 100-year and above flood flows. Exhibit 2-1 (see Chapter 2, Description of the Proposed Action) shows the proposed Cross Levee extension as a heavy dashed line in the southwest corner of the project site connecting the Cross Levee paralleling the UPRR tracks to the remainder of the setback levee system for Phase 2. A hydraulic analysis by MBK Engineers, the District Engineers for RD 2062, included in Appendix A to this addendum, indicates that there is no significant difference in flood flows accommodated with the Updated NEPA Modifications (new Cross Levee location, lowered and widened Paradise Cut Channel). It is important to note in particular, that in a 200-year flooding event, most of the surrounding area near the Project site is completely inundated due to failures and overtopping of upstream levees. Any additional flood waters in the Paradise Cut channel has no additional adverse effect on the downstream levee systems as a result.

- Revisions to Paradise Cut Set-Back Levee: the applicant is proposing an alternative to the "undulated" location of the proposed Paradise Cut Set-Back Levee, which would be "straightened out" from the original configuration and average setback of 100 feet from the existing Federal project levee. Coupled with the lower elevation of Paradise Cut than existed at the time of the original 2012 Tract 3765 VTM, the amount of flood waters accommodated with this alternative are virtually the same as with the original undulated levee/trestle combination analyzed in the Third Addendum. However, since there is a possibility of higher initial flood velocities with the Updated NEPA Modifications, MBK Engineers recommends revetment along the Cross Levee waterside slope as previously mentioned and the staging of fill material to be used as check dams in the Paradise Cut channel to slow flood waters between the Paradise Cut setback levee and the existing Federal project levee. This action would be included the RD 2062 Emergency Operations Plan (EOP), along with planned controlled levee breaches at Paradise Cut and Old River that are already included in the EOP.

1.1.3 NEPA Process Overview

In June 2005, USACE published a Notice of Intent to prepare an EIS evaluating Phase 2 of the River Islands Project pursuant to the NEPA. The NEPA evaluation was initiated in response to Califia LLC's application for an individual permit under Section 404 of the Clean Water Act. Proposed alterations to existing Federal

project levees as part of the project's flood protection improvement modifications would also require USACE authorization under 33 USC 408. The EIS only addresses Phase 2 of the River Islands at Lathrop project because Phase 1 can be completed without any USACE authorizations (or other federal authorizations triggering NEPA).

Although a final EIS has not yet been circulated and a record of decision not yet rendered, the 2012 Tract 3765 VTM proposals analyzed the minor differences between the project description included in the SEIR and the project description included in the EIS. These differences in the proposed project between the EIS and the SEIR, were referred to as "NEPA modifications" or "project modifications," and were evaluated in the third addendum. With this Sixth Addendum, the changes to the flood protection program noted above would be dubbed the "Updated NEPA Modifications", since they are part of the No Action Alternative under the EIS. These Updated NEPA Modifications are described in greater detail in Chapter 2, Description of the Proposed Action.

1.2 CEQA GUIDELINES REGARDING THE ADDENDUM TO THE SEIR

If, after certification of an EIR, altered conditions, changes, or additions to a project occur, CEQA provides four mechanisms to address these changes: an SEIR, a supplement to an EIR, an addendum to an EIR, and a subsequent mitigated negative declaration.

Section 15162 of the State CEQA Guidelines describes the conditions under which an SEIR would be prepared. In summary, when an EIR has been certified for a project, no SEIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in light of the whole record, one or more of the following:

- (1) substantial changes are proposed in the project that will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified effects;
- (2) substantial changes have occurred with respect to the circumstances under which the project is undertaken that will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (3) new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete, shows any of the following:
 - (A) The project will have one or more significant effects not discussed in the previous EIR.
 - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR.
 - (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measures or alternatives.
 - (D) Mitigation measures or alternatives that are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Section 15163 of the State CEQA Guidelines states that a lead agency may choose to prepare a supplement to an EIR rather than an SEIR if:

- (1) any of the conditions described above for Section 15162 would require the preparation of an SEIR, and

(2) only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.

Section 15164 of the State CEQA Guidelines states that a lead agency may prepare an addendum to a previously certified EIR if some changes or additions are necessary, but none of the conditions described above for Section 15162 calling for preparation of an SEIR have occurred.

The Updated Tract 3765 VTM is consistent with the WLSP zoning and land use designations and would not deviate from any previously approved entitlements for the River Islands project (e.g., the certified SEIR and previous Addenda). The ultimate number of dwelling units, commercial and office space, public schools and other improvements would remain the same as previously proposed for the entirety of the Project. The differences between the River Islands project, as described in the 2003 SEIR and the previous addenda to the SEIR, as compared to the development proposal in the Updated Tract 3765 VTM application and the revised NEPA modifications, constitute changes consistent with Section 15164 that may be addressed in an addendum to an EIR. As described in Chapter 2 of this document, "Description of the Proposed Action," and Chapter 3, "Affected Environment, Environmental Consequences, and Mitigation Measures," none of the conditions described above for Section 15162 calling for preparation of an SEIR have occurred. The Tract 3765 VTM development proposal and the NEPA modifications do not deviate appreciably from conditions included in required project entitlements. In addition, the 2003 SEIR and resulting Mitigation Monitoring and Reporting Program are still valid for assessing and mitigating identified impacts as a result of the project.

Changes to the project associated with the Updated Tract 3765 VTM proposal and Updated NEPA Modifications, as well as any altered conditions since certification of the SEIR in January 2003, and all subsequent addendums from 2005 to 2012 and will:

- ▲ not result in any new significant environmental effects, and
- ▲ not substantially increase the severity of previously identified effects.

In addition, no new information of substantial importance has arisen that shows:

- ▲ the project will have new significant effects,
- ▲ the project will have substantially more severe effects,
- ▲ that mitigation measures or alternatives previously found to be infeasible would in fact be feasible, or
- ▲ that mitigation measures or alternatives that are considerably different from those analyzed in the SEIR would substantially reduce one or more significant effects on the environment.

Because minor clarifications to the SEIR for the River Islands project are necessary to address the Updated Tract 3765 VTM development proposal and the Updated NEPA modifications, none of the conditions described in Section 15162 of the State CEQA Guidelines calling for preparation of an SEIR or subsequent mitigated negative declaration have occurred, and an addendum to the SEIR for the River Islands project, consistent with Section 15164 of the State CEQA Guidelines, is the appropriate mechanism to address the Updated Tract 3765 VTM development proposal and the Updated NEPA Modifications.

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2 DESCRIPTION OF THE PROPOSED ACTION

2.1 INTRODUCTION

The proposed modifications to the River Islands project evaluated in this Sixth Addendum are:

- ▲ Adoption of Updated Tract 3765 VTM: minor modification to the boundaries of Tract 3765 to be consistent with past modifications to the adjacent 3694 VTM; retaining the existing 48-inch box culverts in the UPRR embankment rather than installing the previously considered trestle at this location to be installed in the UPRR embankment to replace the existing box culverts
- ▲ Updated NEPA Modifications: replace the previously approved “undulated” location of the proposed Paradise Cut Set-Back Levee, with a “straightened out” levee 100 feet from the toe of the existing levee; and removal of soil from Paradise Cut.

For the remainder of this analysis, unless otherwise noted, the term Phase 1 is intended to refer to both Phase 1a and Phase 1b (also known as Stages 1 and 2, respectively, of Phase 1) as described in the SEIR and previous addenda.

For purposes of this Sixth Addendum, the proposed Phase 2 actions associated with the Tract 3765 VTM are referred to as the “Updated Tract 3765 VTM development proposal,” or the “Updated Tract 3765 VTM”. Phase 2 actions and modifications that are included in the current NEPA review process are referred to as “Updated NEPA Modifications” or “revised project modifications”. The combination of the Updated Tract 3765 VTM proposal and the Updated NEPA Modifications are often collectively referred to as the “proposed project” or “Project.” When referring to any project elements or phases as described in the SEIR, the previous addenda to the SEIR for Tracts 3491 and 3694, or current project approvals, the terms “SEIR,” “previous addendum to the SEIR,” “previous addendum,” or “current project approvals” are included in the relevant text.

Consistent with the purpose of this addendum, as described in Section 1.2, “CEQA Guidelines Regarding the Addendum to the SEIR,” the project description provided below is intended, in large part, to highlight clarifications, actions, and modifications associated with the Updated Tract 3765 VTM proposal and Updated NEPA Modifications when compared to the current project approvals associated with the implementation of Phase 2 of the River Islands project. Overall project development at full buildout is not altered by the proposed project modifications or the Tract 3765 VTM proposal. Typically, where current project approvals are the same as the Updated Tract 3765 VTM proposal and Updated NEPA Modifications, the similarities are not emphasized in this project description.

2.2 LOCATION AND SETTING

Conditions related to the location and setting for the proposed project have not changed from what is described in the previous addenda or the certified SEIR. However, it should be noted that Section 3.1, “Location and Setting,” in the SEIR describes the location of the River Islands Project site in its entirety, whereas the Updated Tract 3765 VTM development proposal and revised NEPA modifications only encompass a portion of the project site associated with Phase 2 of project development.

2.3 PROJECT BACKGROUND

Information included in the SEIR related to Stewart Tract planning history, previous development plans for Stewart Tract, and previous environmental documents remains accurate and applicable. Background information relevant to this Sixth Addendum is supplemented by the certification of the SEIR, the previous addenda addressing the Tract 3491 VTM, Tract 3694 VTM and Tract 3765 VTM, and associated approvals and entitlements, which were summarized previously in Section 1.1, “Background and Action Triggering the Addendum.”

2.4 PROJECT GOALS AND OBJECTIVES

There are no changes in project goals and objectives related to the Updated Tract 3694 VTM proposal or the revised NEPA modifications.

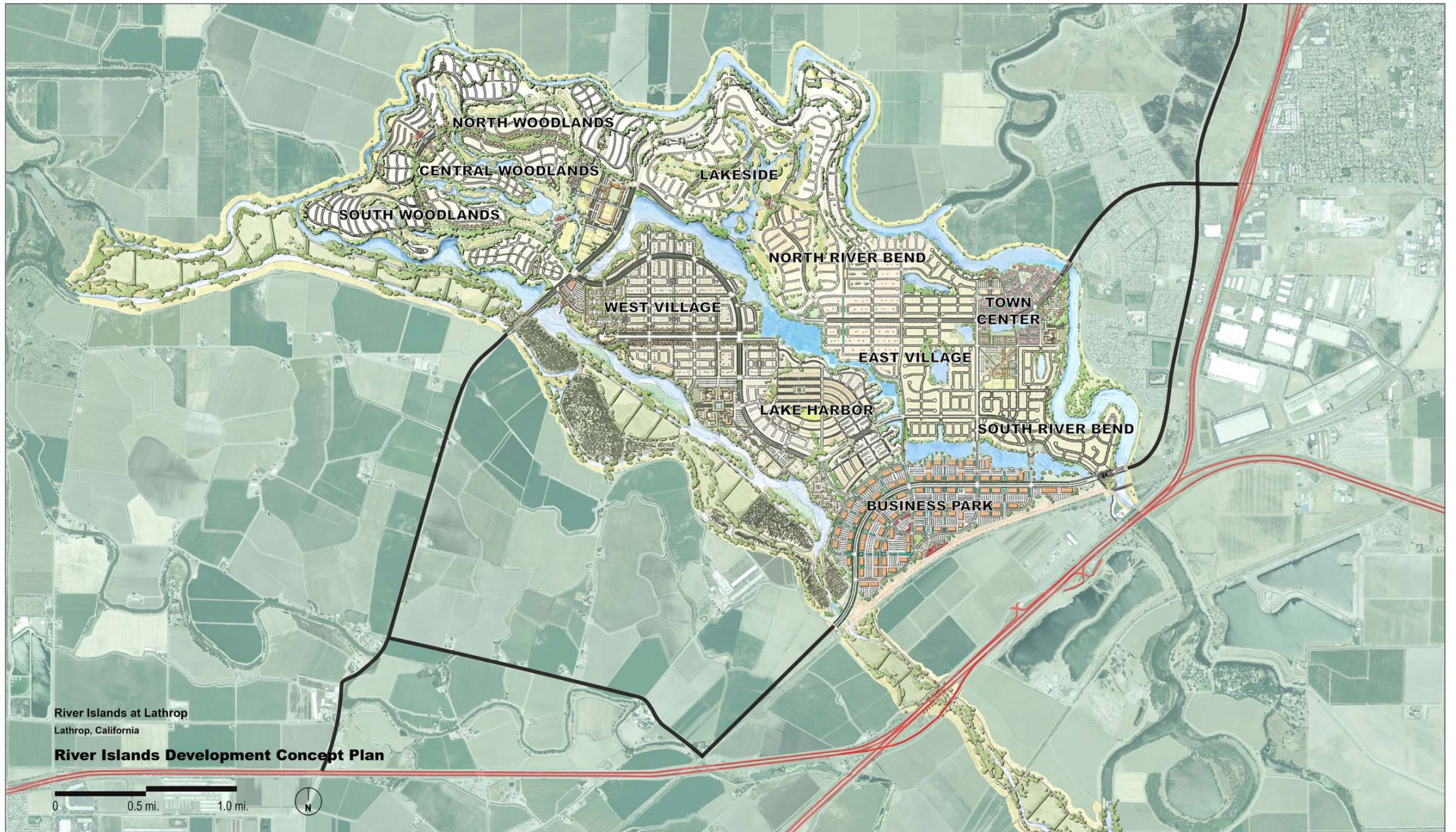
2.5 PROJECT DESCRIPTION

2.5.1 The Updated Tract 3765 VTM

The Updated Tract 3765 VTM proposal includes the subdivision of approximately 3,060 acres of land comprising Phase 2 of the River Islands project (Exhibit 2-1), as well as “remainder land” that was included in the Phase 1 Tract 3694 VTM; these designated remainders were not subdivided into individual lots with the Tract 3694 VTM but were proposed for subdivision of large lots with the 2012 Tract 3765 VTM proposal. Land uses included in this large lot vesting tentative map are RL-RI (residential low), RM-RI (residential medium), RH-RI (residential high), NC-RI (neighborhood commercial), RCO-OS (resource conservation/open space) and CR-RI (employment center). The Tract 3765 VTM area includes the following development districts: West Village, Employment Center (portion), Lakeside (portion), Old River (portion), Woodlands, Lake Harbor and Paradise Cut (see Exhibit 1-2 for general district locations). The Updated Tract 3765 VTM proposal is consistent with previously approved Preliminary Development Plans (PDPs) for each of the Lakeside and Old River districts. With certain City actions regarding the Tract 3694 VTM, including a change in the Phase 1 development footprint with a finding of consistency for the Stage 2A portion of Phase 1, there is a resulting change in the development envelope for the Updated Tract 3765 VTM.

The Updated Tract 3765 VTM contains 25 parcels to be subdivided into 35 large lots and a remainder that will eventually contain 6,716 residential units, consisting of 6,184 single-family units and 532 multifamily units. The Updated Tract 3765 VTM proposal does not include the construction of individual units or creation of individual building lots at this time but would include extension and construction of certain infrastructure in anticipation of this development. This could include flood protection improvements, roadways, utilities and similar “backbone” improvements. With a subsequent small lot vesting tentative map (similar to the Tract 3694 VTM for Phase I), a portion of the Employment Center District, a Neighborhood Commercial area, additional residential areas, lakes and water features, schools, and parks and trails would be built.

The differences between the Updated Tract 3765 VTM proposal and the River Islands project evaluated in the SEIR and current project approvals are divided into two categories: (1) modification of development envelope and (2) flood protection alternatives.



River Islands at Lathrop
Lathrop, California

River Islands Development Concept Plan



MODIFICATION OF THE DEVELOPMENT ENVELOPE

In the River Islands SEIR, Phase 2 of the project included development of the West Village, Lakeside and Woodlands Districts. With the changes approved with the Tract 3694 VTM and Second Addendum, minor changes were made to the districts affected by Phase 1 development. Further, the City made findings of consistency for the Stage 2A area of the Phase 1, which further changed the development footprint of the Lakeside and Old River Districts, and as a result, the development envelope for Phase 2. Phase 2, as reflected in the Updated Tract 3765 VTM includes a portion of the Lakeside and Old River Districts, all of the Lake Harbor District, a portion of the Employment Center District, along with the West Village and Woodlands Districts that remain unchanged from the SEIR and WLSP. This action is consistent with the WLSP and related approvals, which allow for the “shifting” of the timing of development and infrastructure in the various districts, depending on market conditions, improvement phasing and other factors.

In the River Islands SEIR, Phase 2 of the project covered approximately 2,159 acres encompassing the West Village, Lakeside and Woodlands Districts. The previous Phase 1 proposals (Tract 3491 VTM and Tract 3694 VTM) modified acreages for the project overall (since these proposals envisioned different development envelopes for Phase 1, affecting Phase 2). Subsequently, the Tract 3694 VTM and Second Addendum modified the Phase 1 boundary to cover approximately 1,793 acres encompassing the East Village and Town Center districts and portions of the Old River Road, Lakeside, and Employment Center districts. The findings of consistency for Stage 2A now has Phase 1 encompassing 1,755 acres. The resulting acreage available for development within Phase 2 is now 3,060 acres of which approximately 182 acres were designated remainders under the Tract 3694 VTM. With the Updated Tract 3765 VTM proposal, the available building envelope would slightly decrease from the 2012 Tract 3765 Proposal because of modifications in the Phase 1 building envelope.

The Tract 3765 VTM area also includes existing sprayfield areas used for recycled water disposal associated with the development of Phase 1 of approximately 226 acres. These areas will remain in use for recycled water disposal on an interim basis as part of existing agreements with the City of Lathrop but would eventually be developed in the future for residential and non-residential development as alternative sites for the disposal areas are acquired and permitted. The underlying land use designation and zoning of the affected properties as established by the WLSP, and proposed development as indicated in the SEIR, are not proposed to change with this proposal.

FLOOD PROTECTION ALTERNATIVES

In the Original Tract 3765 proposal, it was assumed that there would be a restoration of flood flows from RD 2107 into the project area as a result of the replacement of the existing box culverts in the UPRR embankment with a trestle. The trestle was designed to mitigate for the loss of flood storage and allow for Paradise Cut flood protection improvements to be deferred to the end of Phase 2. Phasing of other levee improvements for Old River and Paradise Cut could also be modified in accordance with the WLSP and related approvals, including the construction of seepage berms with reconstructed levee segments initially, and the placement of engineered fill in addition to these improvements at a later date to create the project’s superlevees as defined in the SEIR and previous addenda.

In the Third Addendum to the SEIR, adopted with the approval of the Original Tract 3765 VTM, timing relating to the Paradise Cut improvements were assumed to be delayed with the No Action alternative required by the EIS. In this Sixth Addendum, this timing assumption does not change. The change in assumptions relate to the possible modification of the existing box culverts in the UPRR rail line embankment with placement of a trestle (an improvement that the applicant has no control over the timing or implementation) and the location of the Cross Levee and Paradise Cut setback levee. The Updated Proposal would setback the Cross Levee from the UPRR rail line near the box culverts to accommodate the flood flows from RD 2107, whether or not a trestle is ever built. Additionally, the setback levee along Paradise Cut would be “straightened out” from its undulating form first proposed in the original SEIR and previous addenda; see Exhibit 2-1. These improvements would be coupled with the additional flood capacity within Paradise Cut gained by previous

land leveling within the area for agricultural purposes that created a lower original ground elevation. The updated flood protection alternative provides virtually the same flood protection benefits and impacts as previously proposed with the Original Tract 3765 Proposal as determined by the MBK Engineers hydraulic study included in Appendix A. The applicant also proposes revetment to address initial flood flow velocities, along with emergency actions of the RD 2062 for placement a check dams between the new straightened out Paradise Cut setback levee and the existing Federal Paradise Cut levee. RD 2062 would store fill material in locations near the channel that can be quickly placed as check dams between the proposed setback levee and the existing Federal Project levee in an emergency condition.

2.5.2 Updated NEPA Modifications

The Third Addendum, as previously approved by the City for the Original Tract 3765 VTM, included the following modifications associated with the River Islands EIS (“NEPA modifications”): (1) elimination of back bays and avoidance of special aquatic features, (2) modification of boat docks, (3) greater detail regarding bridge construction, and (4) flood protection improvements. The Sixth Addendum only updates item 4 of the NEPA modifications, regarding flood protection improvements as described above; the other three elements remain unchanged. Updated flood protection alternatives analyzed in this Sixth Addendum are described as the Updated NEPA Modifications, discussed further in the environmental analysis provided in Chapter 3, “Affected Environment, Environmental Consequences, and Mitigation Measures” of the Sixth Addendum.

With the Updated Tract 3765 VTM proposal, flood protection improvements for Phase 2 are proposed to be modified as reflected in the EIS and the Original Tract 3765 VTM proposal. The ultimate flood protection program would remain unchanged (meeting both 100-year Federal Emergency Management Agency (FEMA) and 200-year State flood protection standards) and the major tenets of the overall flood protection system would remain unchanged (i.e. Paradise Cut improvements, superwide levees, levee benching, etc.).

NO ACTION FLOOD PROTECTION OPTION

The No Action Alternative in the EIS contemplates that Califia, LLC could provide flood protection for the Phase 2 area without requiring any federal authorizations. Under this scenario, levees would be built inland from the existing federal levees without contacting the federal levee system (“levee within a levee”); without affecting delineated wetland features; and without requiring any federal funding, permits, or authorizations for any other improvement. However, if this alternative were to be implemented, it is assumed to be an interim phase of providing flood protection until the project as described in the SEIR and the EIS Proposed Action could be fully implemented. If, through the current NEPA review and Federal permitting processes, Califia LLC were not provided the requested Federal permits and authorizations, they would construct the No Action alternative while continuing to pursue Federal authorizations. It is assumed that the necessary Federal authorizations could eventually be obtained, and the full project as described in the SEIR and the EIS Proposed Action would be implemented.

It should be noted that the RD 2107 and RD 2062 flood reduction cuts included in the RD 2062 EOP are included in MBK Engineer’s hydraulic modeling; this is the same as was assumed with the 2012 Tract 3765 VTM. The RD 2107 flood reduction cut is located on the Paradise Cut north levee between I-5 and the UPRR west branch and is initiated approximately 2 hours after RD 2107 starts flooding because of levee failure. The RD 2062 flood reduction cut is located on the Paradise Cut north levee near the west end of RD 2062 and is initiated approximately 4 hours after failure of the UPRR west branch embankment separating RD 2062 and RD 2107. The RD 2062 flood reduction cut is not explicitly included in the model for the new “No Action” alternatives because relief breaches occur naturally at several locations on the Paradise Cut levee due to overtopping starting less than 6 hours after initial inundation of Stewart Tract. What is new to the EOP, is the possible placement of check dams between the interior Paradise Cut interior levee and the existing federal levee along Paradise Cut should flood velocities need to be attenuated to prevent scour and undermining of the levee system.

Under the No Action Alternative, Califia LLC would pay applicable San Joaquin Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) fees for habitat areas affected by constructing levees, implement applicable SJMSCP impact minimization measures, and implement planned non-native species controls in Paradise Cut (e.g., feral cat control) to address potential effects on state and federally-listed threatened and endangered species. Areas that could remain in an undeveloped state (e.g. farmed) would not need to be mitigated (fees paid) initially until these areas were designated for urban developed and removed from agricultural operations.

CHANGES TO THE NO ACTION PROTECTION OPTION

Since it is anticipated that the construction of the UPRR trestle will not occur in the short-term, if ever, the project applicant has proposed setting back the Cross Levee up to 2,500 feet from its original location to accommodate potential flood flows from the RD 2107 area. Historically, flood flows from this area have inundated portions of RD 2062, regardless of what structure within the UPRR rail line was in place. During the 1997 flood event, 36-inch box culverts placed in the railroad embankment by UPRR just a year prior to the flood event were overwhelmed as rising flood waters eventually overtopped and then broke the UPRR embankment, allowing flood waters to pass into RD 2062. If a trestle is not constructed, this type of failure would likely occur again during a flood event that impounds flood waters against the UPRR embankment. The project applicant and RD 2062 would plan to accommodate these flows with the cross-levee setback, which would let flood waters be diverted into Paradise Cut with no additional impacts than originally approved with the Original Tract 3765 proposal. As with the Original Tract 3765 VTM approval, an interior levee, utilizing the approved Conditional Letter of Map Revision from FEMA dated March 10, 2005, could be built first to allow incremental development along with the setback levees on Paradise Cut, which would be straightened out under the Updated Proposal. Letters of Map Revision issued by FEMA would then be obtained for the new interior levee system. Alternatively, utilizing one or more Letters of Map Revision for Fill for high ground plateaus could also be utilized. Either way, Phase 2 development could occur with the ultimate Paradise Cut improvements deferred until buildout. Either of these incremental improvements could be constructed in advance of the Paradise Cut Improvements and would not need any Federal approvals or permitting.

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3 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

3.1 APPROACH TO ENVIRONMENTAL ANALYSIS

As stated previously in Section 1.2, “CEQA Guidelines Regarding the Addendum to the SEIR,” the City has determined that, in accordance with Section 15164 of the State CEQA Guidelines, minor technical changes or additions to the SEIR and previous addenda are necessary to address the Updated Tract 3765 VTM Proposal and Updated NEPA modifications. Consequently, this Sixth Addendum to the SEIR is prepared for the Updated Tract 3765 VTM proposal and Updated NEPA modifications.

To prepare an addendum to an EIR, as opposed to an SEIR or a supplement to an EIR (Sections 15162 and 15163 of the State CEQA Guidelines), none of the conditions described in Section 15162 calling for preparation of a SEIR must have occurred. In summary, an addendum requires that the revised project or altered circumstances since approval of the previous CEQA document:

- ▲ will not result in any new significant environmental effects,
- ▲ will not substantially increase the severity of previously identified effects,
- ▲ will not result in mitigation measures or alternatives previously found to be infeasible being categorized as feasible, and
- ▲ will not result in availability/implementation of mitigation measures or alternatives that are considerably different from those analyzed in the previous document that would substantially reduce one or more significant effects on the environment.

The analysis of environmental effects provided below follows the general format used in the SEIR. The environmental analysis first evaluates for each environmental topic area (e.g., land use, traffic, air quality) whether there are any changes in the regulatory background, existing conditions, or circumstances in which the project is undertaken that would result in new or substantially more severe environmental impacts. The addendum then evaluates the differences between the Tract 3765 VTM proposal and the prior River Islands project approvals that warrant minor changes or additions to the SEIR. In this instance prior project approvals encompass those associated with the SEIR and the two previous addenda prepared for the Tract 3491 VTM and Tract 3694 VTM, and the term “SEIR” includes both the SEIR itself and the two previous addenda. The Addendum then evaluates the differences between the Updated NEPA Modifications and the prior River Islands project approvals that warrant minor changes or additions to the SEIR.

The environmental effects of the project differences, if any, are identified and an assessment is made as to whether these differences would result in new significant impacts, substantial changes in the severity of previously identified environmental impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives that would trigger the need for subsequent environmental review for the Updated Tract 3765 VTM Proposal and Updated NEPA Modifications based on the various criteria for subsequent environmental review included in Sections 15162 and 15164 of the State CEQA Guidelines.

3.2 LAND USE CONSISTENCY AND COMPATIBILITY

3.2.1 Updated Tract 3694 VTM

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the Tract 3491 VTM in 2005, and Tract 3964 VTM in 2007, original Tract 3765 VTM and update to the Tract 3694 VTM in 2015 no changes to the regulatory background or existing conditions have occurred involving land use issues that would trigger the need for subsequent environmental review for the Updated Tract 3765 VTM proposal.

California Senate Bill X71 (Ch. 5, Stats. 09-10, 7th Ex, Sess.) was enacted and took effect on February 3, 2010, after certification of the River Islands SEIR, leading to the adoption of the Delta Plan on May 16, 2013 by the Delta Stewardship Council. Subsequently its 14 regulatory policies were approved by the Office of Administrative Law, a state agency that ensures the regulations are clear, necessary, legally valid, and available to the public. The Delta Plan became effective with legally-enforceable regulations on September 1, 2013. While the Delta Plan influences and in some cases guides land use policy within the legal Delta, the River Islands Project is considered exempt from the Delta Plan and is not considered a covered action under Water Code section 85057.5. Specifically, the River Islands Project is a project located within the Secondary Zone of the Delta and since its approval by the City of Lathrop in 2003 (and the prior approval of the Gold Rush City Project in 1996), it has been included in the SJCOG Clean Air Plan and considered within the San Joaquin Valley as an area slated for development. This development is considered in alternative planning strategies to achieve greenhouse gas emission reductions.

Further, the City of Lathrop has approved and is undertaking this project in the Secondary Zone. The City of Lathrop filed a Notice of Determination in February 2003 for the approval of the River Islands Specific Plan and associated development approvals, including the River Islands Development Agreement, long before the effective date of the Delta Plan. In this regard, the Delta Protection Act provides that when the Delta Plan is adopted, nothing in the application of the plan shall conflict with or extinguish any vested rights. Moreover, the River Islands Project includes habitat restoration such as the restoration and preservation proposed in Paradise Cut, and it would be consistent with the conservation measures included in the Bay Delta Conservation Plan.

Consequently, because of the reasons, the River Islands Project is exempt from the Delta Plan under the Delta Protection Act, the River Islands Project does not conflict with the plan.

Project land uses under the Updated Tract 3765 VTM proposal are consistent with those included in the WLSP and existing approvals. Although the development envelope under the Updated Tract 3765 VTM is modified in some areas relative to existing approvals due to the City's administrative action in Stage 2 of Phase 1, the overall development scenario remains the same. No additional housing units or other development beyond the total development considered in the SEIR and other approvals would be constructed. The Updated No Action Alternative (through the Updated NEPA Modifications), does reduce the overall development footprint for the entirety of the Project, flexibility within the Project approvals, including the WLSP allow the full anticipated development to occur.

Therefore, conclusions in the SEIR and subsequent addenda related to consistency with applicable land use plans, policies, and regulations; consistency with applicable habitat conservation plans or natural community conservation plans; and lack of division of an established community, would also apply to the Updated Tract 3765 VTM.

3.2.2 Updated NEPA Modifications

The Updated NEPA Modifications result in minor project changes and clarifications that do not affect land use consistency conclusions. Reduction in the acreage within the Employment Center District specifically, as a result of the relocated Cross Levee do not preclude full buildout of non-residential development within the anticipated Business Park. The same is true for the added detail now available regarding bridge design and construction methods, which would allow the future Golden Valley Parkway Bridge to span over the existing Federal Project Levee in the form of a causeway. Although in some ways the proposed flood protection improvement modifications alter the timing and order of the original improvements identified in SEIR and addenda, the third addendum allowed for the advancement of the No Action flood improvements to precede other EIS related improvements (e.g. eco-restoration efforts) and the desired levels of flood protection are still maintained for new and existing land uses and the type and amount of development included in the River Islands project is not altered. Although changes in the phasing of flood control improvements and project development would occur, payment

of fees under the San Joaquin Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) would be made at appropriate times and applicable impact avoidance and minimization measures would be implemented. Therefore, conclusions in the SEIR and subsequent addenda related to consistency with applicable land use plans, policies, and regulations; consistency with applicable habitat conservation plans or natural community conservation plans; and lack of division of an established community, would also apply to the Updated NEPA Modifications.

Because land uses included in the Updated Tract 3765 VTM (which also reflect the NEPA modifications) are considered consistent with those evaluated in the SEIR, they can also be considered consistent with the Lathrop General Plan and the WLSP, just as the original VTM land uses were found to be consistent. The Updated Tract 3765 VTM proposal and updated NEPA modifications would not require any additional amendments to these plans beyond those already approved for the River Islands project.

3.2.3 Conclusion

In summary, any differences between the Updated Tract 3765 VTM proposal and Updated NEPA modifications described in this Addendum and the previously approved development proposals and SEIR are considered minor and would not result in new significant land use impacts, significant changes in the severity of previously identified land use impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to land use.

3.3 POPULATION, EMPLOYMENT, AND HOUSING

3.3.1 Updated Tract 3964 VTM

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the Tract 3491 VTM in 2005, Tract 3964 VTM in 2007, the Original Tract 3765 in 2012, and updated Tract 3694 VTM in 2015 no changes to the regulatory background or existing conditions relative to population, employment, and housing have occurred that trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal.

The SEIR and previous addenda identify impacts related to population growth and housing demand during project construction as being less than significant. The extent, type, and pace of development are similar under the Updated Tract 3765 VTM proposal and the development scenario described in the SEIR and previous addenda. Therefore, the number of construction jobs generated by project development during

peak construction periods would not be appreciably different between the various scenarios. Impacts related to population growth and housing demand during project construction would remain less than significant under the Updated Tract 3765 proposal.

The Updated Tract 3765 VTM proposal would not change the total number of housing units as identified in existing project approvals (4,284 units in Phase 1 and 6,716 units in Phase 2). However, under the modifications under Updated Tract 3694 VTM, Phase 2 would have to accommodate a higher number of multi-family units than originally assumed under the SEIR, since Phase 1 has a higher number of single-family units relative to multifamily units. Project approvals for Tract 3694 included 3,226 single-family units and 1,058 multifamily units. The Tract 3694 VTM included 3,741 single-family units, and 543 multifamily units. The Updated Tract 3694 approved in 2015 included 3,611 single-family units and 673 multi-family units. The split between single-family and multifamily units would be altered correspondingly during Phase 2 of project development to result in the 1,629 multifamily units and 9,371 single-family units (11,000 total units) identified in the SEIR at project buildout. Therefore, the difference in unit mix associated with the Updated Tract 3694 VTM would only apply to Phase 1 of the project. The additional multifamily units addressed in the subsequent small lot vesting tentative map would be analyzed in any subsequent project level CEQA review at that time.

Job-generating land uses were also altered under the Tract 3694 VTM, since the SEIR and previous addenda concentrated these uses in the Town Center and Employment Center. Under Tract 3694, only 60 percent of the Employment Center would be constructed and the remaining 40 percent would be developed in Phase 2. While the total buildout of the Town Center would be unaffected by the Updated Tract 3765 VTM Proposal, the Employment Center would be XX acres smaller than the original project approvals. However, the WLSP and applicable zoning for the Employment Center allow for a slightly more intensive non-residential development that will allow the same amount of development within the Employment Center as originally envisioned (e.g. 4 million square feet of office and commercial space). Additionally, the assumptions included in the 2007 office absorption analysis prepared for the project by ESG would not be affected. Therefore, the Updated Tract 3765 VTM proposal would have approximately the same employee-generation potential as the SEIR development scenario. Therefore, impacts related to generation of employment, which are identified as less than significant in the SEIR and previous addenda, would remain less than significant under the Updated Tract 3765 VTM proposal.

3.3.2 Updated NEPA Modifications

The Updated NEPA Modifications include the relocated Cross Levee that leads to the reduction of the development envelope of the Employment Center, but for the reasons described for Updated Tract 3765 VTM, the Updated NEPA Modifications would not alter the type and amount of development in the overall River Islands Project and therefore would not affect factors such as housing availability, housing demand, and generation of employment. Although the timing of construction of some flood protection improvements would be altered, the same general system of levee and other flood protection improvements would ultimately be implemented, and construction jobs generated during peak construction periods would not be appreciably different from that identified in the SEIR and addenda.

3.3.3 Conclusion

Because the Updated Tract 3765 VTM and Updated NEPA modifications do not alter the type or amount of development at project buildout, any changes in the proposal are considered minor and would not result in new significant impacts related to population, employment, and housing; significant changes in the severity of previously identified impacts related to population, employment, and housing; or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to population, employment, and housing.

3.4 TRAFFIC

3.4.1 Updated Tract 3765

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the Tract 3491 VTM in 2005, Tract 3694 VTM in 2007, Original Tract 3765 VTM in 2012 and updated Tract 3694 VTM in 2015, no changes to the regulatory background relative to traffic have occurred that trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal.

Some changes to existing traffic conditions have occurred since completion of the SEIR in 2003 and adoption of the two previous VTMs, in that some planned transportation infrastructure improvements have been implemented and some traffic generating land uses have been developed since that time. However, these changes are consistent with the traffic model assumptions used in the SEIR and would not alter the results of the model or the impact analysis for the Updated Tract 3765 VTM proposal.

Since the Updated Tract 3765 VTM proposal does not directly create housing or employment generating uses (these would occur with a subsequent small lot VTM), there are no new traffic or transportation related effects created by the proposal. However, even if one considers the development proposed within the Updated Tract 3765 VTM, traffic generation during construction and operation would not change because the amount and type of development is consistent with that evaluated in the SEIR and subsequent addenda. In addition, the traffic infrastructure associated with the project, such as the proposed River Islands Parkway, Golden Valley Parkway, and Paradise Road configurations and uses, would be unchanged from the SEIR and previous approvals.

Although not expected, if the implementation of the Updated Tract 3765 VTM proposal were to alter the rate of trip generation due to alterations in phasing (i.e., more or less trips during some point in project implementation compared to earlier estimates), this would not alter the significance of traffic impacts because of the mitigation measures included in the SEIR. As described on pages 4.4-71 through 4.4-75 of the Draft SEIR, there are several regional and local traffic fee and monitoring programs that the River Islands project would be subject to. Fees are collected based on development and use of fees by local agencies for infrastructure improvements is based on the amount of fees collected from various sources, and in many cases, monitoring of traffic conditions to determine the need for a planned improvement. Any slight alterations in the timing of various types of development associated with the Updated Tract 3765 VTM proposal would not alter the effectiveness or implementation of the fee collection and mitigation programs as they respond directly to the volume and type of development that occurs and the trip generation that triggers the need for transportation infrastructure improvements.

Overall, capacity and function of the traffic network would be unchanged under the Updated Tract 3765 VTM. Because there would be no change in traffic generation or capacity or function of the roadway network, there would be no change in traffic impacts from those described in the SEIR and subsequent addenda.

3.4.2 Updated NEPA Modifications

Modifications to the flood protection improvements included in the Updated NEPA Modification would not change traffic generation or the capacity and function of the roadway network. Although further detail is available regarding the design and construction methods for project bridges (which are critical elements of the transportation network), this detail would not change the lane count, capacity, or function of these bridges as described in the SEIR and subsequent addenda. Therefore, the added bridge detail that may be necessary to construct the Golden Valley Parkway bridge over Paradise Cut would not alter the analysis or conclusions regarding traffic impacts.

As described below in Section 3.5, “Air Quality”, the flood protection improvement modifications would generally be neutral regarding any increases or decreases in earth moving efforts compared to the SEIR and subsequent addenda. Therefore, the Updated NEPA Modifications would also not result in a substantial change in construction traffic. In addition, the anticipated phasing/staging of flood protection improvements would spread construction activity, and therefore construction traffic, over many more years than assumed in the SEIR and subsequent addenda. Therefore, annual construction vehicle trips would likely be less than described in these documents, and construction traffic impacts could be less.

3.4.3 Conclusion

Because the Updated Tract 3765 VTM and Updated NEPA modifications do not alter traffic generation or the capacity and function of the project roadway network, these actions would not result in any new significant traffic impacts, significant changes in the severity of previously identified traffic impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to traffic.

3.5 AIR QUALITY

3.5.1 Updated Tract 3765

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no major changes to the regulatory background or existing conditions relative to air quality have occurred that trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal.

As mentioned above in Section 3.3, “Population, Employment, and Housing,” and described elsewhere in this document, the extent, type, and pace of development are not appreciably different under the Updated Tract 3765 VTM compared to development scenarios described in the SEIR and previous addenda. Therefore, construction related and operational air emissions and associated air quality impacts (e.g., emissions of regional criteria pollutants during construction, potential for increases in odorous emissions, increases in stationary-source toxic air contaminants) also would not be appreciably different.

3.5.2 Updated NEPA Modifications

Similar conclusions regarding air quality impacts also apply to the Updated NEPA Modifications. Elimination of back bays, avoidance of special aquatic features, further detail on bridge construction, and flood protection improvement modifications would not change operational air emissions (both stationary and mobile source emissions) associated with the project. Flood protection improvement modifications would likely require decreased earth moving when compared to the original project approvals with the No-Action Flood Protection option. As with the 2012 Tract 3765 VTM, the proposed flood protection improvement modifications included as the Updated NEPA Modifications will result primarily in a change in phasing/timing of levee improvements rather than a change in overall construction effort. Rather than the total flood protection improvement scenario described in the SEIR being completed before any project development, it would be completed in stages concurrently (and some portions potentially after) project development. This staging of flood protection improvements would spread construction emissions over many more years than assumed in the SEIR and subsequent addenda. Therefore, annual construction emissions would likely be less than described in these documents, while overall emissions would not be appreciably different.

Although further detail is available regarding the design and construction methods for the Golden Valley Parkway Bridge over Paradise Cut, this detail does not change the lane count, capacity, or function of this

bridge or overall construction effort assumed in the SEIR and subsequent addenda. Therefore, the added bridge detail does not alter the analysis or conclusions regarding stationary, mobile source, or construction related air emissions.

3.5.3 Conclusion

Because the Updated Tract 3765 VTM and Updated NEPA Modifications do not appreciably alter mobile source, stationary source, or construction related emissions (and in some cases may reduce annual emissions), including odors and toxic air contaminants, these actions would not result in any new significant air quality impacts, significant changes in the severity of previously identified air quality impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to air quality.

3.6 NOISE

3.6.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no major changes to the regulatory background or existing conditions relative to noise have occurred that trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. There are however, newer standards issued by the California Department of Fish and Wildlife for noise impacts when constructing structures in rivers and streams under certain specific conditions and locations. These standards are intended to protect special-status fish species that may occur in waterways affected by construction and would be applied to bridges constructed as part of the River Islands project. There are few, if any, special-status fish species in Paradise Cut that would be affected by the bridge construction. Further, the Golden Valley Parkway Bridge would be constructed as a causeway that would span over the existing project levees with less impact in the waterway than with previously proposed construction methodologies. Therefore, these new California Department of Fish and Wildlife actions would not result in any new significant noise impacts, significant changes in the severity of previously identified noise impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to noise impacts.

As described previously, the extent, type, and pace of development (e.g., homes, job generating land uses) supported by the Updated Tract 3765 VTM proposal and Updated NEPA Modifications are consistent with the development scenarios described in the SEIR and the previous addenda. Therefore, noise associated with the construction and operation of these categories of development would not appreciably differ from that described in the SEIR and previous addenda. Under the Updated Tract 3765 VTM and Updated NEPA Modifications, construction of flood protection improvements would be spread over a greater number of years, but the total construction effort would not be appreciably different, resulting in reduced annual construction activity for flood protection improvements. In addition, construction and operations related traffic generation and overall traffic impacts under the Updated Tract 3765 VTM proposal and Updated NEPA modifications would not be appreciably different from those identified in the SEIR and previous addenda, and the Tract 3765 VTM proposal would not result in new or substantially more severe traffic impacts. Therefore, noise generation from construction activities, stationary sources, and mobile sources under the Updated Tract 3765 VTM proposal also would not be appreciably different from noise generation identified in the SEIR and previous addenda. Project development also would not place new noise sensitive receptors in locations not already anticipated in the SEIR and subsequent addenda.

Impacts related to construction noise, which are considered significant in the SEIR and previous addenda, would also be significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. The same mitigation measures identified in the SEIR would reduce these impacts to less-than-significant levels.

Impacts related to increases in traffic noise levels identified as less than significant in the SEIR and previous addenda would remain less than significant under the Updated Tract 3765 VTM proposal and Updated NEPA modifications.

The SEIR and previous addenda identify a significant and unavoidable noise impact resulting from some project areas potentially being exposed to exterior noise levels exceeding City standards. This condition is created by existing noise sources, primarily I-5 and the UPRR line along the projects southeastern boundary. Exterior areas around homes on high-ground corridors near I-5 and the Head of Old River are considered most likely to be exposed to this impact, but these areas are located in Phase 1. The Updated Tract 3765 and Updated NEPA Modifications do not propose any development of housing or non-residential uses in the Phase 1 area (this development was the subject of the Tract 3491 VTM), so no new sensitive receptors would be affected by these existing noise sources. Therefore, the previously identified significant and unavoidable noise impact is not associated with the Updated Tract 3765 VTM and Updated NEPA Modifications.

3.6.2 Conclusion

Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA modifications would not result in any new significant noise impacts, significant changes in the severity of previously identified noise impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to noise issues.

3.7 GEOLOGY, SOILS, AND MINERAL RESOURCES

3.7.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to geology, soils, and mineral resources have occurred that trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The Updated Tract 3765 VTM proposal and Updated NEPA Modifications include the same land uses and development types as those analyzed in the SEIR and previous addenda. Therefore, risks associated with seismic hazards (including ground shaking, liquefaction, ground lurching, soil settlement, lateral spreading, and landslide) would not be appreciably different between those identified in the SEIR and past addenda and for the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. The Updated Tract 3765 VTM and Updated NEPA Modifications would not result in new or substantially more severe geology, soils, and mineral resources impacts relative to the impact mechanisms listed above. Potential for damage to project facilities resulting from shrink-swell soils and corrosive soils also would not be appreciably different between the SEIR and past addendum development scenarios and the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. The Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in new or substantially more severe geology, soils, and mineral resources impacts relative to these impact mechanisms. Impacts identified in the SEIR and previous addenda related to seismic hazards, shrink swell-soils, and corrosive soils; the level of significance of those impacts (before and after mitigation); and applicable mitigation measures, would also apply to the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

There are no potentially significant sand deposits designated as MRZ-2 by the California Department of Conservation, Division of Mines and Geology in the Phase 2 area. Therefore, there are no impacts related to this issue associated with the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

Impacts related to construction-related soil erosion would occur under the any River Islands development scenario. In the SEIR and previous addenda, this impact is considered less than significant. The potential for construction-related soil erosion would not be appreciably different under the Updated Tract 3765 VTM proposal and Updated NEPA modifications which would have a similar construction effort as past development scenarios for constructing the Cross Levee and Paradise Cut setback levee, supporting only a slightly modified development approach (e.g., straightening out the Paradise Cut levee). Therefore, this impact would remain less than significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

3.7.2 Conclusion

Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA modifications would not result in any new significant impacts related to geology, soils, and mineral resources; significant changes in the severity of previously identified impacts related to geology, soils, and mineral resources; or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to geology, soils, and mineral resources.

3.8 HYDROLOGY AND WATER QUALITY

3.8.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background relative to hydrology and water quality have occurred that trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

With the passage of Senate Bill 5, the Central Valley Flood Protection Act in 2008, local land use agencies must determine through the making of findings that urbanized areas be provided a 200-year level of flood protection (i.e., flood protection be able to withstand water surface elevations associated with the 1-in-200 Annual Exceedance Probability [AEP] event). Because the River Islands flood control system will provide 200-year flood protection, plus include an additional 3-feet of levee freeboard above the 1-in-200 AEP water surface elevation, the project is consistent with the legislative requirements. In addition, the project is consistent with, and supports current flood protection planning efforts resulting from the legislation in question, such as the project's planned improvements to Paradise Cut that increase the flood protection function of this feature.

In 2016, the City Council made findings that the River Islands project has made adequate progress towards meeting the 200-year flood protection. The Council made the same findings in 2017 (these findings are required annually), which included the Stage 2A area interior levees.

As stated previously, development planned within the Updated Tract 3765 VTM area is consistent with that evaluated in the SEIR and past addenda; therefore, the development itself would not alter impacts, mitigation, or conclusions in these past documents related to hydrology and water quality. Similarly, the design and construction methods for the Golden Valley Parkway bridge are consistent with assumptions used in the SEIR and previous addenda and do not alter impacts, mitigation, or conclusions in these past documents related to hydrology and water quality.

Elements of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications that could alter project effects on hydrology and water quality include modified timing/phasing of flood protection improvements, location of the Cross Levee and setback levees of Paradise Cut and the lack of reliance on a UPRR trestle as part of the updated No-Action Flood Protection Improvement Option.

It should be noted that previously approved elements of the No Action Flood Improvement Option, including the construction of waterside bench areas and timing of Paradise Cut eco-restoration elements are not affected by the Updated Tract 3765 VTM proposal and were determined to not increase any impacts previously identified from that evaluated in the SEIR and previous addenda.

Where the Updated Tract 3765 VTM proposal and Updated NEPA Modifications could alter hydrologic conditions, such as modifying the location of the Cross Levee, straightening of the Paradise Cut setback levee and removing reliance on the restoration of a trestle in the UPRR rail line paralleling the Cross Levee, these modifications have been incorporated into updated hydraulic/hydrologic modeling for the project (MBK 2018) and provided as Appendix A to this addendum.

Table 3-1 compares the modeling results from the SEIR with the updated modeling results performed by MBK Engineers incorporating the Updated Tract 3765 VTM proposal and Updated NEPA Modifications along the San Joaquin River. As seen in the two columns in Table 3-1 titled “2012 to 2018 change”, the change in the impacts from 2012 to 2018 ranges from +0.01 feet to -0.08 feet (roughly +1/8 inch to -1.0 inch).

Tables 3-2, 3-3, 3-4, and 3-5 compare impact changes for Paradise Cut, Old River, Grant Line Canal and Middle River respectively.

Table 3-1 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, San Joaquin River

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to No Action	50	0	0	0	0	-0.08	-0.08
	100	0	0	0	-0.01	-0.04	-0.03
	200	+0.01	0	-0.01	-0.01	-0.03	-0.02
	500	+0.03	+0.03	0	0	-0.03	0.03
Existing to With Project	50	0	0	0	-0.16	-0.16	0
	100	0	0	0	-0.05	-0.05	0
	200	+0.01	+0.01	0	-0.04	-0.04	0
	500	+0.42	+0.42	0	-0.02	-0.02	-0.01
Base to No Action	50	0	0	0	0	-0.08	-0.08
	100	0	0	0	-0.01	-0.04	-0.03
	200	+0.01	0	-0.01	-0.01	-0.03	-0.02
	500	+0.03	+0.04	+0.01	0	0	0

Table 3-2 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, Paradise Cut

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to No Action	50	0	-0.05 a	-0.05	0	-0.84	-0.84
	100	0	-0.04 a	-0.04	-0.01	-0.61	-0.60
	200	+1.85	+1.63	-0.22	-0.05	-0.05	0
	500	+0.91	+0.96	+0.05	-0.37	-0.70	-0.33

Table 3-2 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, Paradise Cut

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to With Project	50	+0.05	+0.05	0	-1.15	-1.15	0
	100	+0.12	+0.12	0	-0.73	-0.73	0
	200	+1.63	+1.63	0	0	-0.04	-0.04
	500	+1.08	+1.07	-0.01	-0.65	-0.68	-0.03
Base to No Action	50	0	-0.05 ^a	-0.05	0	-0.84	-0.84
	100	0	-0.04 ^a	-0.04	-0.01	-0.61	-0.60
	200	+1.84	+1.64	-0.20	-0.02	-0.01	+0.01
	500	+0.94	+1.01	+0.07	-0.33	-0.63	-0.30

Notes: ^a No WSE increase in this scenario, therefore the minimum WSE decrease is shown.

Table 3-3 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, Old River

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to No Action	50	0	+0.03	+0.03	0	-0.28	-0.28
	100	0	+0.05	+0.05	-0.01	-0.21	-0.20
	200	+0.39	+0.43	+0.04	0	-0.08	-0.08
	500	+0.07	+0.22	+0.15	-0.26	-0.37	-0.11
Existing to With Project	50	+0.02	+0.02	0	-0.10	-0.10	0
	100	+0.09	+0.09	0	0	0	0
	200	+0.49	+0.44	-0.05	0	0	0
	500	+0.37	+0.35	-0.02	-0.27	-0.30	-0.03
Base to No Action	50	0	+0.03	+0.03	0	-0.28	-0.28
	100	0	+0.05	+0.05	-0.01	-0.21	-0.20
	200	+0.43	+0.52	+0.09	0	-0.08	-0.08
	500	+0.13	+0.29	+0.16	-0.22	-0.31	-0.09

Table 3-4 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, Grant Line Canal

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to No Action	50	0	+0.03	+0.03	0	0	0
	100	0	+0.04	+0.04	0	0	0
	200	+0.24	+0.41	+0.17	0	0	0
	500	+0.04	+0.04	0	0	0	0

Table 3-4 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, Grant Line Canal

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to With Project	50	+0.02	+0.02	0	0	0	0
	100	+0.08	+0.08	0	0	0	0
	200	+0.44	+0.39	-0.05	0	0	0
	500	+0.07	+0.03	-0.04	0	0	0
Base to No Action	50	0	+0.03	+0.03	0	0	0
	100	0	+0.04	+0.04	0	0	0
	200	+0.28	+0.50	+0.22	0	0	0
	500	+0.08	+0.11	+0.03	0	0	0

Table 3-5 Summary of Maximum WSE Impacts and 2012 to 2018 Impact Change, Middle River

Impact Scenario	Flood Event	Max WSE Increase (feet)			Max WSE Decrease (feet)		
		2012	2018	2012 to 2018 Change	2012	2018	2012 to 2018 Change
Existing to No Action	50	0	0	0	0	-0.19	-0.19
	100	0	0	0	0	-0.12	-0.12
	200	+0.20	+0.18	-0.02	0	-0.55	-0.55
	500	+0.29	+0.57	+0.28	-0.29	-0.43	-0.14
Existing to With Project	50	0	0	0	-0.03	-0.03	0
	100	+0.03	+0.03	0	0	0	0
	200	+0.24	+0.24	0	-0.39	-0.39	0
	500	+0.54	+0.50	-0.04	-0.20	-0.20	0
Base to No Action	50	0	0	0	0	-0.19	-0.19
	100	+0.01	0	-0.01	0	-0.12	-0.12
	200	+0.20	+0.18	-0.02	-0.01	-0.56	-0.55
	500	+0.33	+0.63	+0.30	-0.29	-0.44	-0.15

Impact Comparison - Paradise Cut

- ▲ Existing to No Action: In the 50-year and 100-year flood events, there was no WSE increase with the 2012 scenario and a 0.01 foot decrease for the 100-year flood events. With the 2018 scenario, there is a reduction in the WSE of up to 0.84 feet (50-year flood event). This is due to the agricultural area degrade within Paradise Cut, and there are no Stewart Tract levee breaches in these flood events. In the 200-year and 500-year flood events, the 2018 scenario only shows an increase in the WSE relative to the 2012 scenario for the 500-year event, 0.05 feet (3/5 inch)
- ▲ Existing to With Project: No change, or reductions in impacts.
- ▲ Base to No Action: Changes to impacts are similar to what is shown for Existing to No Action.

Impact Comparison - Old River

- ▲ Existing to No Action: Maximum increases in WSE range from 0.03 feet (1/3 inch) for the 50-year flood event to 0.15 feet (1 4/5 inch) for the 500-year flood event. These increases primarily occur downstream of Middle River. Maximum decreases in WSE range from 0.28 feet (3 1/3 inches) for the 50-year flood event to 0.08 feet (1 inch) for the 200-year flood event.
- ▲ Existing to With Project: No changes in impacts in the 50-year and 100-year flood events. In the 200-year and 500-year flood events, there is a very small decrease in the WSE impacts of up to 0.05 feet (3/5 inch).
- ▲ Base to No Action: Changes to impacts are similar to what is shown form Existing to No Action.

Impact Comparison - Grant Line Canal

- ▲ Existing to No Action: No decreases in WSE for all flood events and no increase for the 500-year flood event. Increases in WSE ranging from 0.03 feet (1/3 inch) for the 50-year flood even to 0.17 feet (2 inches) for the 200-year flood event.
- ▲ Existing to With Project: No changes in impacts in the 50-year and 100-year flood events. In the 200-year and 500-year flood events, there is a very small decrease in the WSE impacts of up to 0.05 feet (3/5 inch).
- ▲ Base to No Action: In the 200-year flood event, the WSE impacts see an increase of up to 0.22 feet (2 2/3 inches). In the 50-, 100, and 500-year flood events, there is a very small increase in the WSE impacts of up to 0.04 feet (1/2 inch).

Impact Comparison - Middle River

- ▲ Existing to No Action: Deceases in impacts in the 50-year and 100-year flood events of 0.19 feet (2 1/4 inches) and 0.12 feet (1 2/5 inches) respectively. In the 200-year flood event there are also decreases in WSE relative to the 2012 scenario ranging from 0.02 feet (1/4 inch) to 0.55 feet (6 3/5 inches) depending on the location along Middle River. In the 500-year flood event, upstream of Howard Road there is an increase in the WSE impact of up to 0.28 feet (3 1/3 inch), and an decrease in the impact of 0.14 feet (1 2/3 inche) downstream of Howard Road.
- ▲ Existing to With Project: No changes in impacts in all flood events except the 500-year, which has a 0.04 foot (1/2 inch) decrease relative to the 2012 scenario.
- ▲ Base to No Action: Changes to impacts are similar to what is shown form Existing to No Action

In all cases, particularly for the more frequent 1 in 50 AEP and 1 in 100 AEP events, the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would either not result in any increased flood stage elevations than those identified in the 2012 SEIR, or only minor increases. For 200-year and 500-year flood events, there are some decreases in elevations when compared to the 2012 analysis and some minor increases. Where there are increases, there are is sufficient freeboard in the levees to where the increase can be accommodated (see Appendix A). Further, in the 200-year scenario, much of the area south and west of the Project Site is completely inundated and there is no effect from the Updated NEPA Modifications under such a scenario (Appendix A).

As with the 2012 analysis, it is important to note that the flooding events assumed in the SEIR analysis anticipated levee failures three feet from the top of levee in some locations upstream of the project site. With the updated analysis, the hydrologic modeling assumptions are more conservative; the modeling shows failures at top of levee, or the more extreme assumption of no failures while overtopping (the latter is the assumption utilized by USACE when evaluating projects in the Delta at this time). Were the SEIR modeling to

use the same levee failure assumptions as the updated modeling, increases in flood stage elevation shown in the above tables would occur in fewer locations, would be substantially less, and in many cases increases in flood stage elevation would convert to decreases. Where decreases in flood stage elevation are shown in the tables, these decreases would be greater. Given these conditions, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not change the less than significant impact conclusions in the SEIR related to alterations in flood stage elevations.

The development scenario evaluated in the SEIR and previous addenda use the Central Lake and the Grand Canal to detain stormwater before discharging it to Paradise Cut. Stormwater best management practices (BMPs) would be implemented such as use of water treatment wetlands (bio-retention basins) adjacent to the stormwater detention water bodies to treat stormwater before it reaches the detention areas. In the case of the water treatment wetlands, water from the stormwater detention water bodies would be regularly cycled through the treatment wetlands to maintain water quality in the detention water bodies. This same scenario would continue unchanged under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications and stormwater would be stored in lakes as is the case in the Phase 1 area. There would be no new significant impact or substantially more severe significant impact.

Under the development scenario analyzed in the SEIR, Phase 2 of project development would include approximately 100 acres of water features to be used for stormwater treatment and management (i.e., Central Lake, Grand Canal, water treatment wetlands). This area, in conjunction with other stormwater BMPs, was considered sufficient to:

- ▲ detain project-generated stormwater volumes consistent with regulatory standards,
- ▲ maintain interior lake water quality to such a level that water quality impacts associated with discharges from the lake to the Delta would be considered less than significant, and
- ▲ allow a lake-level management regime such that diversions to the lake from the Delta and discharges from the lake to the Delta would result in less-than-significant, and in some cases beneficial, impacts related to Delta hydrology and water quality.

The stormwater management system continues to have sufficient capacity to store and treat stormwater generated by the project while meeting the same performance criteria described in the SEIR and previous addenda. There would be no new significant impact or substantially more severe significant impact.

The SEIR identifies a potentially significant impact related to excavations during construction intersecting shallow groundwater, resulting in releases of sediments or contaminants into the groundwater. This impact is considered less than significant after mitigation. The Updated Tract 3765 VTM proposal and Updated NEPA Modifications do not appreciably alter the type and extent of proposed development requiring excavations that might intersect groundwater. Therefore, the potential for adverse effects to groundwater during construction of the Tract 3765 VTM proposal and NEPA modifications would not differ substantially from what is described in the SEIR and previous addenda, and the same mitigation measures identified in the SEIR and previous addenda would also reduce this impact to a less-than-significant level under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR and previous addenda also identify potential impacts to groundwater quality through contaminants entering groundwater via the Central Lake and the human-made Paradise Cut Canal and increases in total dissolved solids in City wells resulting from withdrawals of groundwater to serve the River Islands project. These impacts are all considered less than significant in the SEIR and previous addenda. The Updated Tract 3765 VTM proposal and Updated NEPA Modifications have the same potential for contaminants to enter the lake system (i.e., the same type and extent of development that would generate contaminants) and the same methods and capacity to treat/remove these contaminants with treatment wetlands and other BMPs. Therefore, potential impacts to groundwater quality from operation of these water bodies, which are considered less than significant for the SEIR and previous addenda, would remain less than significant for the Updated Tract 3765 VTM scenario and Updated NEPA modifications. Although the Updated Tract 3765

VTM proposal does not include construction of homes or non-residential uses at this time, if one were to consider the development ultimately planned for the Updated Tract 3765 VTM area, it is not appreciably different from what described in the SEIR and previous addenda. As a result, the demand for potable water under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not differ appreciably from what is assumed in the SEIR and previous addenda, and impacts related to increases in total dissolved solids in City wells resulting from withdrawals of groundwater to serve the River Islands project would remain less than significant.

An impact related to water consumption resulting from the River Islands project making water unavailable to other users is also identified in the SEIR and previous addenda. The impact is considered less-than-significant. Again, because the development that would ultimately occur within Updated Tract 3765 VTM area and related water demand would not appreciably differ from that described in the SEIR and previous addenda, this impact would remain less than significant.

3.8.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to hydrology and water quality, significant changes in the severity of previously identified impacts related to hydrology and water quality, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to hydrology and water quality.

3.9 HAZARDOUS MATERIALS AND PUBLIC HEALTH

3.9.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to hazardous materials and public health has occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal or Updated NEPA Modifications.

The SEIR and previous addenda identify hazardous materials and public health impacts related to storage, use, and transport of hazardous materials during project construction and operation (less than significant); potential exposure of construction workers, residents, and others to hazardous materials that may currently be on the project site (significant); and use of recycled water to irrigate public areas at the project site (less than significant). The single significant impact among these three identified in the SEIR and previous addenda—the potential exposure of construction workers, residents, and others to hazardous materials that may currently be on the project site—would be reduced to a less-than-significant level with mitigation.

The Updated Tract 3765 VTM proposal and Updated NEPA Modifications include the same land uses already considered in the SEIR and previous addenda; therefore, the Updated Tract 3765 proposal and Updated NEPA Modifications would not alter the potential for project operations to use, store, transport, or generate hazardous materials or introduce land uses that would have greater sensitivity to hazardous materials. The Updated Tract 3765 VTM proposal and Updated NEPA Modifications do not include any construction methods that would result in additional storage, use, transport, or generation of hazardous materials relative to construction methods assumed in the SEIR and previous addenda. Therefore, the less-than-significant impact in the SEIR and previous addenda related to this topic would remain less than significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

Similarly, because there would be no substantial changes in the land uses and construction methods under the Updated Tract 3765 VTM proposal and Updated NEPA modifications compared to those included in the

SEIR and previous addenda, the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant or substantially more severe impacts related to potential exposure of construction workers, residents, and others to hazardous materials that may currently be present on the project site. This impact would remain significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications and would be reduced to a less-than-significant level using the same mitigation measures identified in the SEIR.

Finally, proposed development associated with the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would make the same use of recycled water on the same land uses as considered in the SEIR and previous addenda. Therefore, potential health risk impacts associated with the use of recycled water, which are considered less than significant in the SEIR, would also be considered less than significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

3.9.2 Conclusion

Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to hazardous materials and public health, significant changes in the severity of previously identified impacts related to hazardous materials and public health, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to hazardous materials and public health.

3.10 PUBLIC SERVICES

3.10.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs no changes to the regulatory background or existing conditions relative to public services have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR and previous addenda identify public service impacts related to obstruction of roadways during construction that potentially slows emergency vehicle access, increased demand for fire protection facilities and services, increased demand for water-related emergency facilities and services, increased demand for water flows for fire suppression (fire flow), increased demand for police protection facilities and services, increased demand for animal control facilities and services, and increased demand for school facilities and services. All of these impacts are considered significant and would be reduced to a less-than-significant level with mitigation. The SEIR and previous addenda also identify a public services impact related to increased generation of solid waste and an associated increase in demand for landfill capacity. However, this impact is considered less than significant because of sufficient available capacity at existing landfills.

There are no substantial changes in the land uses and construction methods under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications compared to those included in the SEIR and previous addenda. The Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant or substantially more severe impacts related to demand for, or provision, of public services; obstruction of roadways during construction that could slow emergency vehicle access; and generation of waste requiring disposal in a landfill. The same mitigation measures identified in the SEIR that would reduce significant impacts to less than significant levels would achieve the same result under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

3.10.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to public services, significant changes in the severity of previously identified impacts related to public services, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to public services.

3.11 PUBLIC UTILITIES

3.11.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background relative to public utilities have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR and previous addenda identified public utilities impacts related to:

- ▲ demand for potable water (significant),
- ▲ environmental impacts associated with the development of new city wells (less than significant based on previously adopted mitigation identified in the City's Water, Wastewater, and Recycled Water Master Plan EIR),
- ▲ demand for wastewater treatment capacity (significant),
- ▲ environmental impacts associated with the expansion of Water Recycling Plan (WRP) #1 and construction of WRPs #2 and #3 (significant),
- ▲ demand for recycled water storage and disposal capacity during Phases 1a and 1 of project development (less than significant),
- ▲ demand for recycled water storage and disposal capacity for Phase 2 of project development (significant), and
- ▲ stormwater/surface runoff management (less than significant).

Of the four significant impacts that are identified above, all but one of them (the environmental impact associated with the expansion of WRP #1 and construction of WRPs #2 and #3) could be reduced to less-than-significant levels with mitigation adopted as part of the River Islands Project. As stated in the Second Addendum prepared for the River Islands Project, since certification of the SEIR and related project approvals, the South San Joaquin Irrigation District South County Surface Water Supply Project (SCSWSP) has been completed. The SEIR identified a significant impact related to water supply, not because the City did not have rights to sufficient water to serve the project and existing and future development in the City, but because the SCSWSP had not been completed at that time and water deliveries from this source were not available. Because the SCSWSP has been completed and the City is receiving water deliveries from South San Joaquin Irrigation District, the significant water supply impact identified in the SEIR is no longer applicable, or would be considered less than significant if the SEIR were prepared today.

The Updated Tract 3765 VTM proposal does not include development at this time; however, if one were to consider future development within the Updated Tract 3765 VTM area, as well as any project modifications associated with the NEPA modifications, development that would result in demands for potable water,

wastewater, recycled water, and urban storm drainage would be the same as evaluated in the SEIR and previous addenda. At full project buildout under the Updated Tract 3765 VTM proposal and incorporating the Updated NEPA Modifications, demand for public utilities, methods for the provision of public utilities, and the capacity of public utility systems serving the project would be the same as described in the SEIR and previous addenda. Public utilities impacts identified in the SEIR and previous addenda, as well as mitigation measures and the effectiveness of mitigation measures, would be the same under the Updated Tract 3765 VTM and Updated NEPA Modifications.

3.11.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in new significant impacts related to public utilities, significant changes in the severity of previously identified impacts related to public utilities, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to public utilities.

3.12 RECREATION

3.12.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to recreation resources have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to recreation resources have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR and previous addenda identified recreation impacts related to demand for neighborhood and community parks, reduced recreational boating opportunities, and consistency with the open space designations. The impact related to reduced recreational boating opportunities is less than significant; the remaining two impacts are beneficial.

The Updated Tract 3765 VTM proposal does not include development at this time; however, if one were to consider future development within the Tract 3765 VTM area, as well as any project modifications associated with the Updated NEPA Modifications, development that would result in demands for recreation facilities would be the same as evaluated in the SEIR and previous addenda. The total acreage of parks and similar recreational facilities would also be the same (or greater). Therefore, there would be no change in impacts related to demand for neighborhood and community parks and consistency with open space designations and these impacts would remain beneficial under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

3.12.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in new significant impacts related to recreation, significant changes in the severity of previously identified impacts related to recreation, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to recreation.

3.13 AGRICULTURAL RESOURCES

3.13.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background relative to agricultural resources have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

As stated in the second Addendum prepared for the River Islands Project, since certification of the SEIR and related project approvals, all Williamson Act contracts that apply to lands included in the SEIR Phase 1 development area and the Tract 3694 VTM development proposal area have been cancelled. For contracts that are still in affect within the Phase 2 area (i.e., Tract 3765 VTM area); however, Notices of Non-Renewal have been filed with San Joaquin County and these contracts will expire before any development begins. Therefore, cancellation of contracts (versus expiration of contracts), which is considered significant in the SEIR, would not occur. Approval of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not alter impacts related to Williamson Act contract cancellations as described in the SEIR and previous addenda, and delays in implementation of development in the Phase 2 area (which are unrelated to consideration of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications) would result in lessening of this impact as contracts expire rather than being cancelled.

The SEIR and previous addenda also identified agricultural resource impacts related to conversion of important farmland (significant) and adjacent landowner/user conflicts (potentially significant). No mitigation is available to reduce impacts related to the conversion of important farmland to a less-than-significant level; therefore, this impact is considered significant and unavoidable. Impacts related to adjacent landowner/user conflicts can be reduced to less than significant with mitigation identified in the SEIR.

The Updated Tract 3765 VTM proposal does not include development at this time; however, if one were to consider future development within the Tract 3765 VTM area, as well as any project modifications associated with the NEPA modifications, the overall development footprint and resulting conversion of important farmland to a non- agricultural use is the same as described in the SEIR and previous addenda. Because of the similarities in the development footprint, type of development, and staging of development, potential conflicts between ongoing agricultural activities and adjacent new development under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not be appreciably different from that described in the SEIR and previous addenda.

No mitigation is available to reduce impacts related to the conversion of important farmland to a less-than-significant level (i.e., no new important farmland can be created to replace what is lost); therefore, this impact is considered significant and unavoidable and was covered in the City's previous approval of the project with the SEIR in 2003. For the same reasons described in the SEIR and previous addenda, this impact would remain significant and unavoidable under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

Impacts associated with potential conflicts between ongoing agricultural activities and adjacent new development identified as significant in the SEIR and previous addenda would remain significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. The mitigation measures identified in the SEIR to reduce the impact to a less- than-significant level would also reduce the impact to less than significant under the Updated Tract 3765 VTM and Updated NEPA Modifications.

3.13.2 Conclusion

Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to agricultural resources, significant changes in the severity of previously identified impacts related to agricultural resources, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to agricultural resources.

3.14 TERRESTRIAL BIOLOGY

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to terrestrial biology have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR and previous addenda identified terrestrial biology impacts related to the following categories of effects:

- ▲ general biological resources (less than significant);
- ▲ special-status plants (potentially significant);
- ▲ Valley elderberry longhorn beetle (significant);
- ▲ giant garter snake (significant);
- ▲ western pond turtle (potentially significant);
- ▲ Swainson's hawk (significant);
- ▲ Aleutian Canada goose and greater sandhill crane (less than significant);
- ▲ burrowing owl (significant);
- ▲ colonial nesting birds (less than significant);
- ▲ ground-nesting or streamside/lakeside-nesting birds (potentially significant);
- ▲ birds nesting in isolated trees or shrubs outside of riparian habitat (potentially significant);
- ▲ birds nesting along riparian corridors (significant);
- ▲ snowy egret, American white pelican, double-crested cormorant, and white-faced ibis (less than significant);
- ▲ ferruginous hawk, mountain plover, merlin, and long-billed curlew (less than significant);
- ▲ common tree-nesting raptors (significant);
- ▲ special-status bats (less than significant);
- ▲ riparian brush rabbit (significant);
- ▲ jurisdictional waters of the United States and riparian habitat (significant);
- ▲ wildlife corridors (significant); and
- ▲ biological resources associated with off-site facilities (potentially significant).

All impacts identified as significant or potentially significant would be reduced to less than significant with mitigation identified in the SEIR.

The Updated Tract 3765 VTM proposal and Updated NEPA Modifications do not appreciably alter the type or extent of development included in the project compared to the SEIR and previous addenda; therefore, with limited exceptions, at full buildout, impacts on terrestrial biological resources resulting from construction and operation of project development and the implementation and effectiveness of associated mitigation measures would not be different from that described in the SEIR and previous addenda. One exception is impacts on jurisdictional waters of the United States. With the avoidance of special aquatic features included in the Updated NEPA Modifications, the overall acreage of fill of jurisdictional waters would be less than that described in the SEIR. Effects on wildlife species associated with avoidance of this pond (e.g., western pond turtle) would also be reduced.

The No Action Flood Protection Option of Updated NEPA Modifications, when implemented, could alter the timing of impacts and mitigation described in the SEIR. However, these alterations in timing were analyzed in

the Third Addendum, which was adopted in 2012. In the SEIR, it was assumed that the Paradise Cut canal and setback levee would be completed prior to development in the Phase 2 area, providing a physical separation between habitat and special-status species in Paradise Cut (e.g., riparian brush rabbit) and potential indirect effects from adjacent development (e.g., entrance of humans and pets into Paradise Cut, introduction of feral cats into Paradise Cut). If the Updated NEPA Modifications were implemented, Phase 2 development could occur prior to the physical barriers of the Paradise Cut canal and setback levee being in place, increasing potential indirect adverse effects of development on terrestrial biological resources in Paradise Cut. However, the applicant would be required to pay applicable SJMSCP fees in a phased in basis (development area by development area), implement applicable SJMSCP impact minimization measures concurrently with fee payment, and implement planned non-native species controls in Paradise Cut between new development areas and existing habitat areas (e.g., feral cat control). These measures would reduce indirect effects of project development on terrestrial biological resources in Paradise Cut to within the range described in the SEIR and previous addenda; no new significant impacts would occur and there would not be a substantial increase in any previously identified significant impacts.

The potential reduction or elimination of the lowering of the bench immediately downstream of the Weir and replacing it with an additional setback levee placed 150-250 feet to north of the existing levee is also included in the Updated NEPA Modification flood protection improvement modifications, in the Upper Paradise Cut improvement area near the Paradise Weir. The bench area in question supports habitat for riparian brush rabbit and removal of vegetation and soil to lower the bench is considered a significant impact on this species in the SEIR. This impact would be mitigated to a less than significant level through restoration of habitat on the bench and elsewhere in Paradise Cut and other measures. A reduction in the level of lowering as part of the flood protection improvement modifications would still remove the habitat and the impacts and mitigation would be the same as described in the SEIR. If the acreage of area lowered were reduced or the lowering were eliminated, the impact to riparian brush rabbit would also be reduced or eliminated. This is the same scenario approved with the 2012 Third Addendum to the SEIR.

3.14.1 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to terrestrial biology, significant changes in the severity of previously identified impacts related to terrestrial biology, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to terrestrial biology.

3.15 FISHERIES

3.15.1 Updated Tract 3765 and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the existing conditions relative to fisheries have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

As stated in the Second Addendum prepared for the River Islands Project, since certification of the SEIR and related project approvals, the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) proposed listing populations of North American green sturgeon south of the Eel River as threatened under the federal Endangered Species Act (ESA). The listing proposal was released on April 5, 2005 and was identified in the First Addendum addressing the Tract 3491 VTM. On April 7, 2006, after certification of the First Addendum, NMFS made a decision on the listing proposal released the previous year and listed the green sturgeon as threatened under the ESA. The green sturgeon was identified as a state and federal Species of Concern when the SEIR was certified. As identified in the SEIR, the green sturgeon is

expected to forage in, and migrate through, the lower San Joaquin River and south Delta, which would include waterways around the River Islands project site. However, the species has not been reported in, nor is it expected to spawn in, the River Islands area due to a lack of suitable spawning habitat. Although the green sturgeon now receives a greater level of protection under the ESA than when the SEIR was certified and First Addendum was adopted, the change in listing status does not alter any impact conclusions or mitigation measures in the SEIR or previous addenda. Green sturgeon would use waterways in the project area in the same manner as salmonid species (salmon and steelhead) known to inhabit the project vicinity: for migration, and to a smaller extent, for foraging. Therefore, impacts identified in the SEIR and previous addendum related to salmonid species protected under the ESA would apply to green sturgeon in the same manner currently described in these documents. Mitigation measures identified in the SEIR and previous addendum related to listed salmonid species would also apply to green sturgeon and would be equally effective in reducing significant impacts to less-than-significant levels. Therefore, where the SEIR identifies no significant unavoidable impacts related to listed salmonids (or other special status fish species), the same conclusion would apply to green sturgeon.

The SEIR and/or the previous addenda identified fisheries impacts related to:

- ▲ RID Area construction sediment (less than significant),
- ▲ levee breaching (significant),
- ▲ bridge and utility crossings (significant),
- ▲ the Paradise Cut Bridges (significant),
- ▲ dock construction (less than significant),
- ▲ structural habitat features (ranges from less than significant to beneficial),
- ▲ entrainment in project pumps (beneficial),
- ▲ maintenance dredging of back bays (significant),
- ▲ habitat modification in Paradise Cut (beneficial),
- ▲ diversion of chinook salmon smolts (less than significant),
- ▲ creation of new fish habitat in the RID Area (beneficial),
- ▲ introduction of exotic fish into the Delta (less than significant), and
- ▲ increased water consumption (less than significant).

All the significant impacts listed above would be reduced to less than significant with mitigation identified in the SEIR.

As stated previously in the evaluation of hydrology and water quality, impacts related to construction sediment in the project development area (i.e., RID Area) contributing to water quality contamination would not be altered appreciably by the Updated Tract 3765 VTM proposal or Updated NEPA Modifications as the construction footprint (with minor modifications such as the elimination of back bays) and the type of development are not altered relative to that evaluated in the SEIR and previous addenda. This impact mechanism, as it relates to fisheries (i.e., RID Area construction sediment), would continue to result in a less than significant impact under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The Updated Tract 3765 VTM proposal does not alter planned utility crossings and bridges associated with the project and therefore would not alter fisheries impacts associated with these facilities. The Updated NEPA Modifications do not affect project utility crossings but provide further detail regarding the design and construction of project bridges; however the bridge details still remain consistent with the assumptions regarding the bridges in the SEIR and previous addenda. A portion of the additional bridge details consist of specific measures to minimize fisheries impacts. Therefore, fishery impacts associated with bridge and utility crossings and the Paradise Cut Bridges would be consistent with those described in the SEIR and previous addenda and could be lessened. These impacts would remain significant and would continue to be reduced to a less than significant level with mitigation.

The fisheries related structural habitat features identified in the SEIR that would result in less than significant to beneficial impacts (e.g., habitat plantings) would not be substantially altered by the Updated

Tract 3765 VTM proposal and Updated NEPA Modifications. The impact would continue to range from less than significant to beneficial. No new significant adverse impact would occur.

The beneficial fisheries impact identified in the SEIR related to entrainment in project pumps primarily results from the replacement of multiple existing agricultural water intake pumps along the San Joaquin River, Old River, and Paradise Cut with two screened pump facilities to support water levels in the project's lake system. This modification of water intake infrastructure is included, unchanged, in the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. The beneficial impact identified in the SEIR and previous addenda would continue under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. No new significant adverse impact would occur.

As described previously in the evaluation of hydrology and water quality, the operation and performance of the Central Lake as a stormwater management and water quality system would not be appreciably altered by the Updated Tract 3765 VTM proposal and Updated NEPA modifications. Therefore, fisheries impacts described in the SEIR and previous addenda related to central lake operation (water discharges to the Delta and altered hydrology from water discharges) would not differ appreciably from implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. These impacts would remain beneficial, or less than significant, and no new significant impacts would occur.

A beneficial fisheries impact is identified in the SEIR related to planned habitat modifications in Paradise Cut (e.g., riparian habitat plantings enhancing/creating shaded riverine aquatic habitat). Although these habitat modifications may be delayed or somewhat reduced under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications (e.g., Paradise Cut improvements that provide space for new riparian vegetation are delayed, compliance with USACE vegetation management policies results in less land available for riparian vegetation planting than originally anticipated), substantial beneficial habitat modifications would still occur, resulting in the beneficial effect identified in the SEIR and previous addenda. No new significant impacts would occur because past "less-than-significant" conclusions for fisheries are not dependent on the beneficial effects of habitat improvements in Paradise Cut.

The less than significant fisheries impact identified in the SEIR related to diversion of chinook salmon smolts involves the potential for increased flows entering Paradise Cut from the San Joaquin River to carry with them additional salmon smolts that would be diverted from the San Joaquin River to Old River (a less desirable course for migration to the open ocean). Changes in flows (timing and volume) are not considered sufficient to divert a substantial number of smolts relative to existing conditions and the impact is considered less than significant. The Updated Tract 3765 VTM proposal and Updated NEPA Modifications do not appreciably alter the planned function of Paradise Cut as a flood control feature and the frequency and volume of flows into the cut would not differ appreciably from those described in the SEIR and previous addenda. Therefore, this impact would remain less than significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. No new significant impacts would occur.

Fisheries impacts identified in the SEIR and previous addenda related to the creation of new fish habitat in the RID Area (beneficial) and introduction of exotic fish into the Delta (less than significant) both center on the construction and operation of the project's lake system. Creation of the lakes would provide a new water body suitable for fish and would therefore create new fish habitat. The lake system could also become a source for exotic fish species (e.g., project residents release non-native fish into the lake) that could leave the lake and enter the Delta. However, this impact is considered less than significant because there is not a direct hydrologic connection between the lake system and nearby Delta waterways, and adult fish, juveniles, and eggs are not expected to survive passing through pumps that would move water from the lake system to outfalls in Paradise Cut when needed. As stated previously, the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not alter the operation and performance of the lake system. Therefore, these impacts would remain beneficial and less than significant, respectively, under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. No new significant impacts would occur.

As stated previously in the analysis of hydrology and water quality, although the Updated Tract 3765 VTM proposal does not include construction of homes or non-residential uses at this time, if one were to consider

the development ultimately planned for the Updated Tract 3765 VTM area compared to that contemplated in the Amended West Lathrop Specific Plan (i.e., the most current River Islands proposal), it is not appreciably different from what described in the SEIR and previous addenda. As a result, the demand for potable water under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not differ appreciably from what is assumed in the SEIR and previous addenda. Therefore, fisheries impacts identified in the SEIR related to increased water consumption would not be altered under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications and the impact would remain less than significant. No new significant impacts would occur.

The Updated Tract 3765 VTM proposal and Updated NEPA Modifications do not generate new fishery impact mechanisms beyond those already included in the SEIR and previous addenda and described above.

3.15.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to fisheries, significant changes in the severity of previously identified impacts related to fisheries, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to fisheries.

3.16 CULTURAL RESOURCES

3.16.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the VTMs, no changes to the regulatory background relative to cultural resources have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR identifies impacts to an archeological site identifies as site RI-1 (described as impacts to “recorded archeological sites”) as potentially significant. The site is located in the Phase 1 development area and would not be affected by the Updated Tract 3765 VTM proposal (covers the Phase 2 development area) or the Updated NEPA Modifications. Therefore, impacts to this site and the implementation/effectiveness of mitigation measures would not be altered by the Updated Tract 3765 VTM proposal and the Updated NEPA Modifications.

The SEIR and previous addenda identify additional cultural resources impacts related to listed archeological sites (significant), historic properties (significant), undiscovered/unrecorded archeological sites (potentially significant), undiscovered/unrecorded human remains (significant), and off-site resources (significant). All these impacts would be reduced to less-than-significant levels with mitigation.

Cultural resources impacts related to undiscovered/unrecorded resources and off-site resources address the potential to encounter currently unknown resources in the River Islands Development Area (RID Area [i.e., area proposed for development within the Steward Tract]) or within off-site utility corridors because of these resources either being below the ground surface or not yet being encountered during surveys. Because the potential still exists to encounter currently unknown cultural resources during construction of development associated with the Updated Tract 3765 VTM proposal and construction of the NEPA Modifications, significant impacts identified in the SEIR related to this issue would still be considered significant under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications. The mitigation measures identified in the SEIR for these impacts would also reduce the impacts to less-than significant levels under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

Impacts identified in the SEIR and previous addenda related to listed archeological sites and historic properties involve the degradation of visual character in the vicinity of historic/archeological resources resulting from project development. This impact is considered significant and would be reduced to a less than significant level with mitigation. Historic/archeological resources considered in these impacts include the railroad drawbridge crossing the San Joaquin River just north of the Manthey Road bridge; the landing place for the sail launch Comet (a California historic landmark), which is on the San Joaquin River near the railroad drawbridge; and the agricultural silo complex just southwest of the railroad drawbridge. Construction of modern structures near these sites could degrade remaining views that reflect the historic context of the sites and is considered a significant impact. Under the development scenario described in the SEIR, views of the railroad drawbridge and the Comet landing site would be adversely affected by the Golden Valley Parkway bridge over the San Joaquin River and houses on the high-ground corridor north of the bridge; these are Phase 1 impacts that are not applicable to the Phase 2 area comprising the Updated Tract 3765 VTM proposal. The Updated NEPA modifications provide greater detail regarding the design and construction methods for the Golden Valley Parkway bridge over the San Joaquin River. These additional details are consistent with assumptions used in the SEIR and previous addenda and do not alter the intensity or nature of this impact or the implementation or effectiveness of mitigation. Mitigation measures included in the SEIR would continue to reduce this impact to a less than significant level with the Updated NEPA Modifications.

Under the development scenarios described in the SEIR and the previous addenda, views of the agricultural silo complex would be adversely affected by construction of modern buildings in the portion of the Employment Center north and northwest of the silos. This is an area included in Phase 1 of project development. The Updated Tract 3765 VTM proposal and the Updated NEPA Modifications do not include development in this area and would not affect this impact.

3.16.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to cultural resources, significant changes in the severity of previously identified impacts related to cultural resources, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to cultural resources.

3.17 AESTHETIC RESOURCES

3.17.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to aesthetic resources have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The SEIR and previous addenda identify aesthetic resources impacts related to views of the site from surrounding lands (less than significant), views from I-5 and the I-5/I-205/State Route 120 merge segment (less than significant), views for recreational boaters (less than significant), nighttime views (less than significant), views of the grain silos and the railroad bridge (less than significant), and design and function of walls and fences/consistency with the WLSR (potentially significant). The one potentially significant impact would be reduced to less than significant with mitigation identified in the SEIR.

The Updated Tract 3765 VTM proposal includes the same development types in the same district locations as described in the SEIR and previous addenda. Proposed walls and fences included in the project area are also the same. Development in the Tract 3765 VTM area visible from various vantage points, as well as effects on nighttime views, would not differ from what is described in the SEIR and previous addenda and

impacts related to these issues would remain less than significant. The potentially significant impact associated with the function of walls and fences and consistency with the WLSP would be the same and would continue to be reduced to a less than significant level with the same mitigation.

Although the Updated NEPA Modifications involve levee work, they do not alter levee heights; therefore, project views would not change via this mechanism. The Updated NEPA Modifications provide greater detail regarding the design and construction methods for project bridges. These additional details are consistent with assumptions used in the SEIR and previous addenda and do not alter the aesthetic effects of the bridges.

3.17.2 Conclusion

In summary, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant impacts related to aesthetic resources, significant changes in the severity of previously identified impacts related to aesthetic resources, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to aesthetic resources.

3.18 GROWTH-INDUCING IMPACTS

3.18.1 Updated Tract 3765 VTM and Updated NEPA Modifications

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions related to growth-inducing impacts have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

As described in various sections above, at full buildout of the River Islands project, land uses under the Updated Tract 3765 VTM proposal and Updated NEPA modifications are the same or differ only slightly from those described in the SEIR and previous addenda. No changes are proposed regarding the number and type of dwelling units, population and employee-generating land uses (i.e., dwelling units), and job-generating land uses (Town Center, Employment Center). Therefore, the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in a substantial change in the overall growth-inducing impacts from those described in the SEIR related to fostering economic or population growth or the construction of additional housing and the provision of services since these changes do not create any new development and do not change buildout development assumptions from the SEIR or previous approvals.

3.18.2 Conclusion

Overall, implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant growth-inducing impacts, significant changes in the severity of previously identified growth-inducing impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to growth-inducing impacts.

3.19 CUMULATIVE IMPACTS

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background related to cumulative impacts have occurred that

would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

Regarding existing conditions, since 2003 a number of projects listed in the cumulative impacts section of the SEIR have either been completed, or construction is underway (e.g., Hampton Inn Hotel, Best Western (now Holiday Inn Express) Hotel, Trailer Prox, Walgreen's, Save Mart shopping center and others). However, because CEQA requires that a cumulative impact analysis consider past, present, and reasonably foreseeable future projects, that some projects that were considered "future projects" in the SEIR are now complete or under construction does not affect their consideration in the cumulative-impact analysis.

In some instances (e.g., Central Lathrop Specific Plan), more detail is now available regarding a related project than was available when the SEIR was certified in 2003. However, the cumulative analysis in the SEIR included both a list approach (list of projects) and a plan approach (using development assumptions included in applicable general plans, specific plans, and the SJMSCP), resulting in a thorough and comprehensive consideration of local and regional development in the evaluation of cumulative impacts.

Therefore, additional details or minor modifications regarding a specific project included in the cumulative impact analysis would not alter the overall conclusions in the analysis. As indicated in the cumulative impacts analysis in the SEIR and repeated in the previous addenda, implementing the River Islands project would contribute to significant cumulative impacts related to traffic; air quality; noise; geology, soils, and mineral resources; public services; public utilities; agricultural resources; fisheries; and odor. It also would potentially contribute to significant surface water quality impacts. As described in the SEIR and repeated in the previous addenda, these impacts are a product of cumulative growth, and no feasible mitigation is available to reduce these impacts to less-than-significant levels; therefore, these cumulative impacts are considered significant and unavoidable.

As described in various sections above, land uses under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications are the same or differ only slightly from those described in the SEIR and previous addenda. Therefore, project contributions to cumulative impacts under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not be substantially greater than those described in the SEIR and previous addendum. Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in any new significant cumulative impacts, significant changes in the severity of previously identified cumulative impacts, or significant changes in the effectiveness or applicability of mitigation measures and project alternatives related to cumulative impacts.

3.20 ALTERNATIVES

Since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the previous VTMs, no changes to the regulatory background or existing conditions relative to project alternatives have occurred that would trigger the need for subsequent environmental review of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The River Islands SEIR includes analysis of three alternatives, a No-Project (No-Development) Alternative, a No Project (WLSP) Alternative, and an Environmental Constraints (50% Development) Alternative. The alternatives analysis in the SEIR also describes several other alternatives that were considered, but then rejected from further consideration.

Impacts associated with the alternatives evaluated in the SEIR were compared against impacts resulting from full project buildout. Alternatives were also evaluated for their ability to meet project goals and objectives. Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications does not alter the evaluation of full buildout of the River Islands project because the SEIR fully evaluated the impacts of development of the entire River Islands project. Full project buildout under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would be virtually the same as the full buildout

described in the SEIR, with minor refinements and modifications addressed in this addendum (e.g., elimination of back bays, modifications to boat docks, avoidance of special aquatic features) that do not alter the conclusions in the SEIR and subsequent addenda. Therefore, the comparison of impacts associated with the proposed project and impacts associated with each project alternative included in the SEIR would not be altered under the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

The Updated Tract 3765 VTM proposal and Updated NEPA Modifications include/support the same project goals and objectives as described in the SEIR and previous addenda and do not conflict with these goals and objectives. Therefore, the feasibility of alternatives relative to their ability to meet these goals and objectives would be the same under the SEIR and all other development scenarios. Implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications would not result in alternatives previously found to be infeasible being categorized as feasible.

3.21 CONCLUSION

Based on the analysis of the categories of environmental impacts evaluated above, the Updated Tract 3765 VTM proposal and Updated NEPA Modifications result in none of the conditions described in Section 15162 of the State CEQA Guidelines calling for preparation of a SEIR. In summary, the Updated Tract 3765 VTM proposal, the NEPA modifications, and any altered circumstances or new information of substantial importance since certification of the River Islands SEIR and related project approvals in 2003, and adoption of the Tract 3491 VTM in 2005, the adoption of the Tract 3694 VTM in 2007, and an updated Tract 3694 VTM in 2015:

- ▲ would not result in any new significant environmental effects,
- ▲ would not substantially increase the severity of previously identified effects,
- ▲ would not result in mitigation measures or alternatives previously found to be infeasible becoming feasible,
- ▲ would not result in availability/implementation of mitigation measures or alternatives that are considerably different from those analyzed in the previous document that would substantially reduce one or more significant effects on the environment.

These conclusions confirm that this Addendum to the River Islands SEIR is the appropriate document to record and evaluate the minor project modifications associated with implementation of the Updated Tract 3765 VTM proposal and Updated NEPA Modifications.

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5 REFERENCES

MBK Engineers. 2018 (March 9). *Hydraulic Impact Analysis for River Islands at Lathrop, Update for New Existing Condition and Revised No Action Scenario*. Technical Memorandum.

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Appendix A

Hydraulic Impact Analysis

TECHNICAL MEMORANDUM

DATE: March 9, 2018
PREPARED BY: Michael Archer, P.E.
REVIEWED BY: Brian Brown, P.E.
SUBJECT: Hydraulic Impact Analysis for River Islands at Lathrop, Update for New Existing Condition and Revised No Action Scenario



1. Background

The River Islands at Lathrop project developer, River Islands Development LLC (RID), has made an application for updating the existing large lot, vesting tentative map, Tract 3765, to accommodate the revised circumstances regarding changes in the development envelope for Phase 2, and regarding the “No Action” alternative for flood protection. The subject of this technical memorandum is the “No Action” alternative for flood protection.

In 2012, the original Tract 3765 was approved by the City of Lathrop. In 2010, MBK Engineers (MBK) completed a flood hydraulic impact analysis in support of a Third Addendum to the Subsequent Environmental Impact Report (SEIR) for the River Islands at Lathrop Project (AECOM, 2012). The 2010 hydraulic impact analysis evaluated four scenarios:

1. Base Condition (“Base”): The system prior to construction of the River Islands interior levees that form the Phase 1 protected area, shown in Figure 1.
2. Existing Condition (“Existing”): This scenario includes the existing levee alignments and channel geometry for Stewart Tract and the surrounding area, which includes the River Islands at Lathrop (River Islands) Phase 1 interior levee, as shown in Figure 1.

3. Modified Condition, Cumulative with No Federal Action (“No Action”): This scenario evaluates hydraulic impacts for flood protection which could be built without triggering a Federal action. The “No Action” scenario consists of a FEMA accredited interior levee that does not come in contact with a Federal Project levee or any waters of the United States, as shown in Figure 2.
4. Modified Condition, Cumulative with Project (“With Project”): The “With Project” scenario includes the proposed River Islands at Lathrop Project, as shown in Figure 3.

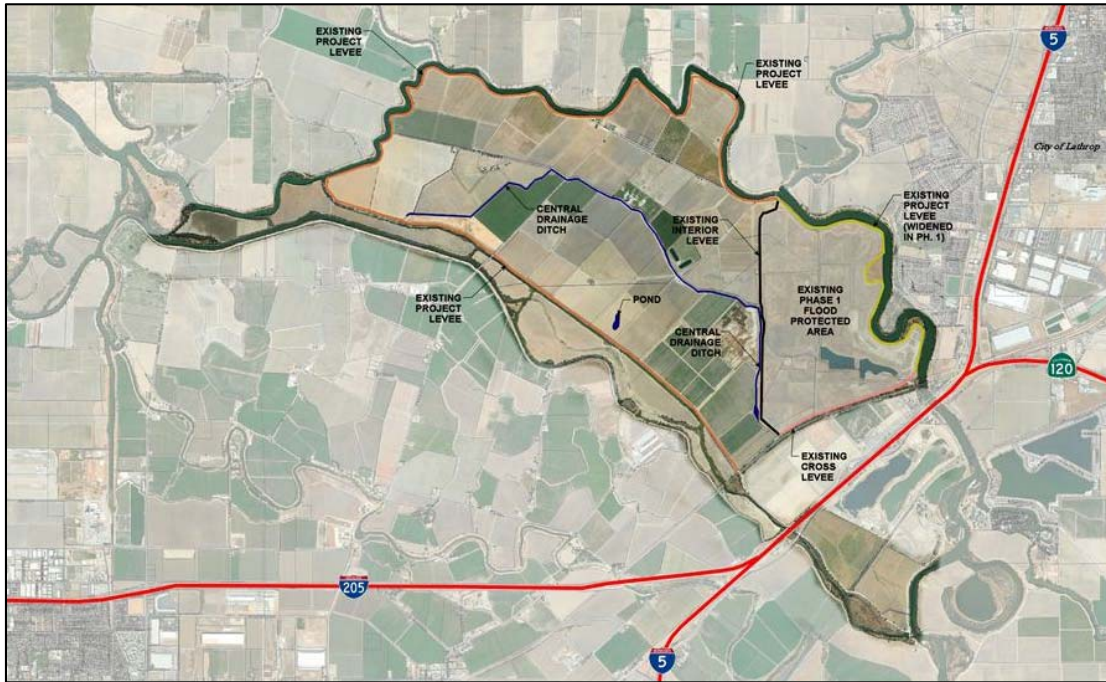


Figure 1. 2012 “Existing” Scenario

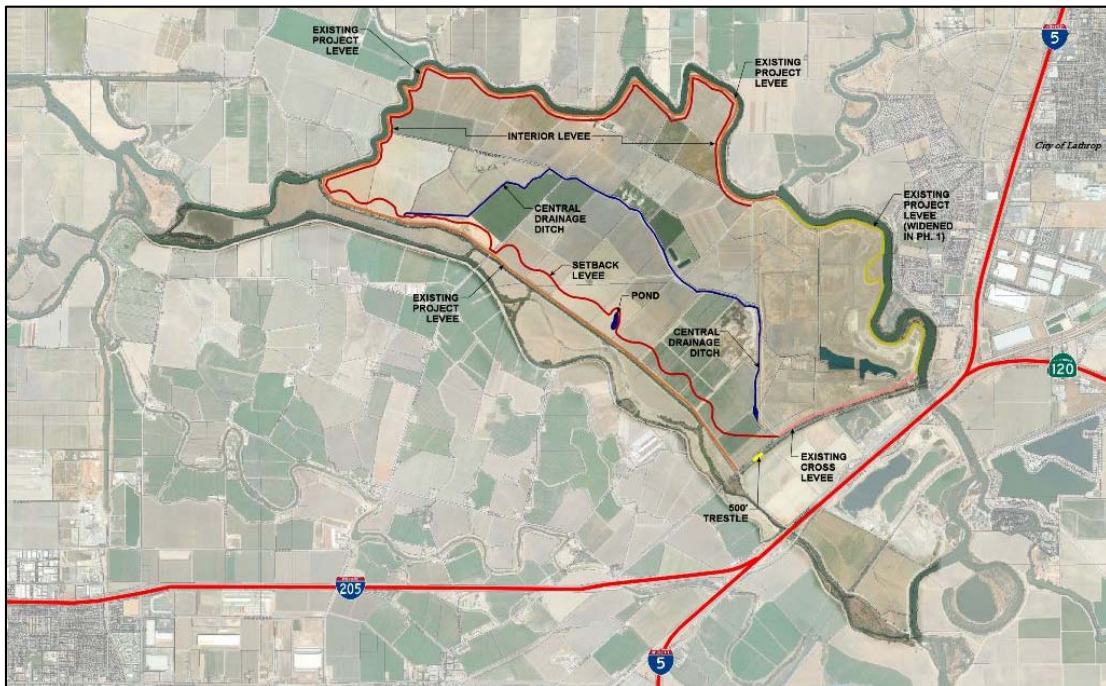


Figure 2. 2012 “No Action” Scenario

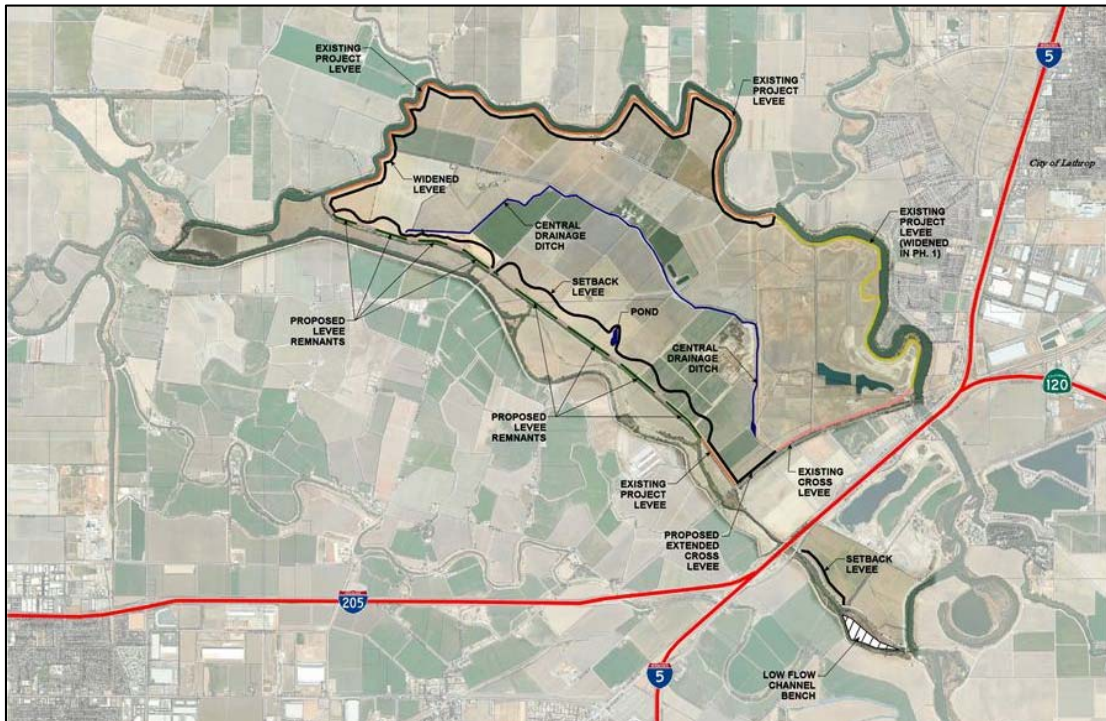


Figure 3. 2012 “With Project” Scenario

The 2010 analysis evaluated hydraulic impacts for seven flood events with 2-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence intervals.

In 2012, the hydraulic model used for the analysis was modified in order to better represent the floodplains in the study area. These modifications did not affect the results of the more frequent flood events that were evaluated in the 2010 analysis (2-, 10-, 25-, 50-, and 100-year). The 200-year and 500-year flood simulations were re-run with the modified hydraulic model, and the updated hydraulic impact analysis was documented in *River Islands at Lathrop Hydraulic Impact Analysis* (MBK Engineers, 2012). The March 2012 report was subsequently revised in July 2014 in order to address comments from the U.S. Army Corps of Engineers (USACE). The 2014 revision was solely editorial; the hydraulic impact analysis and results were unchanged from the 2012 report. The 2012 analysis was used, with reference made to the 2014 report, for the flood hydraulic impact analysis presented in the Draft Environmental Impact Statement for River Islands at Lathrop, Phase 2B (USACE, 2014).

The 2014 report presented the hydraulic impacts of four flood events: 50-year, 100-year, 200-year, and 500-year. The hydraulic impacts were determined for two levee performance conditions:

1. Levees fail when water reaches the top of levee.
2. Levees overtop without failing.

Historically, when levee failures have occurred on the San Joaquin River, they have occurred prior to the water reaching the top of levee. Therefore, the levee performance condition of levees failing when water reaches the top of the levee was defined as the “most likely” condition and determined to be the appropriate condition for NEPA and CEQA purposes.

2. Updated Analysis

The hydraulic analysis presented in the Third Addendum to the SEIR has been updated to account for changes in the “Existing” scenario and revisions to the “No Action” scenario. The updated hydraulic analysis is necessary for Ascent Environmental’s Sixth Addendum to the SEIR. This Technical Memorandum will serve as a technical appendix to this addendum. The “Base” and “With Project” scenarios remain unchanged; therefore, the results for these scenarios presented in the Third Addendum are not affected by the updated analysis.

2.a. New “Existing” Scenario

Since the 2012 analysis, the River Islands at Lathrop Phase 1 interior levee has been expanded to include the FEMA certified Stage 2A area, shown in Figure 4. The Stage 2B interior levee also was recently constructed, and a Letter of Map Revision (LOMR) has been requested by RID for certification by FEMA. The “Existing” scenario has been updated to account for the addition of the Stage 2A and 2B interior levees to the Phase 1 interior levee.

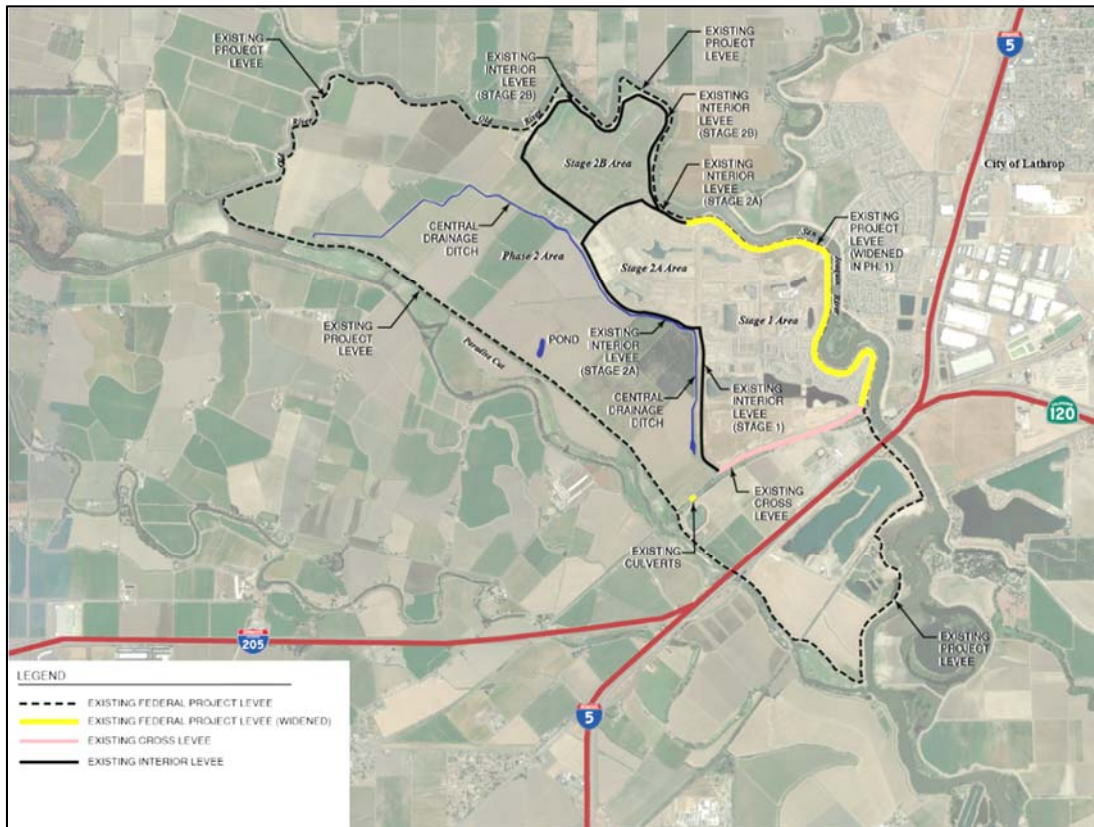


Figure 4. 2018 “Existing” Scenario

2.b. Revised “No Action” Scenario

The NEPA Modifications (as coined by AECOM in the Third Addendum) assumed certain conditions for the “No Action” scenario. This included a 500-foot-long trestle in the Union Pacific Railroad (UPRR) embankment that was assumed to be constructed in order to allow flood water from the southeast Stewart Tract area (Reclamation District [RD] 2107) to flow into the River Islands at Lathrop area (RD

2062) in the event of flooding in RD 2107. In the 2018 Sixth Addendum, the “No Action” conditions (“Updated NEPA Modifications”) have changed as detailed below and in Figure 5:

- The removal of the proposed 500-foot-long trestle in the Union Pacific Railroad (UPRR) embankment. The “No Action” scenario will now leave the UPRR embankment as it currently exists, since the flood flows from RD 2107 will have to be accommodated by River Islands/RD 2062, regardless of whether the existing culverts are within the embankment or a trestle is provided. In the event that RD 2107 floods, the UPRR embankment is assumed to fail, as occurred in January 1997.
- The interior levee along Paradise Cut will be straightened, with its toe offset from the toe of the existing Paradise Cut levee by a distance of 100 feet. It is understood that if the area located between the existing levee and the interior levee becomes inundated with flood waters, there is a potential for erosive conditions to occur. These conditions would be evaluated during the design phase of the project and appropriate erosion control features, such as check berms to reduce velocities and/or revetment along the waterside of the interior levee, would be included.
- Approximately 380 acres of agricultural land within Paradise Cut, downstream of the UPRR, will be degraded approximately 2 feet. The land use of the degraded land is not expected to change, so the hydraulic roughness coefficients remain the same.

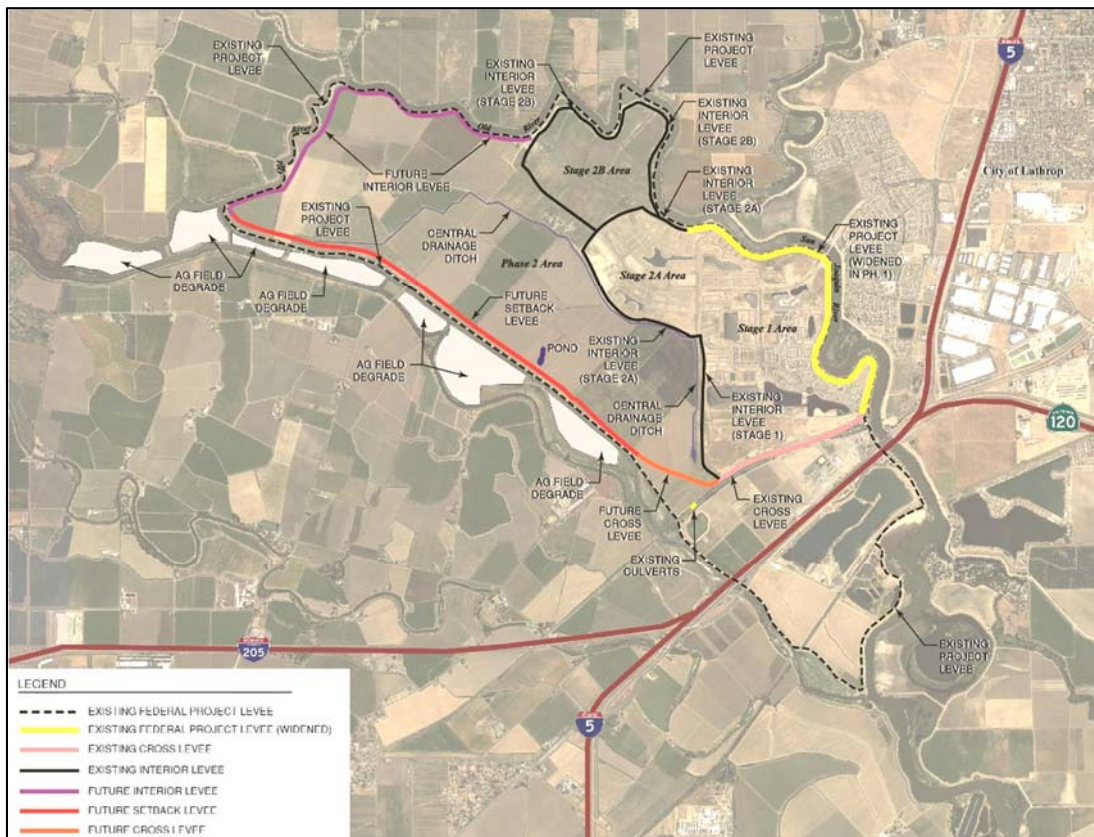


Figure 5. 2018 “No Action” Scenario

3. Hydraulic Model

The same hydraulic model used for the 2012 analysis was used for the updated analysis. The model domain consists of the San Joaquin River and distributaries downstream of the Stanislaus River (Figure 6). The model, which is referred to as the Lower San Joaquin River or LSJR Model, was developed by MBK in 2005 (MBK Engineers, 2006) using the USACE Hydrologic Engineering Center HEC-RAS computer program (USACE HEC, 2010). HEC-RAS performs one-dimensional unsteady hydraulic calculations for a full network of natural and constructed channels. HEC-RAS version 4.1 was used for this analysis.

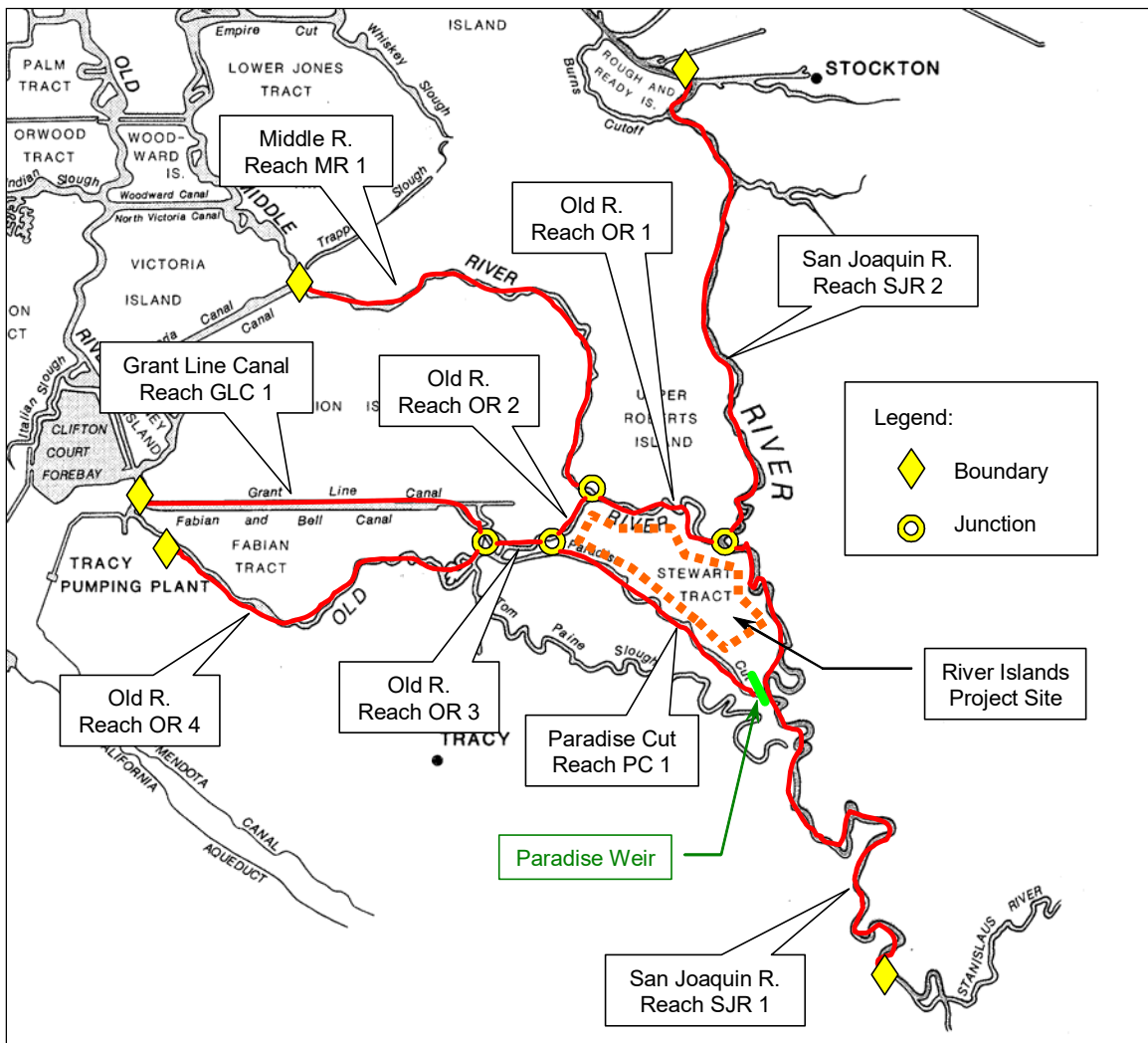


Figure 6. Lower San Joaquin River HEC-RAS Model Schematic

4. Hydrology

The same hydrologic data used for the 2012 analysis was used for the updated analysis. The hydrologic data was developed by USACE as part of the Sacramento and San Joaquin River Basins Comprehensive Study (USACE, 2002). The flood events with the following recurrence intervals were evaluated in the 2012 analysis: 50, 100, 200, and 500 years.

5. Results

The 2014 report presented impacts to the computed maximum water surface elevations in the river channels at the index points shown in Figure 7, and in the floodplain areas shown in Figure 8.

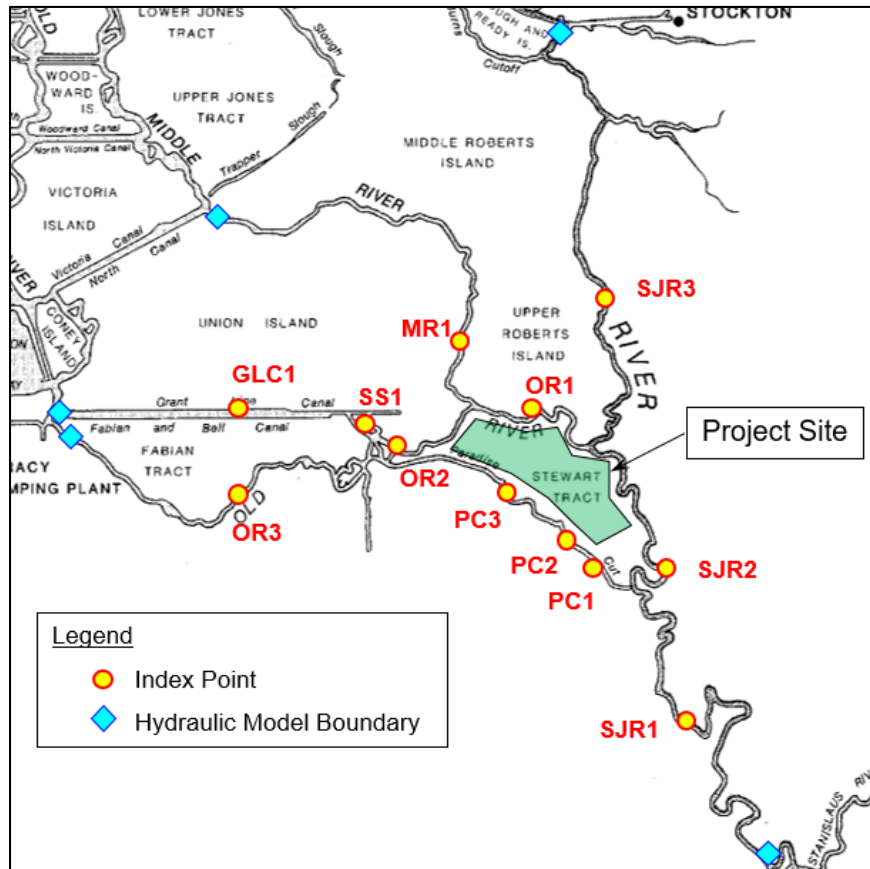


Figure 7. Riverine Hydraulic Impact Index Point Locations

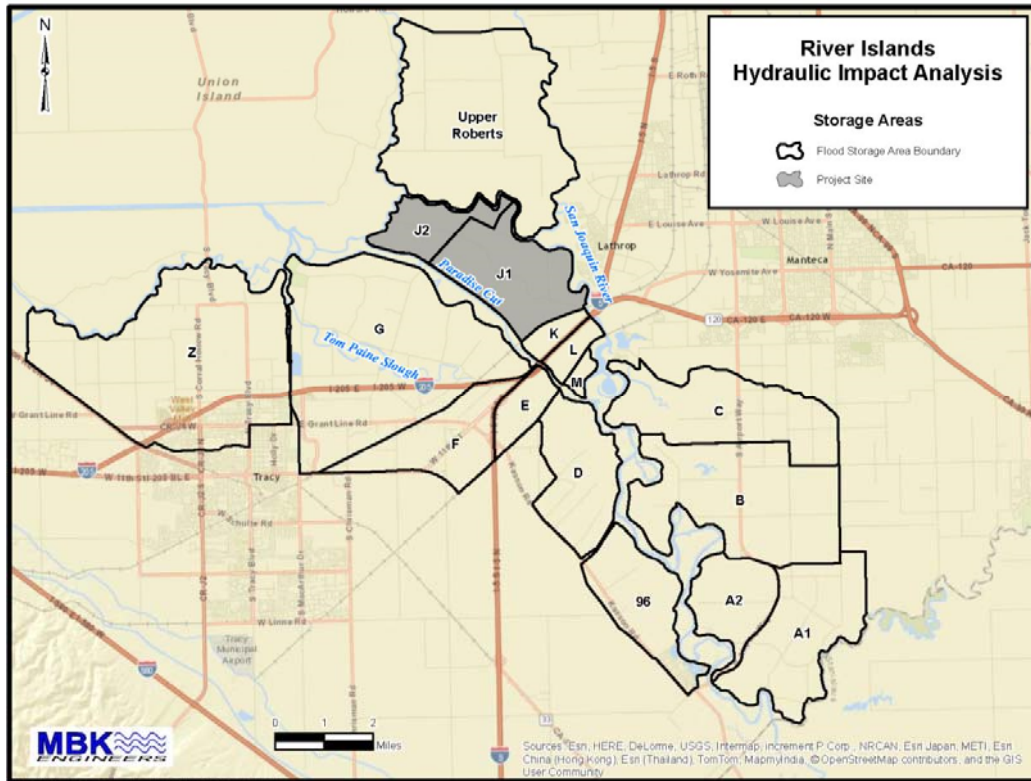


Figure 8. Floodplain Hydraulic Impact Locations

The updated analysis affects the following relative hydraulic impacts, determined in the 2012 analysis, and presented in the 2014 report:

- a. “Existing” to “No Action”
- b. “Existing” to “With Project”
- c. “Base” to “No Action” (cumulative)

5.a. Hydraulic Impacts, “Existing” to “No Action”

The computed riverine hydraulic impacts of going from the updated “Existing” condition to the updated “No Action” condition are provided in Table 1 for both the 2012 analysis and the updated analysis. The change in this impact from the 2012 analysis is also provided. Likewise, the hydraulic impacts in the floodplain area are provided in Table 2. Profile plots of the changes in the maximum water surface elevations in the river channels, comparing the 2012 and 2018 impacts, are provided in Appendix A.

5.a.1. San Joaquin River

In the San Joaquin River, the 2012 analysis showed very little difference between the “Existing” and “No Action” scenarios. The updated “No Action” scenario results in a slight water surface elevation reduction, ranging from 0.02 to 0.08 feet (see Figures A-1 through A-4).

5.a.2. Paradise Cut

In Paradise Cut, the 2012 analysis showed no difference between the “Existing” and “No Action” scenarios in the 50- and 100-year flood events. The updated “No Action” scenario now results in a substantial stage reduction in Paradise Cut of up to 0.8 feet in the 50-year flood (Figure A-5) and up to 0.6 feet in the 100-year flood (Figure A-6). This is due to the addition of the agricultural area degrade in Paradise Cut, paired with the fact that there are no levee failures on Stewart Tract in these flood events. The effect on the water surface elevation within Paradise Cut in the 200- and 500-year flood events, although appearing significant (Table 1, Index Point PC2), is not significant since the floodplains adjacent to Paradise Cut are already flooded due to levee overtopping and failure in both the “Existing” and “No Action” scenarios. In other words, the effects of the “No Action” scenario on the water surface elevation in Paradise Cut do not change the risk of flooding. For the 200- and 500-year flood events, as was pointed out in the 2014 report, it is more important to look at impacts in the floodplain. As seen in Table 2, the updated scenarios result in flood depth increases in the floodplain south of Paradise Cut, of up to 1 foot in the 200-year flood (Floodplain Area Z). This is due to increased flow through levee breaches, due to the Paradise Cut stage increases upstream of the UPRR (see Figure A-7). As stated, these areas are already inundated from flood flows and the additional elevation increases do not change the risk of flooding.

5.a.3. Old River

In Old River, the 2012 analysis showed no difference between the “Existing” and “No Action” scenarios in the 50- and 100-year flood events. The updated “No Action” scenario now results in a stage reduction in these flood events of approximately 0.2 feet in Old River upstream of Paradise Cut, with a slight increase of less than 0.05 feet downstream of Paradise Cut (Figures A-9 and A-10). In the 200- and 500-year flood events, the updated “No Action” scenario results in about a 0.1-foot reduction in the water surface elevation upstream of Paradise Cut, but an increase of up to 0.2 feet downstream of Paradise Cut (Figures A-11 and A-12).

5.a.4. Grant Line Canal

In Grant Line Canal, the 2012 analysis showed no difference between the “Existing” and “No Action” scenarios in the 50- and 100-year flood events. The updated “No Action” scenario results in a slight increase in the water surface elevation in these flood events of less than 0.05 feet (Figures A-13 and A-14). In the 200-year flood, the updated “No Action” scenario increases the stage in Grant Line Canal by up to 0.17 feet (Figure A-15). There is no change in the “No Action” impact in the 500-year flood (Figure A-16).

5.a.5. Middle River

In Middle River, the 2012 analysis showed no difference between the “Existing” and “No Action” scenarios in the 50- and 100-year flood events. The updated “No Action” scenario results in a stage reduction in these flood events of up to 0.2 feet (Figures A-17 and A-18). In the 200-year flood event, the updated “No Action” scenario has negligible effect on the water surface elevation upstream of Howard Road, but results in a substantial reduction in stage downstream of Howard Road of up to 0.6 feet (Figure A-19). In the 500-year flood event, the updated “No Action” scenario results in an increase in stage of about 0.2 feet upstream of Howard Road with a decrease in stage of about 0.15 feet downstream of Howard Road (Figure A-20).

5.b. Hydraulic Impacts, “Existing” to “With Project”

The computed riverine hydraulic impacts of going from the updated “Existing” condition to the updated “With Project” condition are provided in Table 3. The change in this impact from the 2012 analysis is also provided. Likewise, the hydraulic impacts in the floodplain area are provided in Table 4. Profile plots of the changes in the maximum water surface elevations in the river channels, comparing the 2012 and 2018 impacts, are provided in Appendix B.

The updated “With Project” scenario has no effect on the impacts determined in the 2012 analysis, with the exception of the following:

- Paradise Cut, 200- and 500-year flood events: impact reduced by up to 0.05 feet (Figures B-7 and B-8).
- Old River, 200- and 500-year flood events: impact reduced by up to 0.05 feet (Figures B-11 and B-12).
- Grant Line Canal, 200- and 500-year flood events: impact reduced by up to 0.05 feet (Figures B-15 and B-16).
- Middle River, 500-year flood event: impact reduced by up to 0.04 feet (Figure B-20).

5.c. Hydraulic Impacts, “Base” to “No Action”

The computed riverine hydraulic impacts of going from the “Base” condition to the updated “No Action” condition are provided in Table 5. The change in this impact from the 2012 analysis is also provided. Likewise, the hydraulic impacts in the floodplain area are provided in Table 6. Profile plots of the changes in the maximum water surface elevations in the river channels, comparing the 2012 and 2018 impacts, are provided in Appendix C.

The changes in the impacts of the updated “No Action” scenario, when measured against the “Base” scenario, are similar in location and magnitude to the changes that occur when the “No Action” scenario is measured against the “Existing” scenario, as described in Section 5.a.

6. Conclusion

The 2018 analysis mirrors the previous 2012 analysis in that there are reductions in flood stage elevations in more likely flooding scenarios (e.g., 50- and 100-year flood events), and some increases in flood stage elevations for less likely flooding scenarios (e.g., 200- and 500-year flood events). The end result is that there are no increased adverse impacts to downstream areas, since these areas are already inundated by large flood flows in the 200- and 500-year scenarios, which is analogous to the 2012 results. In short, the 2018 analysis provides a similar conclusion to the 2012 analysis, in that there are increased flood stages in the very rare flood events – events that are well in excess of the system design flood, but these increases are more than offset by the beneficial effects of lowered water surface elevations in the more frequent flood events.

Table 1. Maximum Water Surface Elevation Impacts in River, “Existing” to “No Action”

Index Point	Recurrence Interval	Change in Peak Water Surface Elevation (feet)		
		2012 “Existing” to “No Action”	2018 “Existing” to “No Action”	2012 to 2018 Change
SJ1	50-yr	0	-0.02	-0.02
	100-yr	0	0	0
	200-yr	0	0	0
	500-yr	0	0	0
SJ2	50-yr	0	-0.04	-0.04
	100-yr	-0.01	-0.01	0
	200-yr	0	-0.01	-0.01
	500-yr	+0.02	+0.02	0
SJ3	50-yr	0	-0.05	-0.05
	100-yr	-0.01	-0.02	-0.01
	200-yr	0	-0.02	-0.02
	500-yr	-0.01	-0.02	-0.01
PC1	50-yr	0	-0.11	-0.11
	100-yr	-0.01	-0.07	-0.06
	200-yr	-0.03	+0.05	+0.08
	500-yr	+0.02	+0.04	+0.02
PC2	50-yr	0	-0.34	-0.34
	100-yr	0	-0.31	-0.31
	200-yr	+0.31	+1.26	+0.95
	500-yr	+0.09	+0.7	+0.61
PC3	50-yr	0	-0.59	-0.59
	100-yr	-0.01	-0.44	-0.43
	200-yr	+1.85	+1.54	-0.31
	500-yr	+0.74	+0.30	-0.44
OR1	50-yr	0	-0.15	-0.15
	100-yr	0	-0.09	-0.09
	200-yr	0	-0.06	-0.06
	500-yr	-0.04	-0.11	-0.07
OR2	50-yr	0	+0.03	+0.03
	100-yr	0	+0.04	+0.04
	200-yr	+0.24	+0.41	+0.17
	500-yr	+0.04	+0.04	0
OR3	50-yr	0	+0.02	+0.02
	100-yr	0	+0.03	+0.03
	200-yr	+0.21	+0.35	+0.14
	500-yr	+0.06	+0.19	+0.13
MR1	50-yr	0	-0.16	-0.16
	100-yr	0	-0.11	-0.11
	200-yr	+0.16	+0.15	-0.01
	500-yr	+0.07	+0.32	+0.25
SS1	50-yr	0	+0.03	+0.03
	100-yr	0	+0.04	+0.04
	200-yr	+0.24	+0.41	+0.17
	500-yr	+0.04	+0.04	0
GLC1	50-yr	0	+0.02	+0.02
	100-yr	-0.01	+0.03	+0.04
	200-yr	+0.19	+0.33	+0.14
	500-yr	+0.03	+0.03	0

Table 2. Maximum Water Surface Elevation Impacts in Floodplain, “Existing” to “No Action”

Floodplain Area	Recurrence Interval	Change in Peak Water Surface Elevation (feet)		
		2012 “Existing” to 2012 “No Action”	2018 “Existing” to 2018 “No Action”	2012 to 2018 Change
A1	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	0	0	0
A2	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	-0.01	0	+0.01
96	100-yr	dry	dry	0
	200-yr	dry	dry	0
	500-yr	dry	dry	0
B	100-yr	0	-0.03	-0.03
	200-yr	0	-0.01	-0.01
	500-yr	+0.01	+0.02	+0.01
C	100-yr	0	-0.03	-0.03
	200-yr	-0.01	-0.01	0
	500-yr	+0.02	+0.03	+0.01
D	100-yr	dry	dry	0
	200-yr	+0.11	-0.04	-0.15
	500-yr	+0.01	+0.02	+0.01
E	100-yr	dry	dry	0
	200-yr	+0.14	-0.05	-0.19
	500-yr	+0.01	+0.02	+0.01
F	100-yr	dry	dry	0
	200-yr	+0.02	+0.43	+0.41
	500-yr	+0.18	+0.27	+0.09
G	100-yr	dry	dry	0
	200-yr	+0.03	+0.42	+0.39
	500-yr	+0.54	+0.65	+0.11
K	100-yr	dry	dry	0
	200-yr	-2.22	+0.02	+2.24
	500-yr	-1.65	+0.30	+1.95
L	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	0	+0.01	+0.01
M	100-yr	dry	dry	0
	200-yr	-0.01	0	+0.01
	500-yr	0	+0.01	+0.01
Z	100-yr	dry	0	0
	200-yr	+0.06	+1.11	+1.05
	500-yr	+0.44	+0.50	+0.06
Upper Roberts	100-yr	dry	dry	0
	200-yr	0	-0.55	-0.55
	500-yr	-0.26	-0.39	-0.13

Table 3. Maximum Water Surface Elevation Impacts in River, “Existing” to “With Project”

Index Point	Recurrence Interval	Change in Peak Water Surface Elevation (feet)		
		2012 “Existing” to “With Project”	2018 “Existing” to “With Project”	2012 to 2018 Change
SJR1	50-yr	-0.07	-0.07	0
	100-yr	-0.01	-0.01	0
	200-yr	-0.03	-0.02	+0.01
	500-yr	-0.01	-0.01	0
SJR2	50-yr	-0.14	-0.14	0
	100-yr	-0.03	-0.03	0
	200-yr	-0.02	-0.02	0
	500-yr	+0.32	+0.32	0
SJR3	50-yr	-0.06	-0.07	-0.01
	100-yr	0	0	0
	200-yr	+0.01	+0.01	0
	500-yr	+0.28	+0.25	-0.03
PC1	50-yr	0	-0.01	-0.01
	100-yr	0	0	0
	200-yr	+0.30	+0.30	0
	500-yr	-0.03	-0.04	-0.01
PC2	50-yr	-0.35	-0.35	0
	100-yr	-0.26	-0.27	-0.01
	200-yr	+1.55	+1.56	0.01
	500-yr	+1.08	+1.07	-0.01
PC3	50-yr	-0.35	-0.35	0
	100-yr	-0.20	-0.2	0
	200-yr	+1.28	+1.27	-0.01
	500-yr	+0.31	+0.28	-0.03
OR1	50-yr	-0.06	-0.06	0
	100-yr	+0.02	+0.02	0
	200-yr	+0.02	+0.01	-0.01
	500-yr	+0.05	+0.01	-0.04
OR2	50-yr	+0.02	+0.02	0
	100-yr	+0.08	+0.08	0
	200-yr	+0.44	+0.39	-0.05
	500-yr	+0.07	+0.03	-0.04
OR3	50-yr	+0.01	+0.02	0.01
	100-yr	+0.06	+0.06	0
	200-yr	+0.38	+0.33	-0.05
	500-yr	+0.25	+0.21	-0.04
MR1	50-yr	-0.03	-0.03	0
	100-yr	+0.03	+0.03	0
	200-yr	+0.22	+0.22	0
	500-yr	+0.20	+0.21	+0.01
SS1	50-yr	+0.02	+0.02	0
	100-yr	+0.08	+0.08	0
	200-yr	+0.44	+0.39	-0.05
	500-yr	+0.07	+0.03	-0.04
GLC1	50-yr	+0.02	0.02	0
	100-yr	+0.06	0.06	0
	200-yr	+0.35	0.31	-0.04
	500-yr	+0.06	0.03	-0.03

Table 4. Maximum Water Surface Elevation Impacts in Floodplain, “Existing” to “With Project”

Floodplain Area	Recurrence Interval	Change in Peak Water Surface Elevation (feet)		
		2012 “Existing” to “With Project”	2018 “Existing” to “With Project”	2012 to 2018 Change
A1	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	+0.04	+0.04	0
A2	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	+0.03	+0.03	0
96	100-yr	dry	dry	0
	200-yr	dry	dry	0
	500-yr	dry	dry	0
B	100-yr	-0.14	-0.14	0
	200-yr	-0.03	-0.03	0
	500-yr	+0.31	+0.31	0
C	100-yr	-0.14	-0.14	0
	200-yr	-0.03	-0.03	0
	500-yr	+0.32	+0.32	0
D	100-yr	dry	dry	0
	200-yr	+0.19	+0.17	-0.02
	500-yr	+0.03	+0.03	0
E	100-yr	dry	dry	0
	200-yr	-0.66	-0.67	-0.01
	500-yr	-0.02	-0.03	-0.01
F	100-yr	dry	dry	0
	200-yr	+0.37	+0.37	0
	500-yr	+0.18	+0.18	0
G	100-yr	dry	dry	0
	200-yr	+0.39	+0.39	0
	500-yr	+0.65	+0.65	0
K	100-yr	dry	dry	0
	200-yr	+1.47	+1.47	0
	500-yr	+1.78	+1.78	0
L	100-yr	dry	dry	0
	200-yr	+0.11	+0.11	0
	500-yr	+0.46	+0.46	0
M	100-yr	dry	dry	0
	200-yr	+0.03	+0.03	0
	500-yr	+0.37	+0.37	0
Z	100-yr	dry	dry	0
	200-yr	+1.02	+1.01	-0.01
	500-yr	+0.47	+0.47	0
Upper Roberts	100-yr	dry	dry	0
	200-yr	-0.38	-0.38	0
	500-yr	-0.18	-0.18	0

Table 5. Maximum Water Surface Elevation Impacts in River, “Base” to “No Action”

Index Point	Recurrence Interval	Change in Peak Water Surface Elevation (feet)		
		“Base” to 2012 “No Action”	“Base” to 2018 “No Action”	2012 to 2018 Change
SJ1	50-yr	0	-0.02	-0.02
	100-yr	0	0	0
	200-yr	0	0	0
	500-yr	0	0	0
SJ2	50-yr	0	-0.04	-0.04
	100-yr	-0.01	-0.01	0
	200-yr	0	-0.01	-0.01
	500-yr	+0.02	+0.03	+0.01
SJ3	50-yr	0	-0.05	-0.05
	100-yr	-0.01	-0.02	-0.01
	200-yr	0	-0.02	-0.02
	500-yr	0	0	0
PC1	50-yr	0	-0.11	-0.11
	100-yr	-0.01	-0.07	-0.06
	200-yr	-0.01	+0.08	+0.09
	500-yr	+0.02	+0.05	+0.03
PC2	50-yr	0	-0.34	-0.34
	100-yr	0	-0.31	-0.31
	200-yr	+0.32	+1.27	+0.95
	500-yr	+0.10	+0.73	+0.63
PC3	50-yr	0	-0.59	-0.59
	100-yr	-0.01	-0.44	-0.43
	200-yr	+1.84	+1.53	-0.31
	500-yr	+0.77	+0.37	-0.4
OR1	50-yr	0	-0.15	-0.15
	100-yr	0	-0.09	-0.09
	200-yr	0	-0.06	-0.06
	500-yr	+0.01	-0.03	-0.04
OR2	50-yr	0	++0.03	+0.03
	100-yr	0	+0.04	+0.04
	200-yr	+0.28	+0.50	+0.22
	500-yr	+0.08	+0.11	+0.03
OR3	50-yr	0	+0.02	+0.02
	100-yr	0	+0.03	+0.03
	200-yr	+0.24	+0.42	+0.18
	500-yr	+0.10	+0.27	+0.17
MR1	50-yr	0	-0.16	-0.16
	100-yr	0	-0.11	-0.11
	200-yr	+0.16	+0.16	0
	500-yr	+0.08	+0.32	+0.24
SS1	50-yr	0	+0.03	+0.03
	100-yr	0	+0.04	+0.04
	200-yr	+0.28	+0.49	+0.21
	500-yr	+0.08	+0.11	+0.03
GLC1	50-yr	0	+0.02	+0.02
	100-yr	-0.01	+0.03	+0.04
	200-yr	+0.22	+0.40	+0.18
	500-yr	+0.06	+0.09	+0.03

Table 6. Maximum Water Surface Elevation Impacts in Floodplain, “Base” to “No Action”

Floodplain Area	Recurrence Interval	Change in Peak Water Surface Elevation (feet)		
		“Base” to 2012 “No Action”	“Base” to 2018 “No Action”	2012 to 2018 Change
A1	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	0	0	0
A2	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	0	+0.01	+0.01
96	100-yr	dry	dry	0
	200-yr	dry	dry	0
	500-yr	dry	dry	0
B	100-yr	0	-0.03	-0.03
	200-yr	0	-0.01	-0.01
	500-yr	+0.01	+0.02	+0.01
C	100-yr	0	-0.03	-0.03
	200-yr	-0.01	-0.01	0
	500-yr	+0.02	+0.03	+0.01
D	100-yr	dry	dry	0
	200-yr	+0.13	0	-0.13
	500-yr	+0.02	+0.03	+0.01
E	100-yr	dry	dry	0
	200-yr	+0.16	-0.02	-0.18
	500-yr	+0.01	+0.03	+0.02
F	100-yr	dry	dry	0
	200-yr	+0.02	+0.43	+0.41
	500-yr	+0.19	+0.28	+0.09
G	100-yr	dry	dry	0
	200-yr	+0.02	+0.41	+0.39
	500-yr	+0.54	+0.65	+0.11
K	100-yr	dry	dry	0
	200-yr	-1.82	+0.42	+2.24
	500-yr	-1.25	+0.7	+1.95
L	100-yr	dry	dry	0
	200-yr	0	0	0
	500-yr	0	+0.01	+0.01
M	100-yr	dry	dry	0
	200-yr	-0.01	0	+0.01
	500-yr	0	+0.01	+0.01
Z	100-yr	dry	dry	0
	200-yr	+0.05	+1.11	+1.06
	500-yr	+0.47	+0.53	+0.06
Upper Roberts	100-yr	dry	dry	0
	200-yr	-0.01	-0.56	-0.55
	500-yr	-0.27	-0.4	-0.13

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- (USACE, 2002). *Sacramento and San Joaquin River Basins Comprehensive Study, Technical Studies Documentation*. December 2002.
- (USACE, 2014). *Draft Environment Impact Statement: River Islands at Lathrop, Phase 2B*. October 2014.
- (USACE HEC, 2010). *HEC-RAS River Analysis System User's Manual, Version 4.1*. January 2010.

Appendix A

Profile Plots of Water Surface Elevation Impacts in Rivers

“Existing” to “No Action”

“Existing” to “No Action”, San Joaquin River

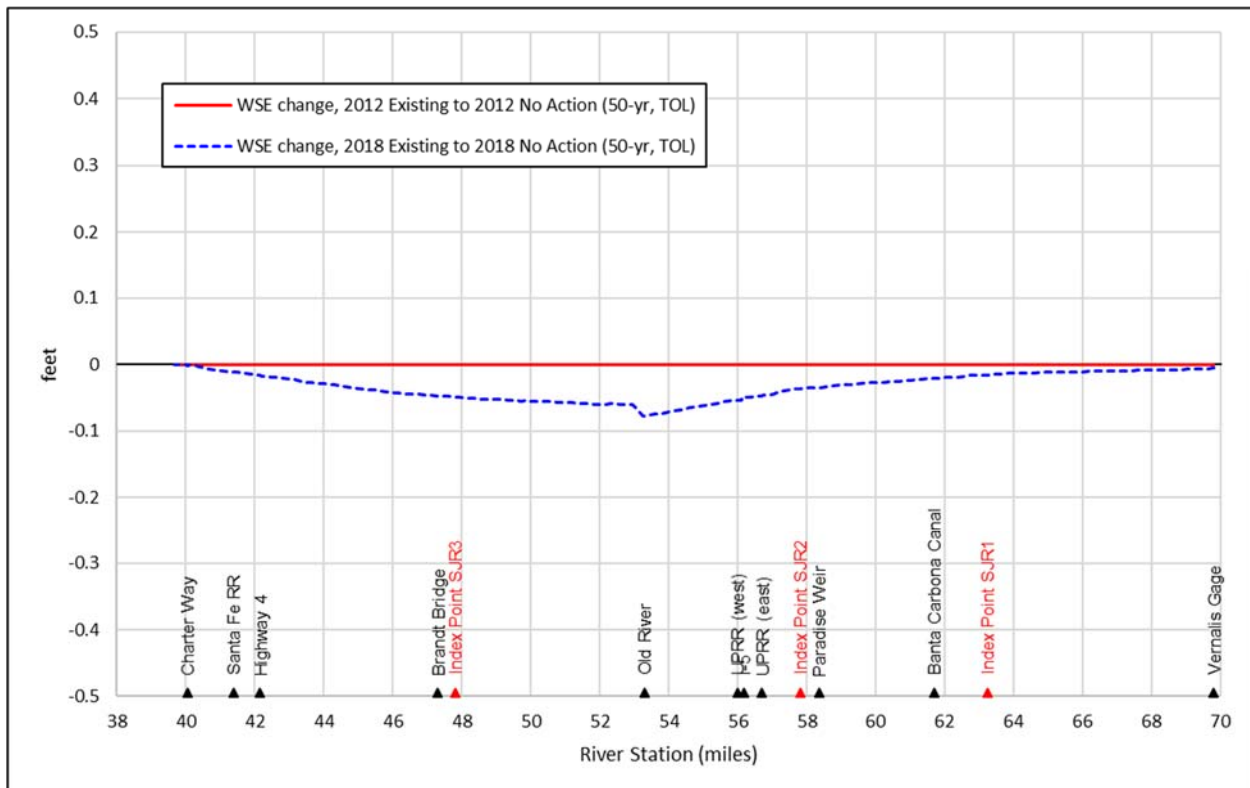


Figure A-1. “Existing” to “No Action” 50-year water surface elevation change, San Joaquin River

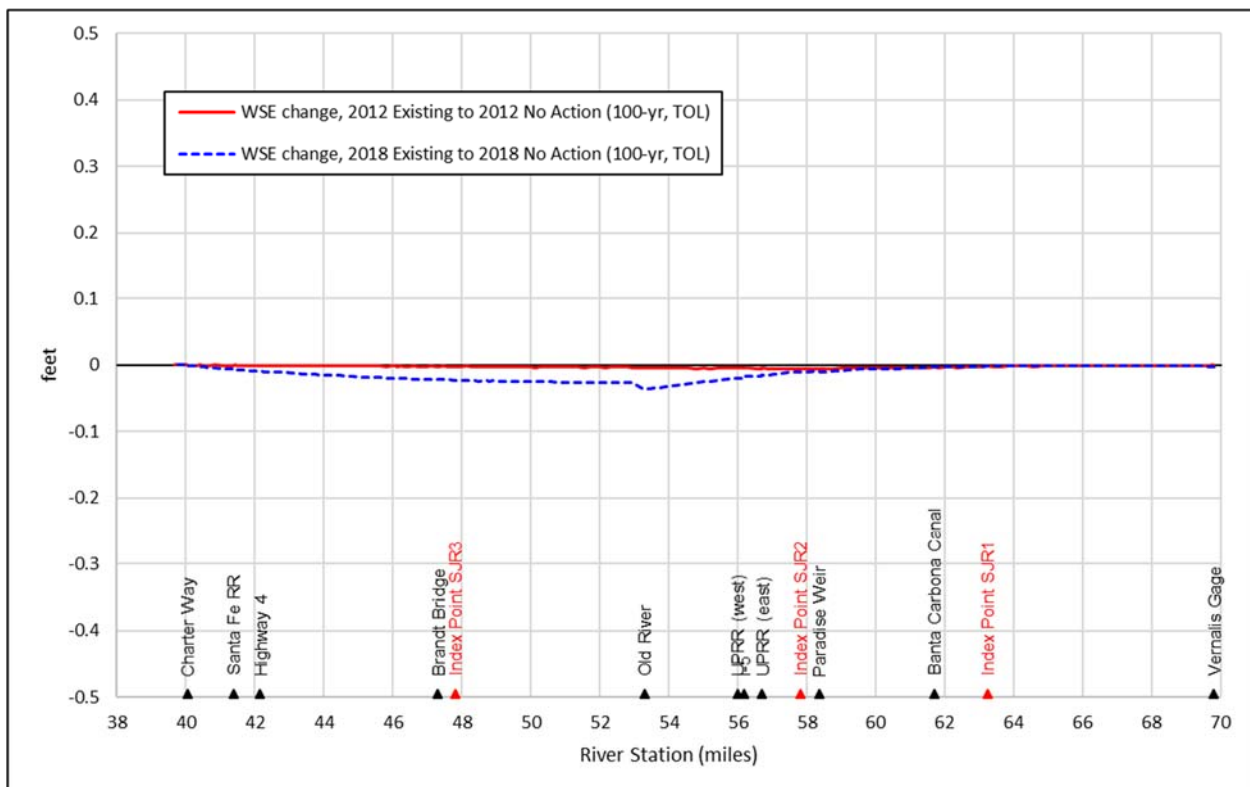


Figure A-2. “Existing” to “No Action” 100-year water surface elevation change, San Joaquin River

“Existing” to “No Action”, San Joaquin River

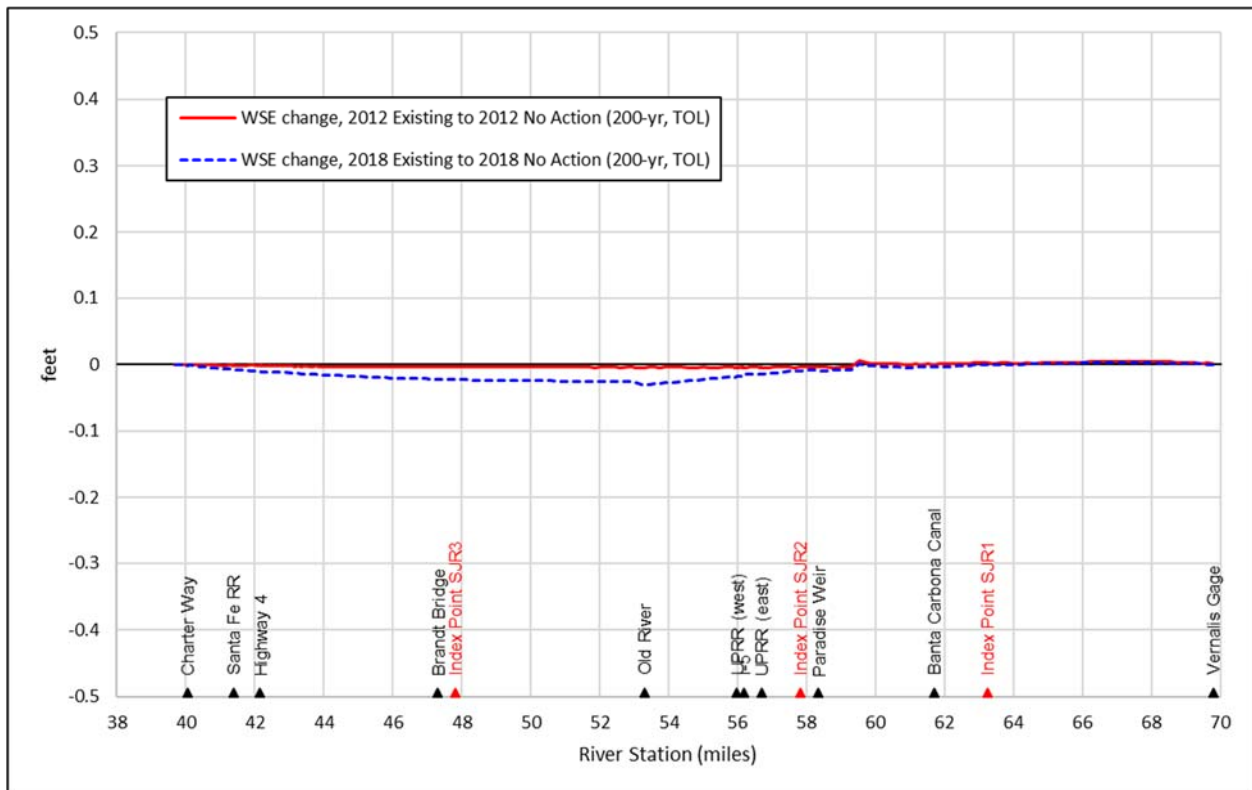


Figure A-3. “Existing” to “No Action” 200-year water surface elevation change, San Joaquin River

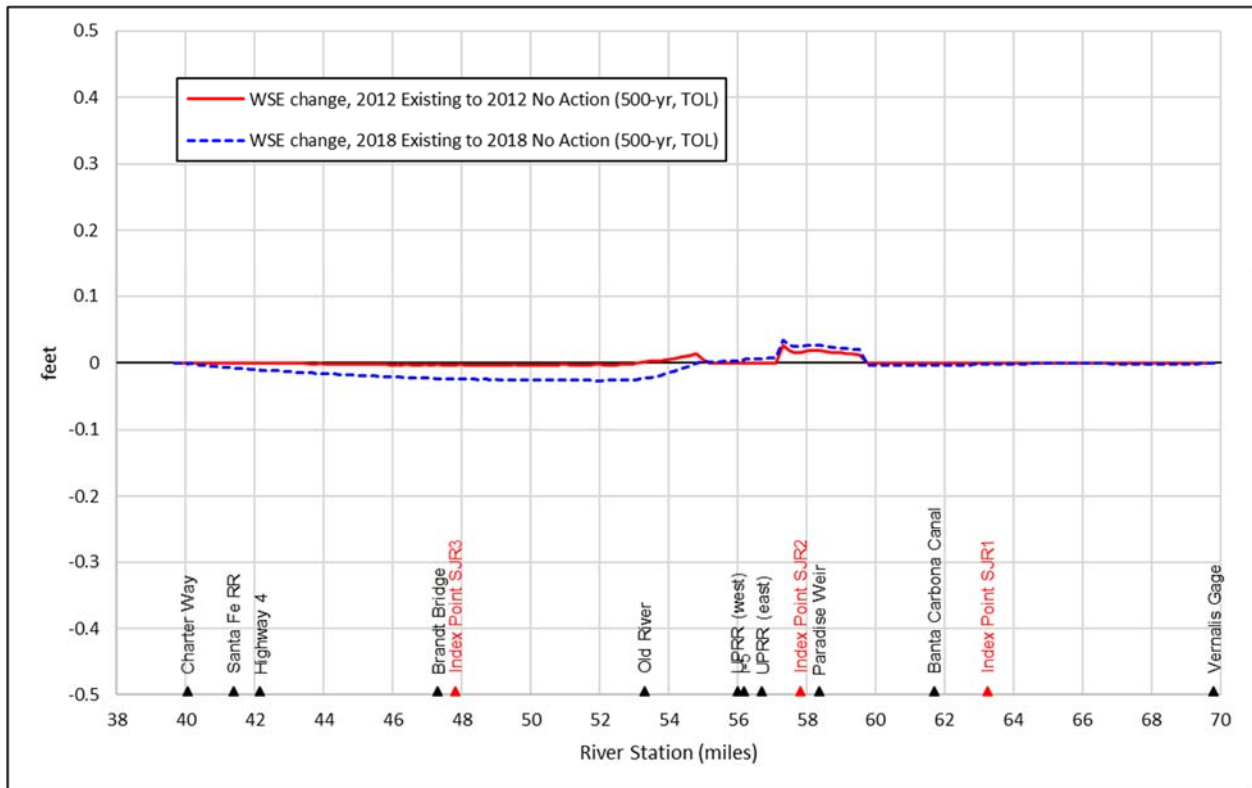


Figure A-4. “Existing” to “No Action” 500-year water surface elevation change, San Joaquin River

“Existing” to “No Action”, Paradise Cut

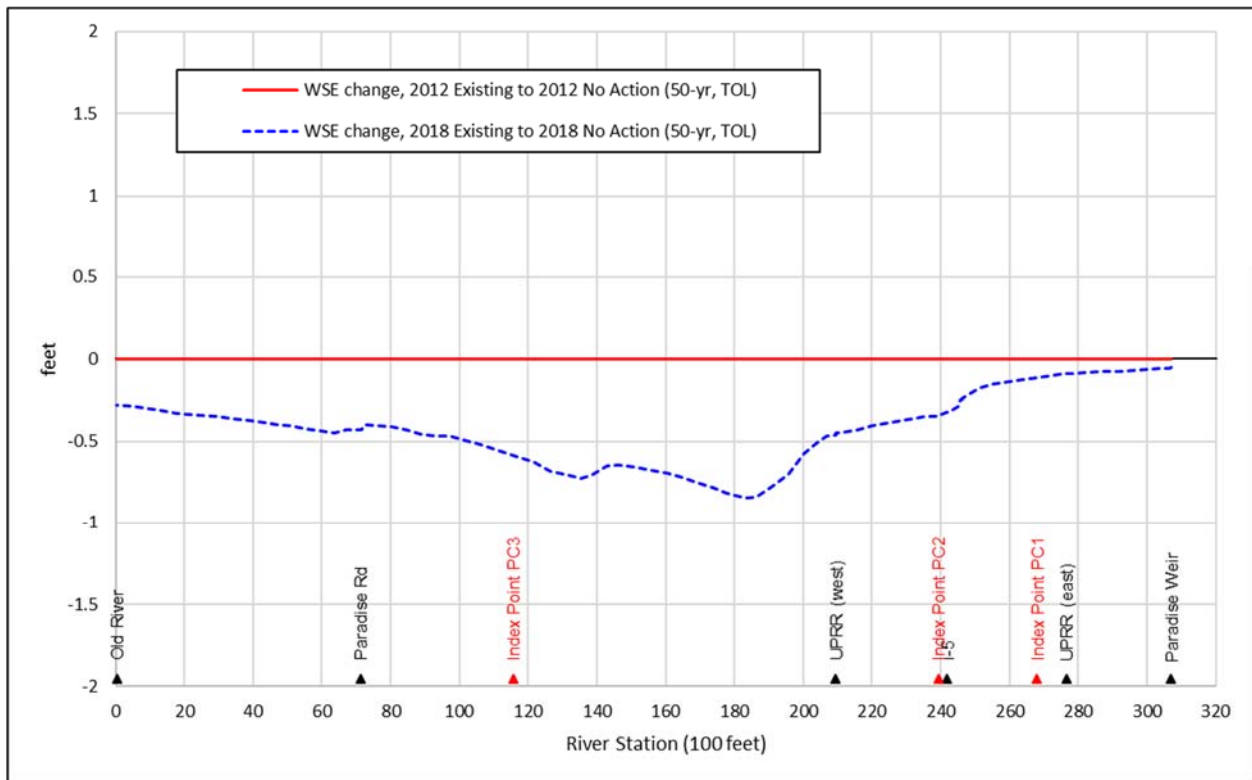


Figure A-5. “Existing” to “No Action” 50-year water surface elevation change, Paradise Cut

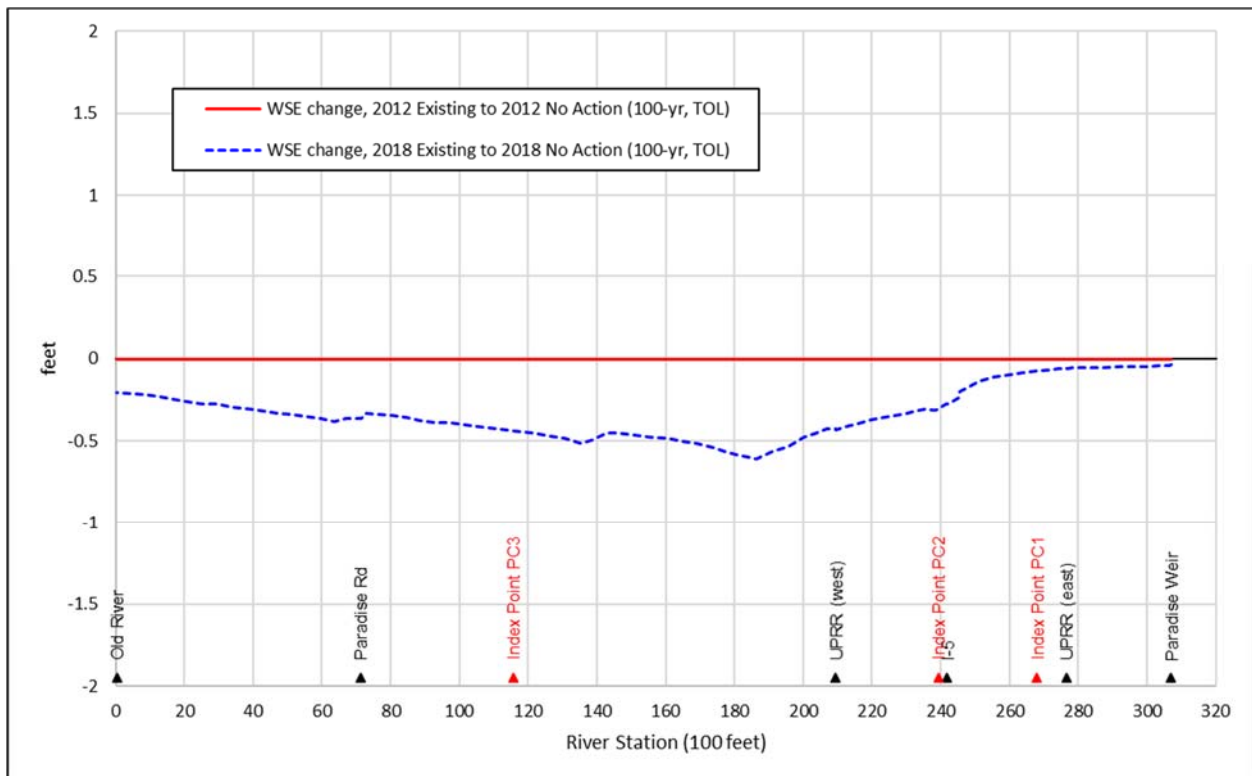


Figure A-6. “Existing” to “No Action” 100-year water surface elevation change, Paradise Cut

“Existing” to “No Action”, Paradise Cut

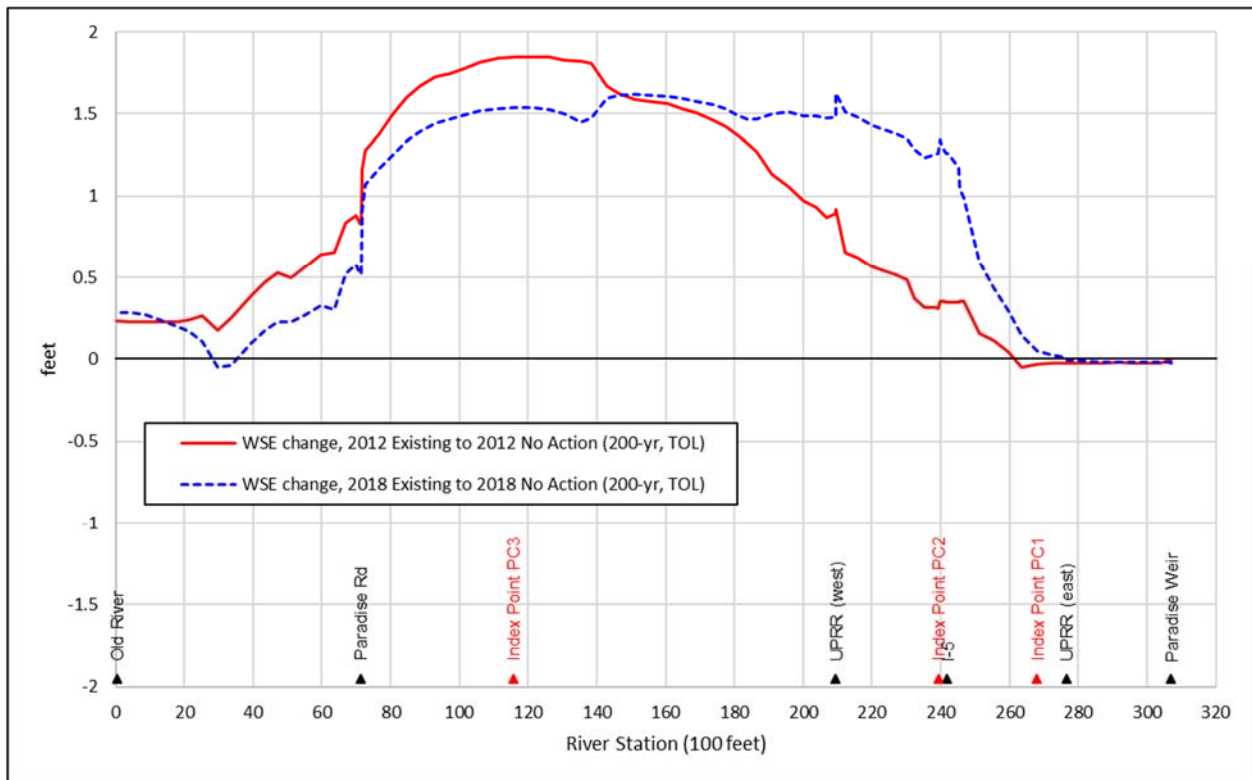


Figure A-7. “Existing” to “No Action” 200-year water surface elevation change, Paradise Cut

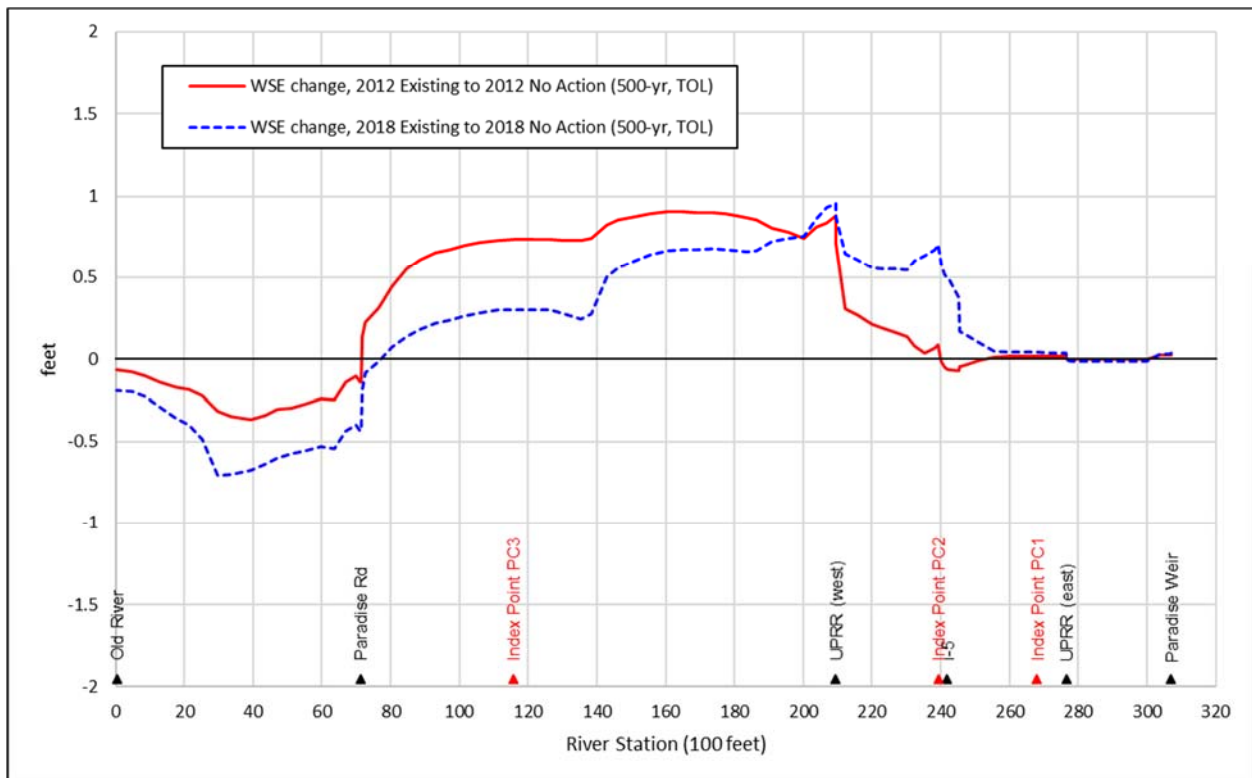


Figure A-8. “Existing” to “No Action” 500-year water surface elevation change, Paradise Cut

“Existing” to “No Action”, Old River

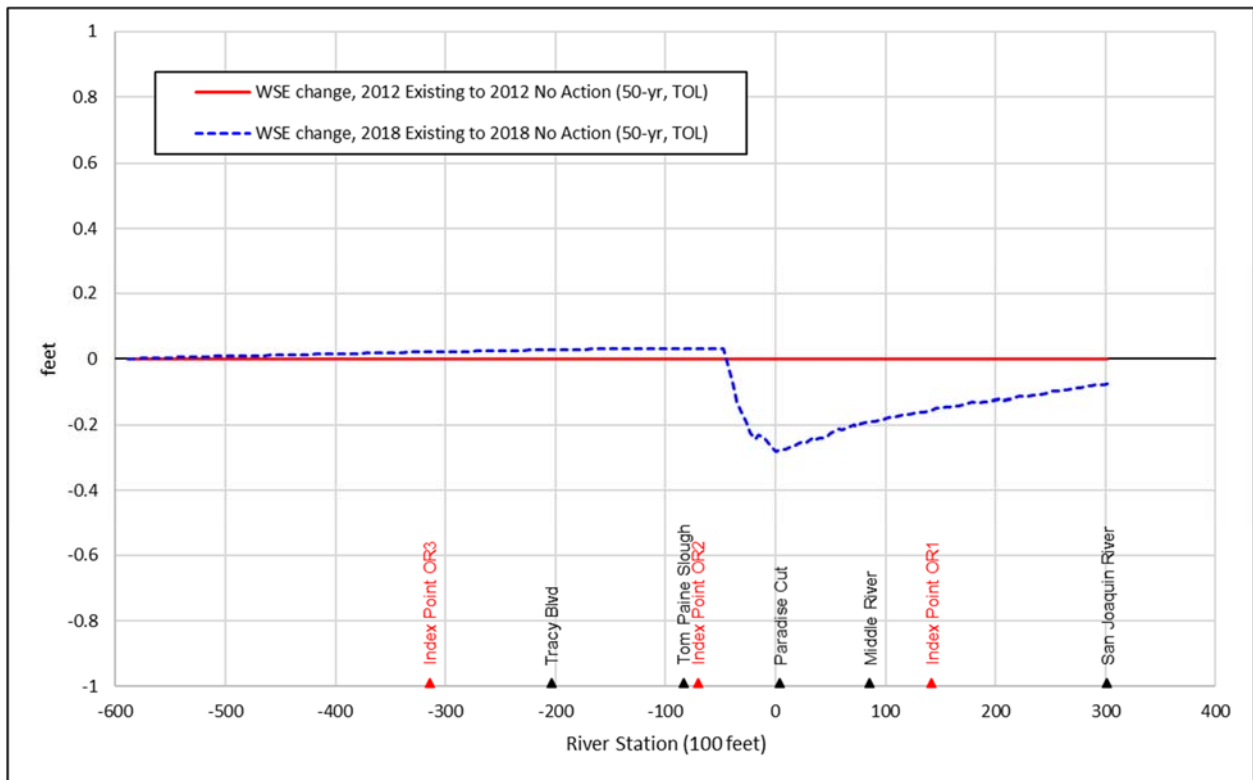


Figure A-9. “Existing” to “No Action” 50-year water surface elevation change, Old River

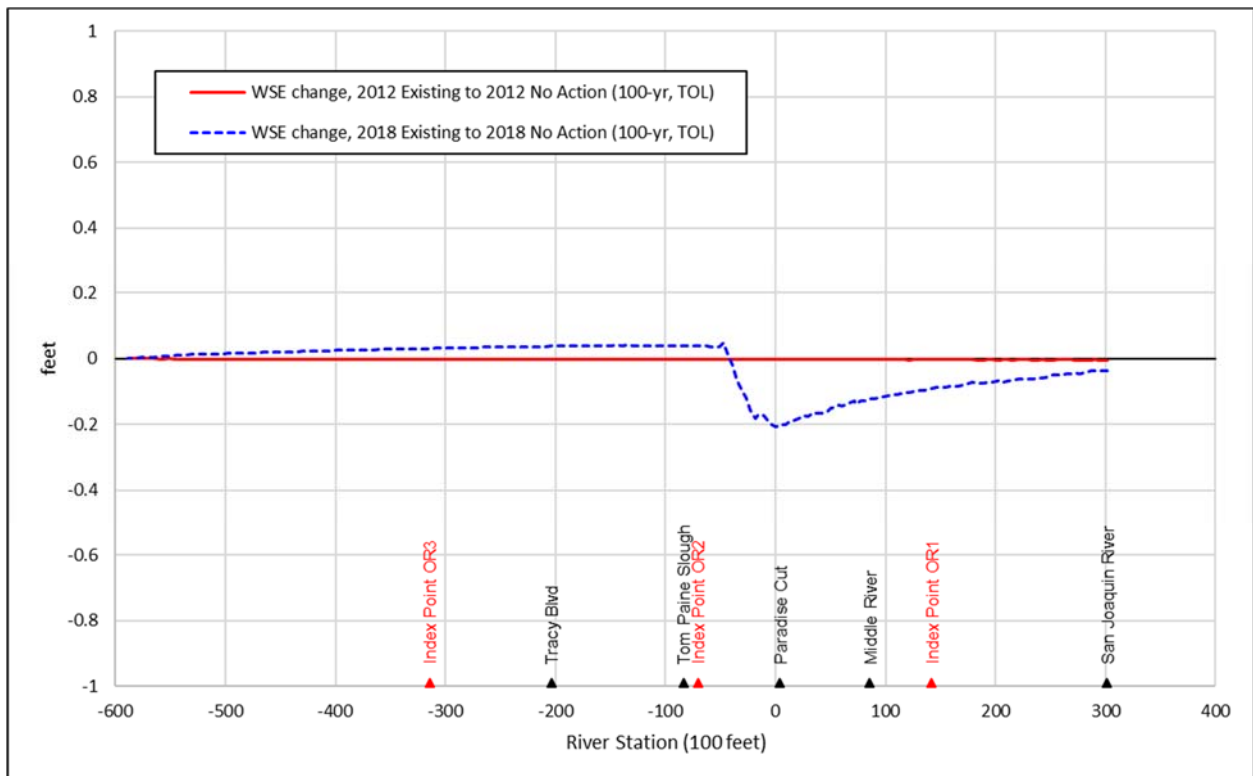


Figure A-10. “Existing” to “No Action” 100-year water surface elevation change, Old River

“Existing” to “No Action”, Old River

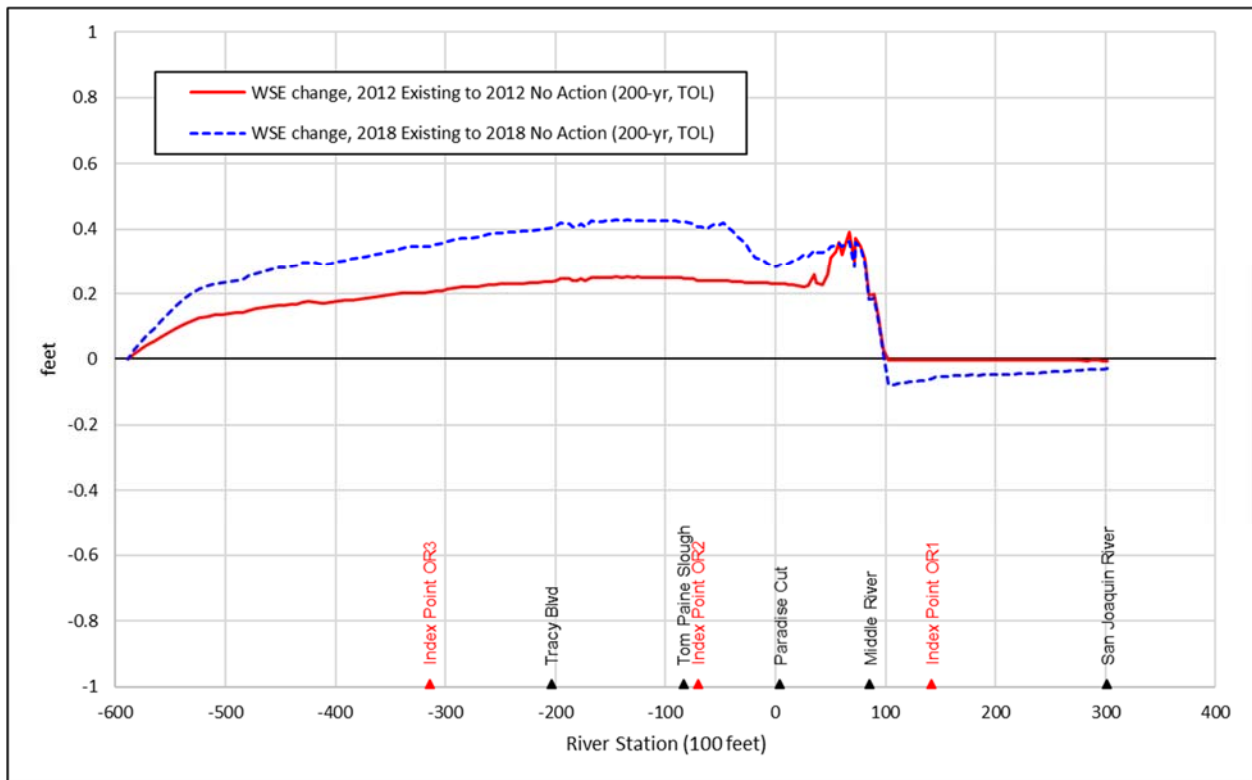


Figure A-11. “Existing” to “No Action” 200-year water surface elevation change, Old River

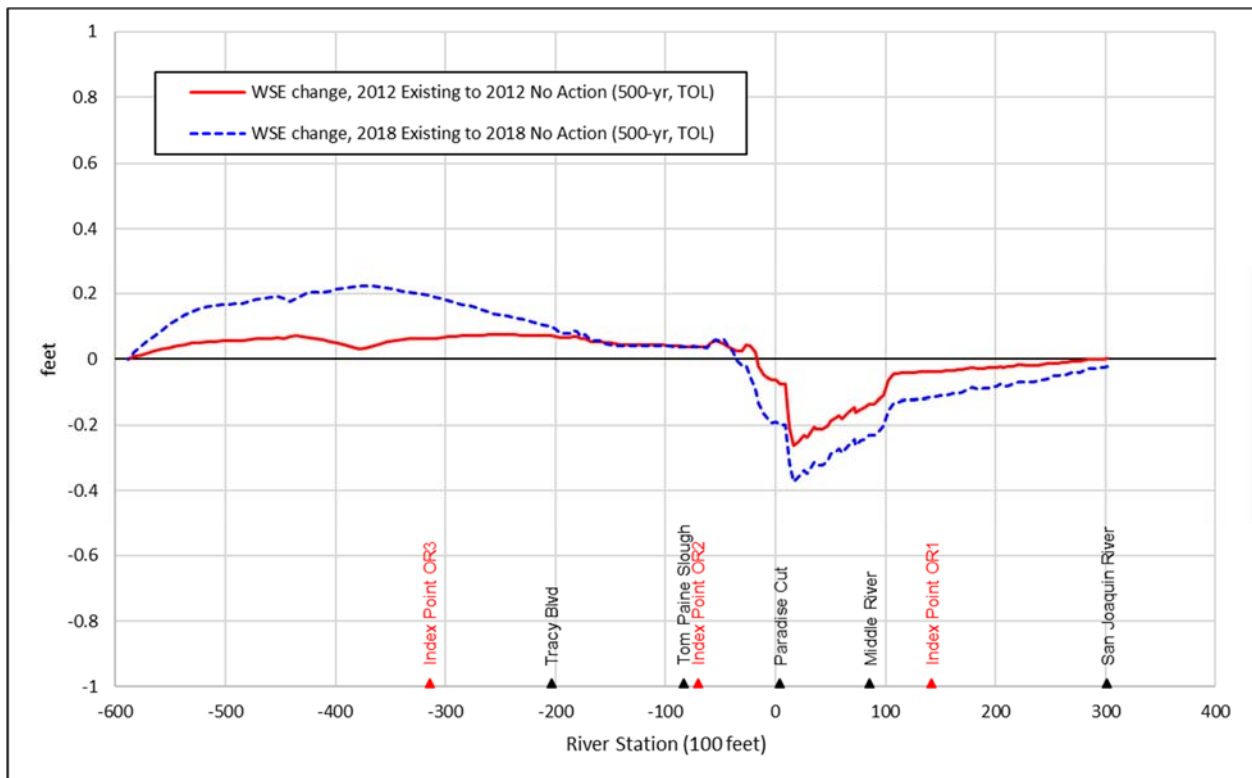


Figure A-12. “Existing” to “No Action” 500-year water surface elevation change, Old River

“Existing” to “No Action”, Grant Line Canal

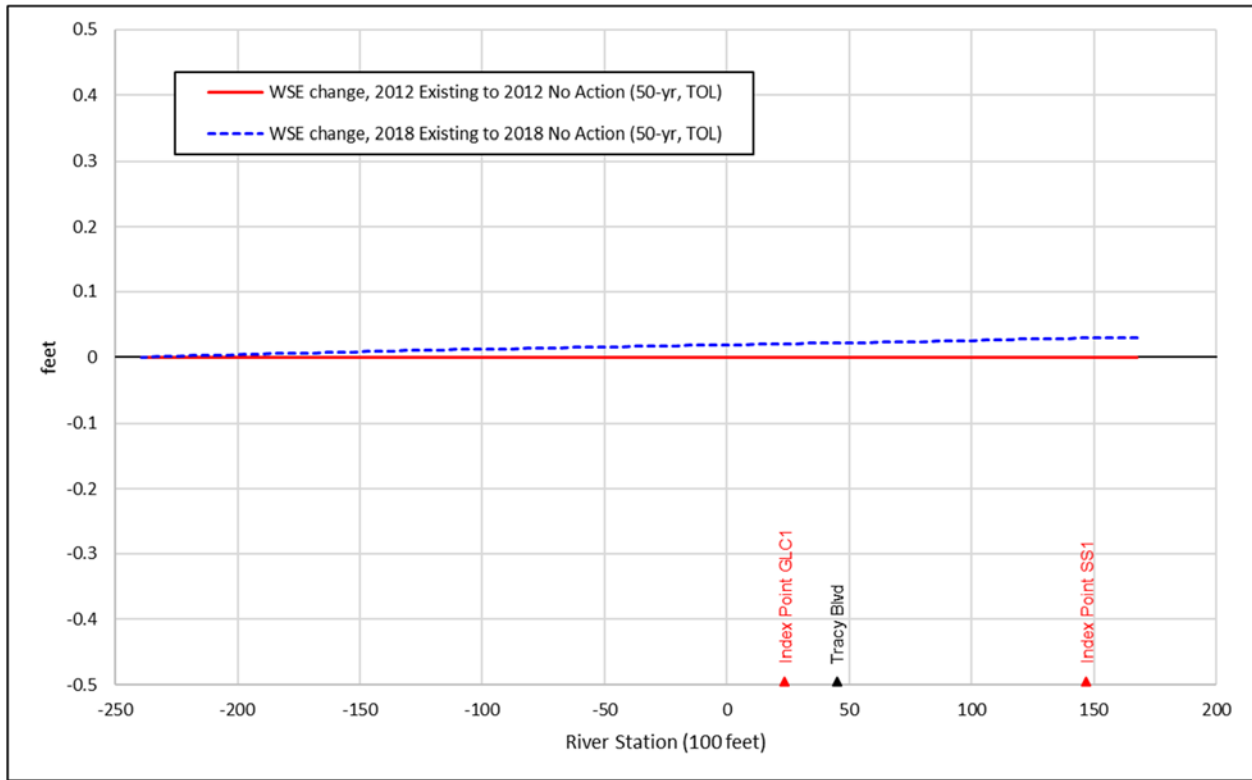


Figure A-13. “Existing” to “No Action” 50-year water surface elevation change, Grant Line Canal

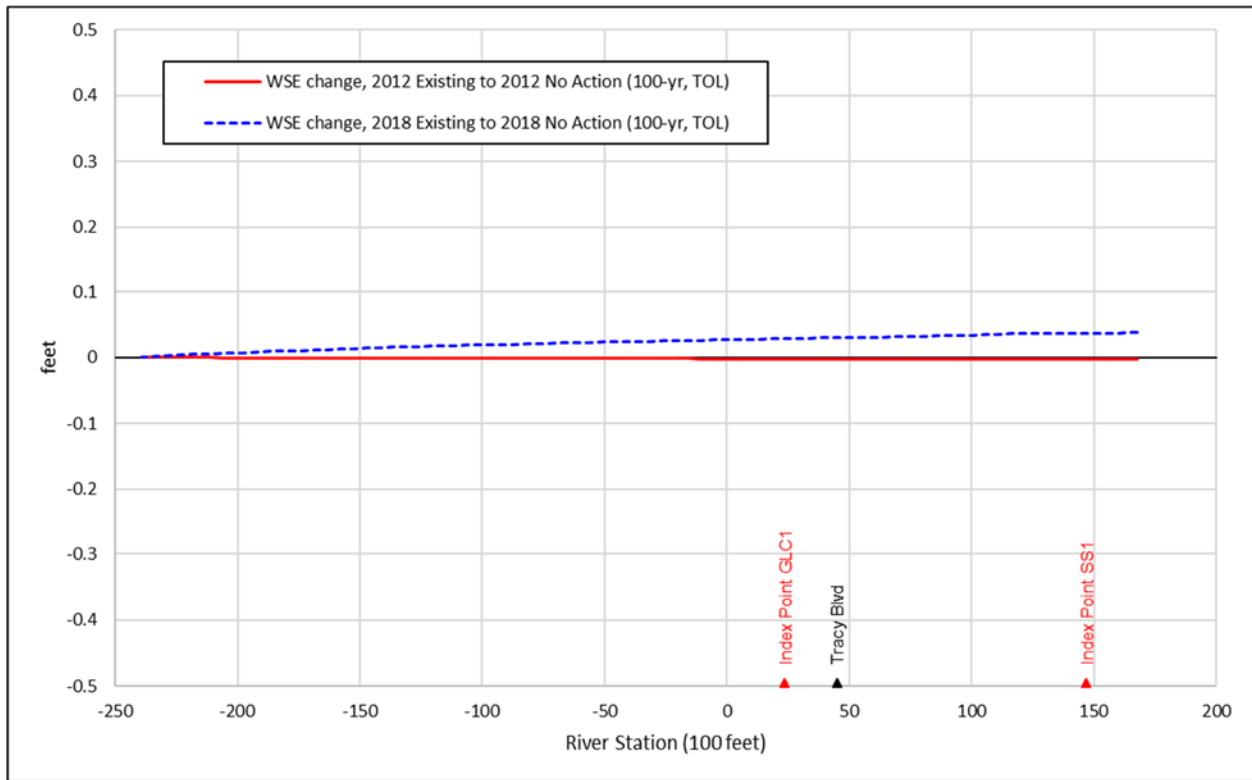


Figure A-14. “Existing” to “No Action” 100-year water surface elevation change, Grant Line Canal

“Existing” to “No Action”, Grant Line Canal

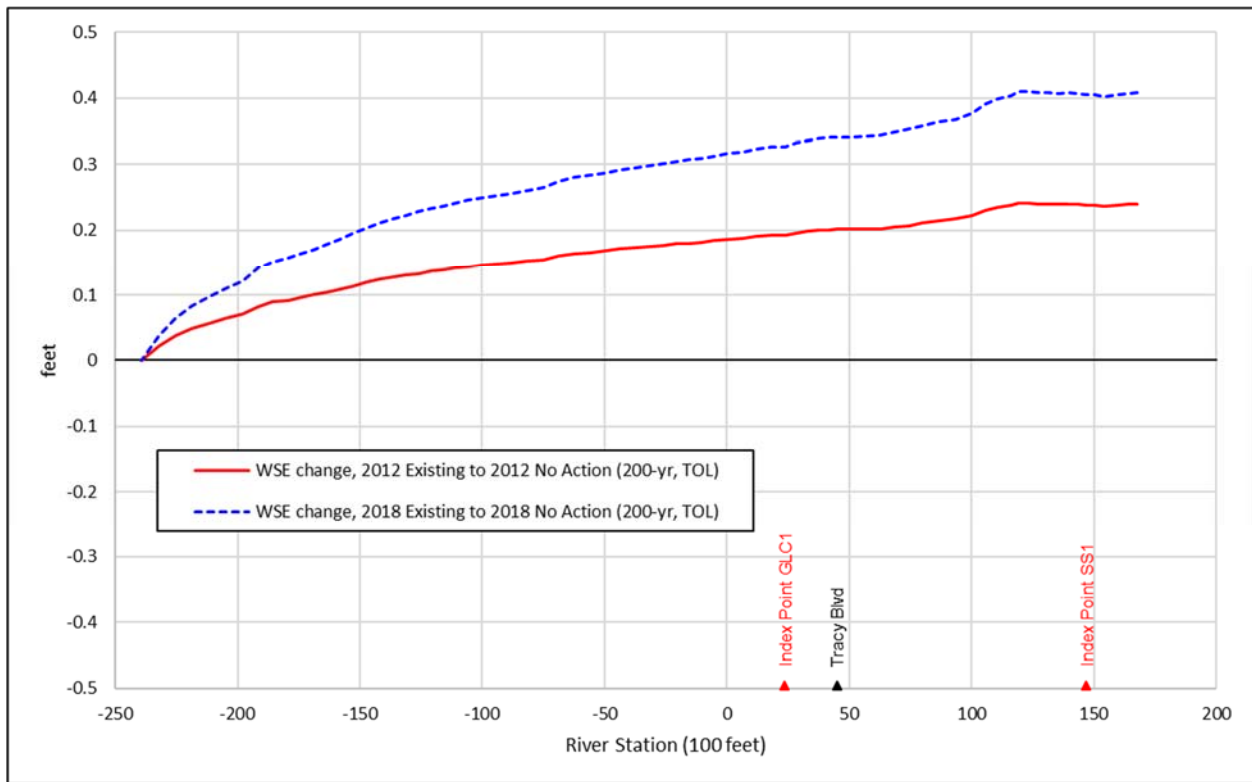


Figure A-15. “Existing” to “No Action” 200-year water surface elevation change, Grant Line Canal

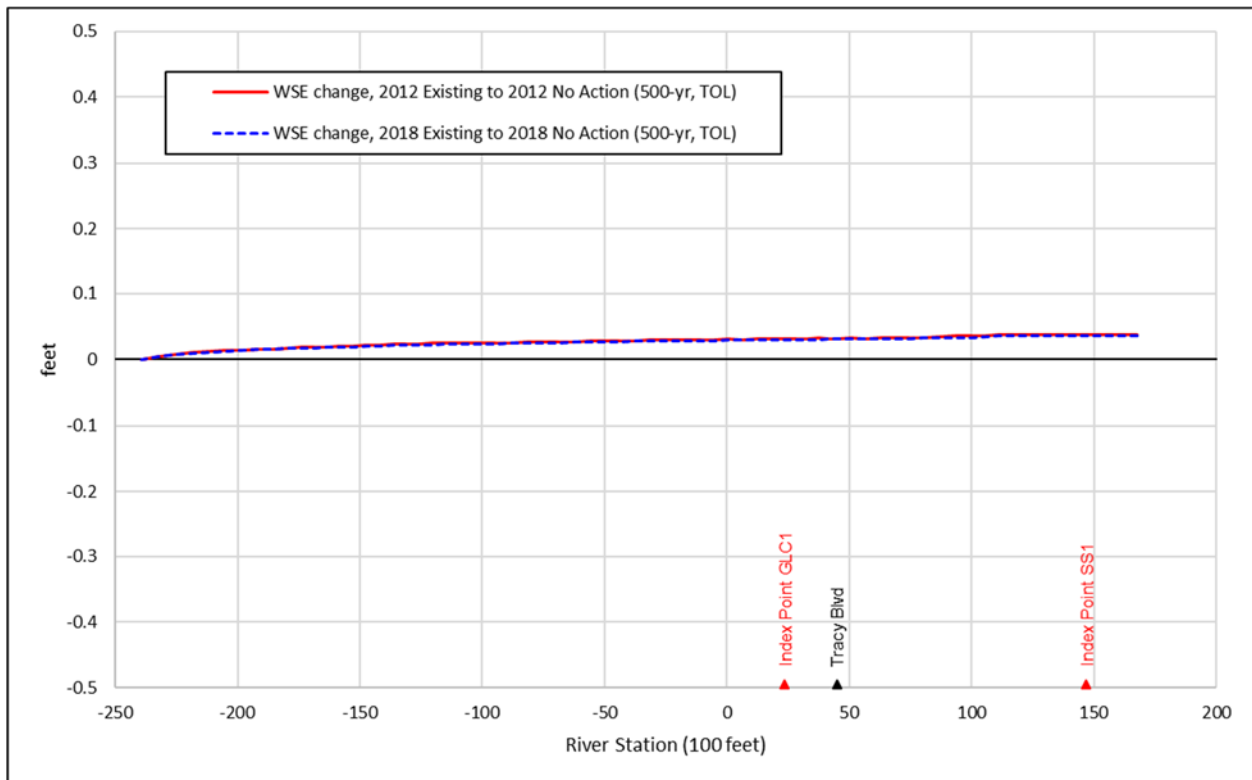


Figure A-16. “Existing” to “No Action” 500-year water surface elevation change, Grant Line Canal

“Existing” to “No Action”, Middle River

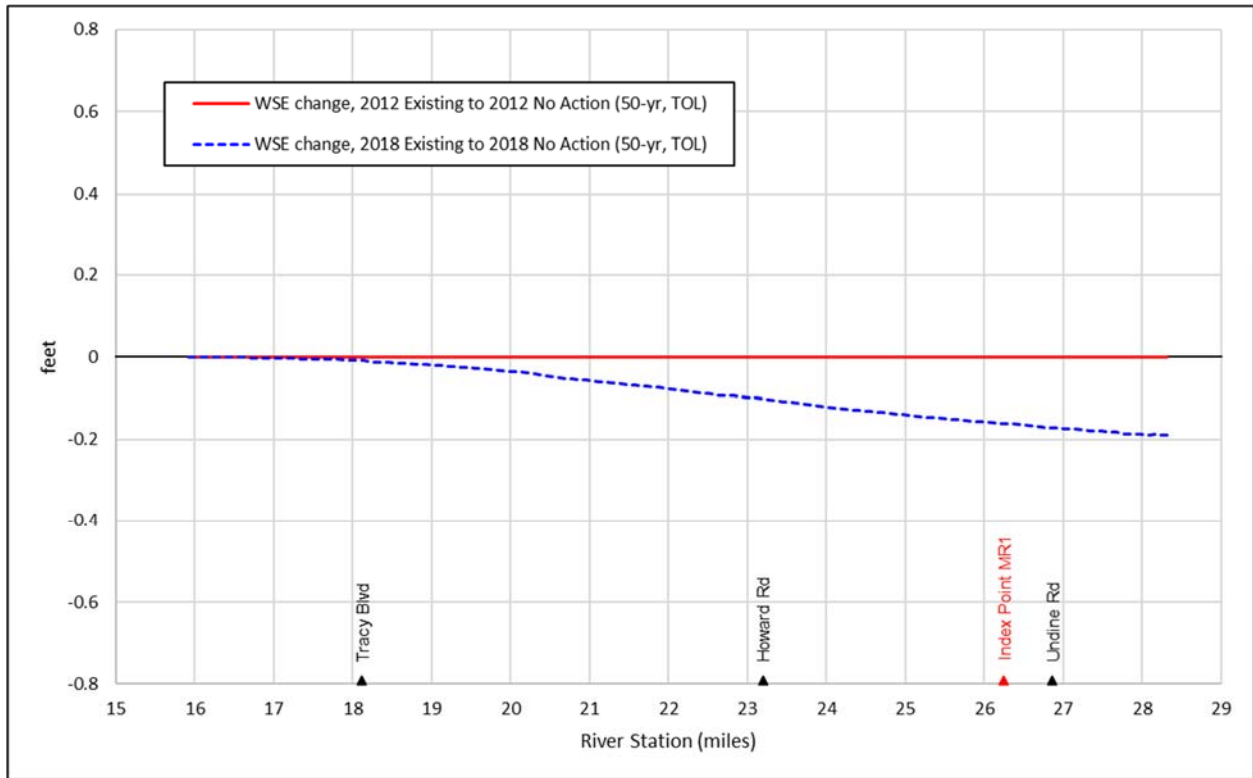


Figure A-17. “Existing” to “No Action” 50-year water surface elevation change, Middle River

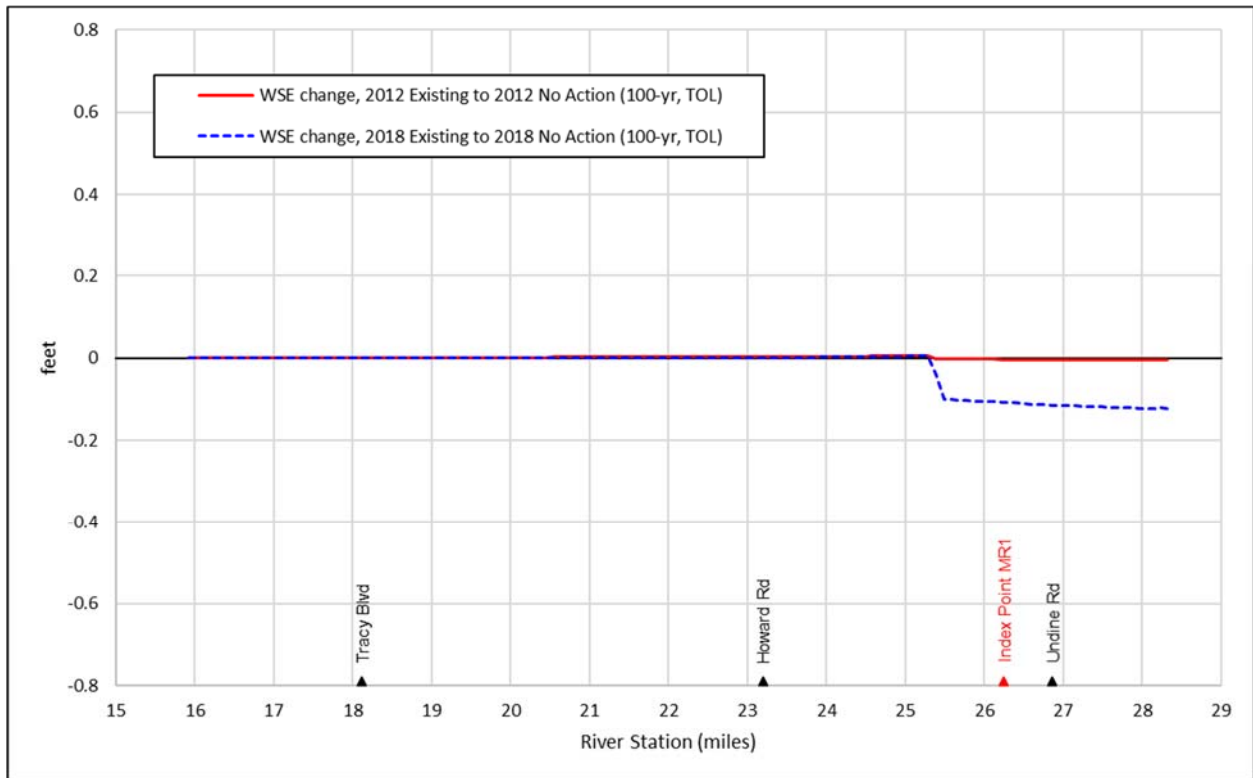


Figure A-18. “Existing” to “No Action” 100-year water surface elevation change, Middle River

“Existing” to “No Action”, Middle River

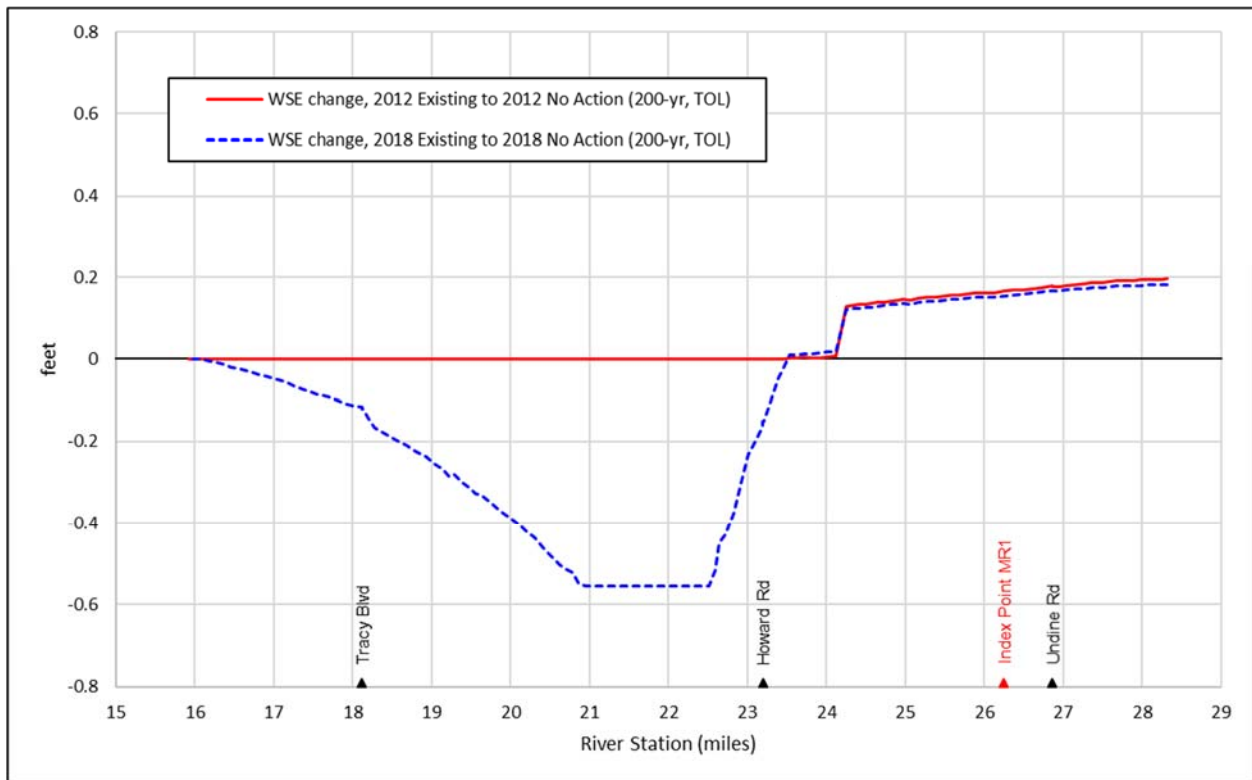


Figure A-19. “Existing” to “No Action” 200-year water surface elevation change, Middle River

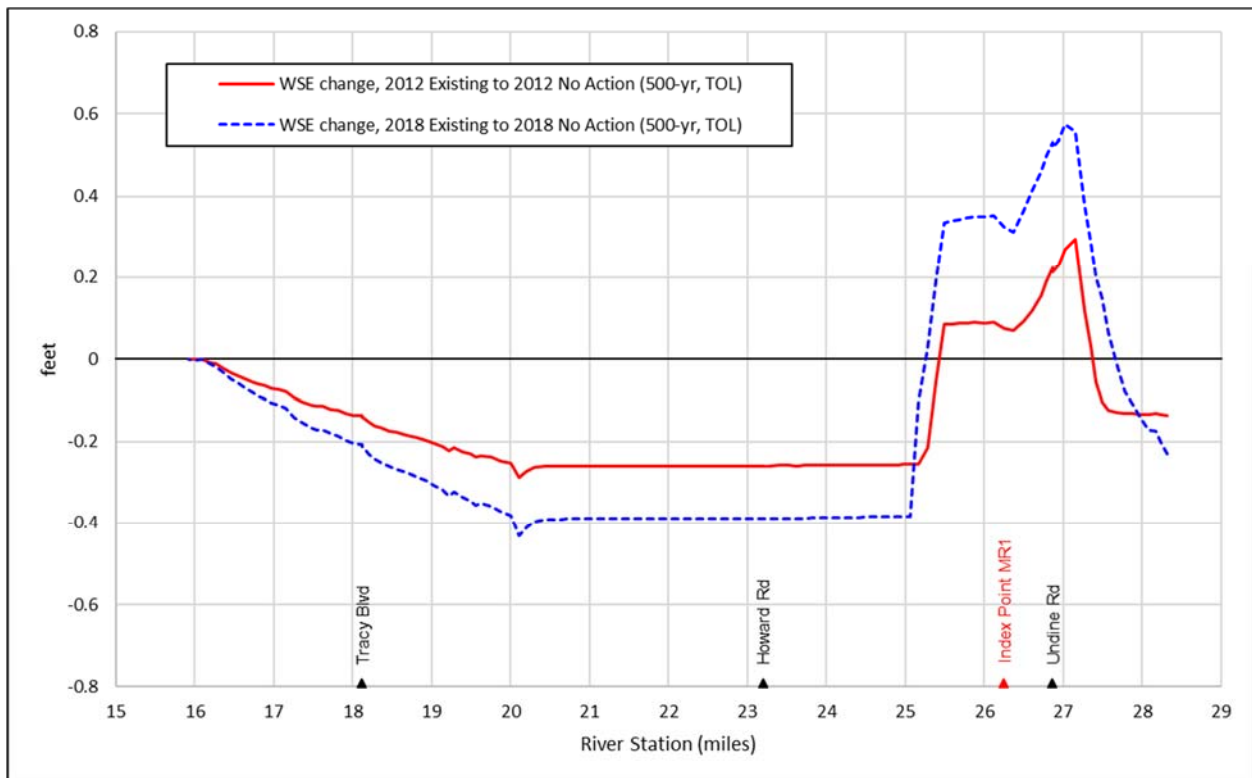


Figure A-20. “Existing” to “No Action” 500-year water surface elevation change, Middle River

Appendix B

Profile Plots of Water Surface Elevation Impacts in Rivers

“Existing” to “With Project”

“Existing” to “With Project”, San Joaquin River

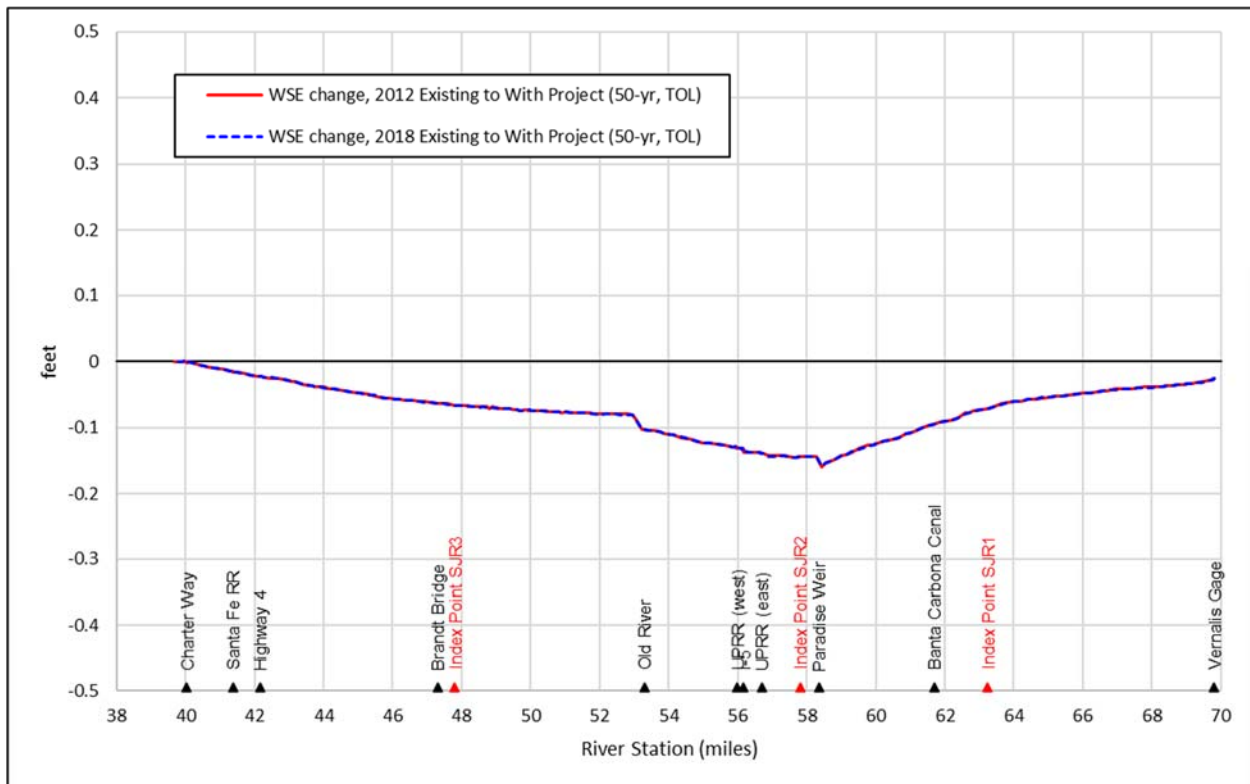


Figure B-1. “Existing” to “With Project” 50-year water surface elevation change, San Joaquin River

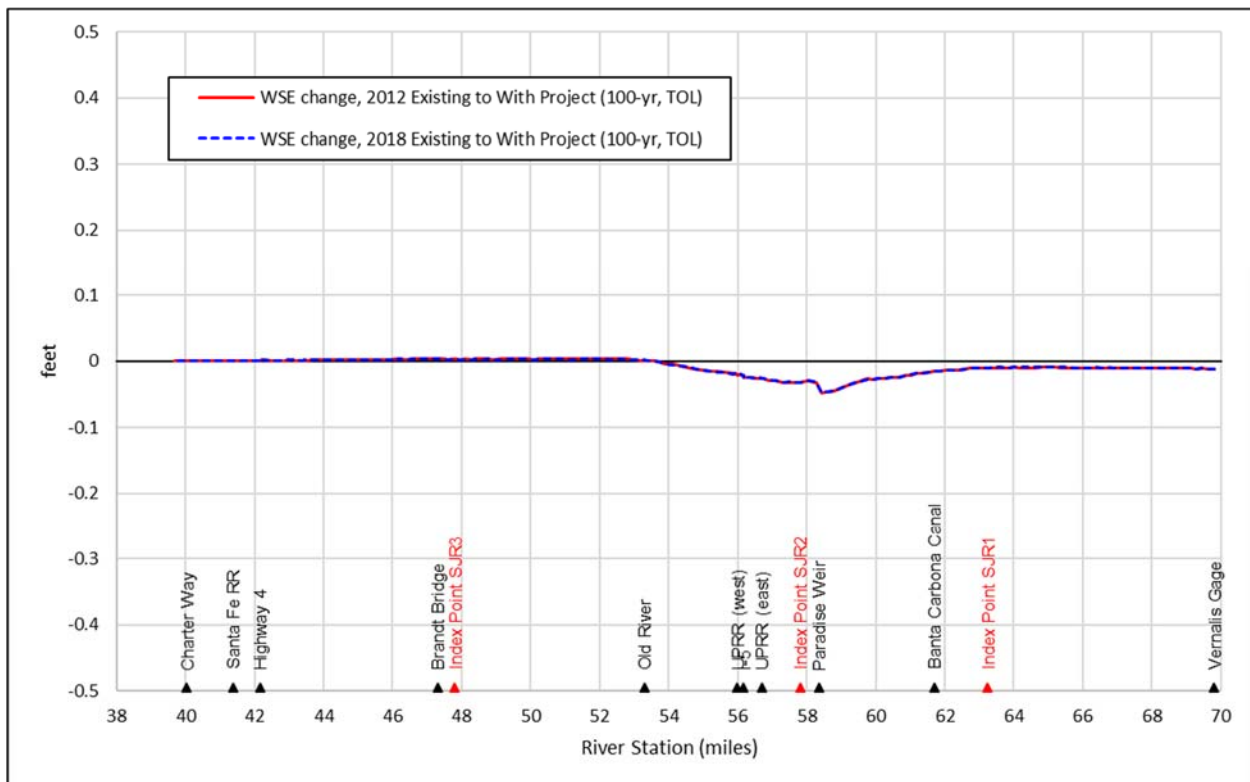


Figure B-2. “Existing” to “With Project” 100-year water surface elevation change, San Joaquin River

“Existing” to “With Project”, San Joaquin River

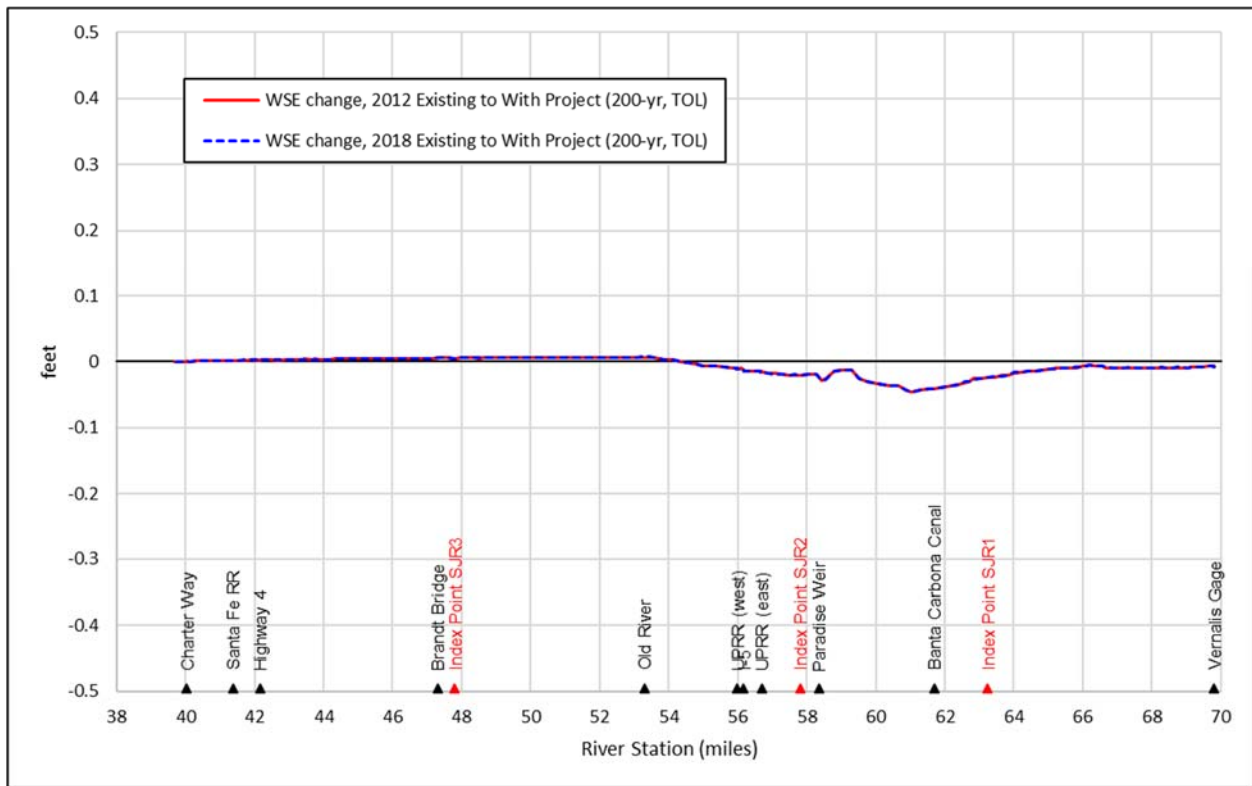


Figure B-3. “Existing” to “With Project” 200-year water surface elevation change, San Joaquin River

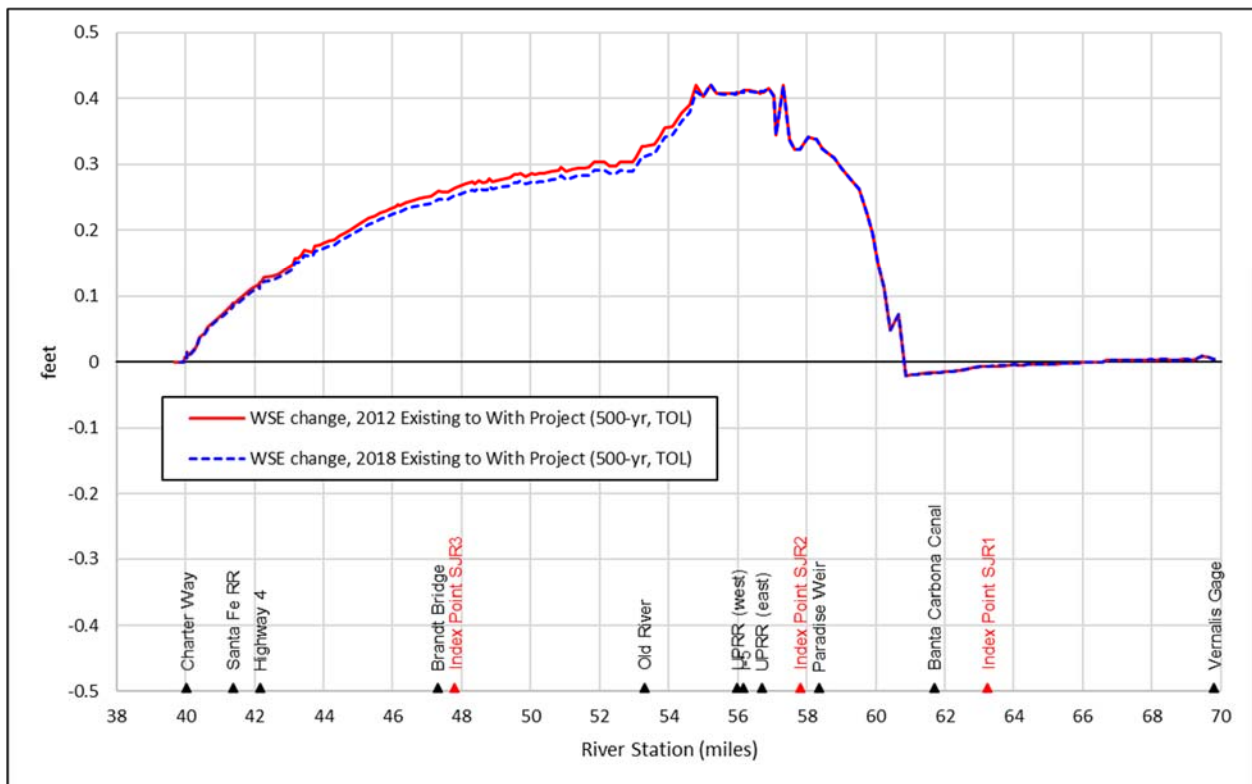


Figure B-4. “Existing” to “With Project” 500-year water surface elevation change, San Joaquin River

“Existing” to “With Project”, Paradise Cut

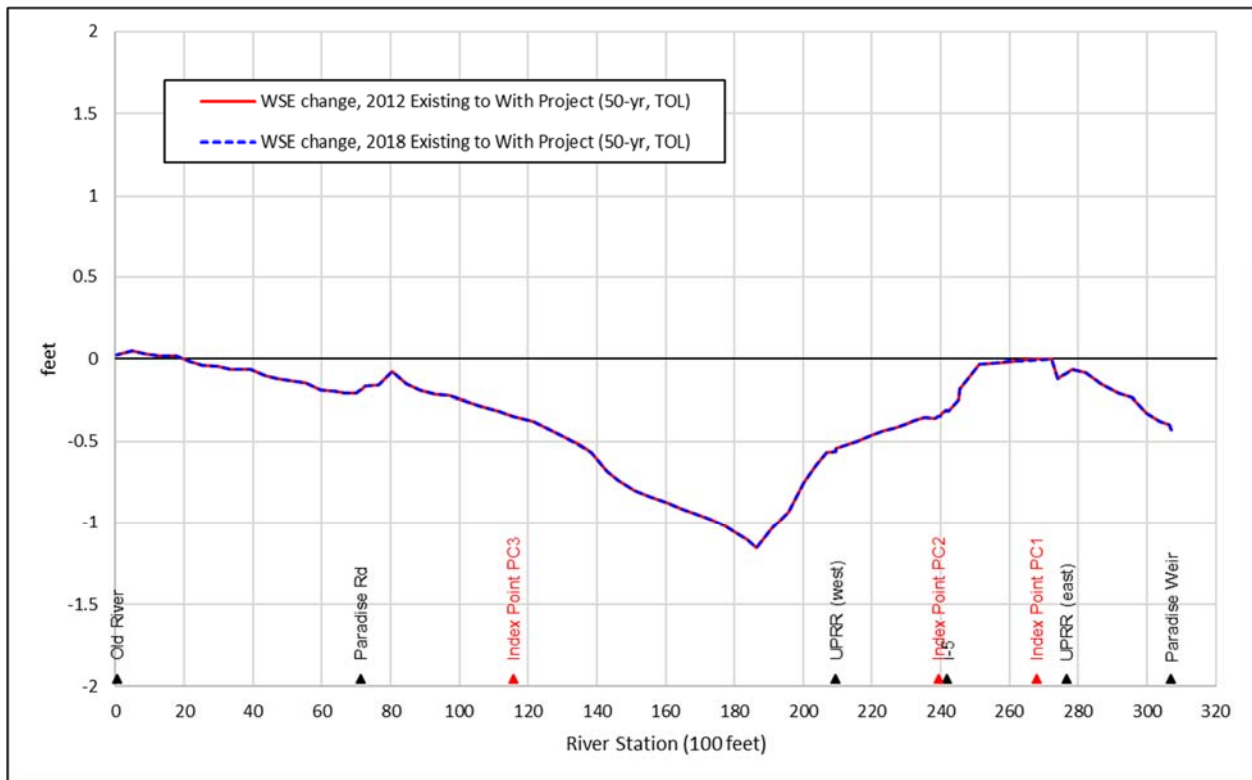


Figure B-5. “Existing” to “With Project” 50-year water surface elevation change, Paradise Cut

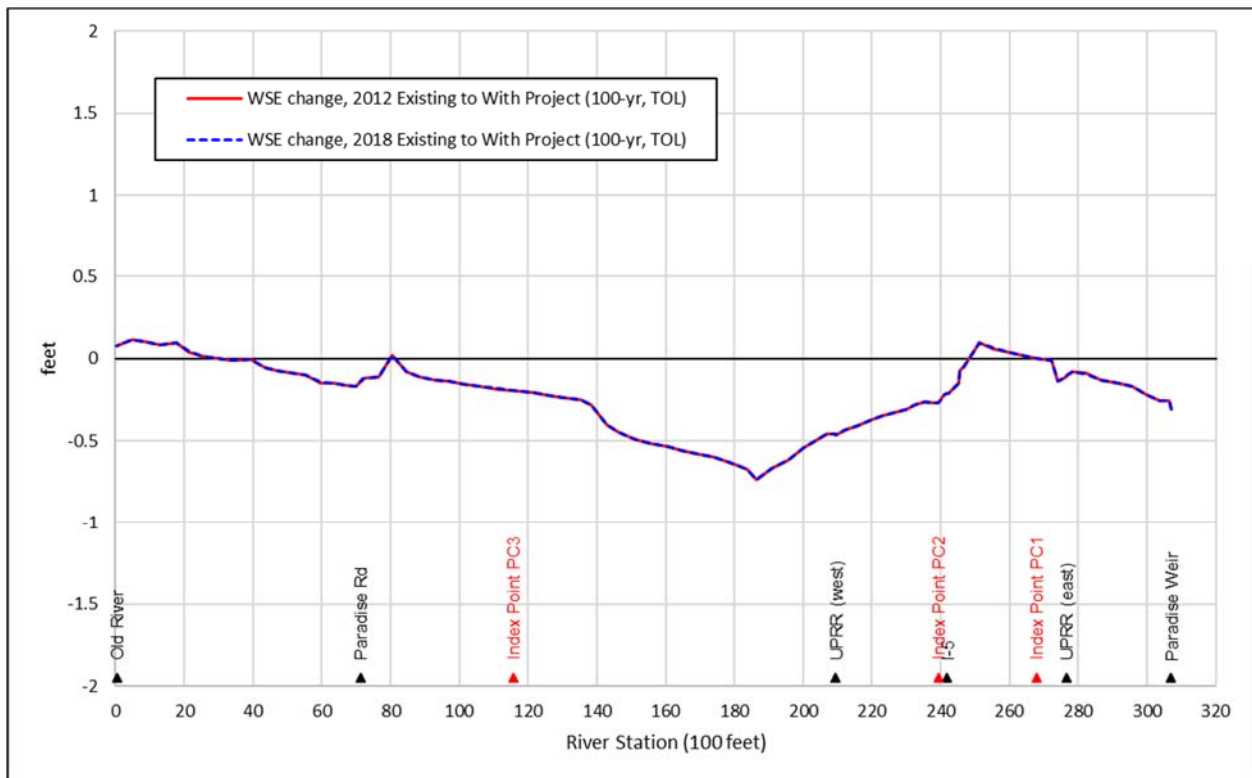


Figure B-6. “Existing” to “With Project” 100-year water surface elevation change, Paradise Cut

“Existing” to “With Project”, Paradise Cut

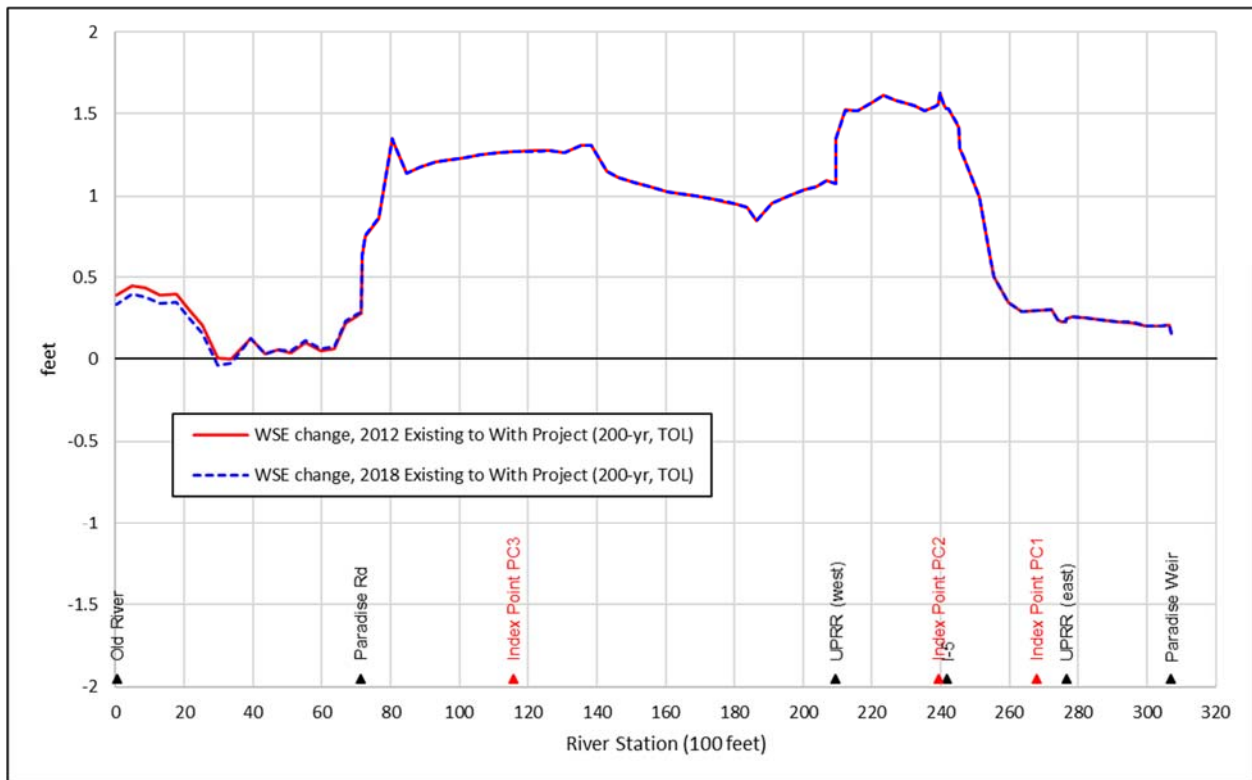


Figure B-7. “Existing” to “With Project” 200-year water surface elevation change, Paradise Cut

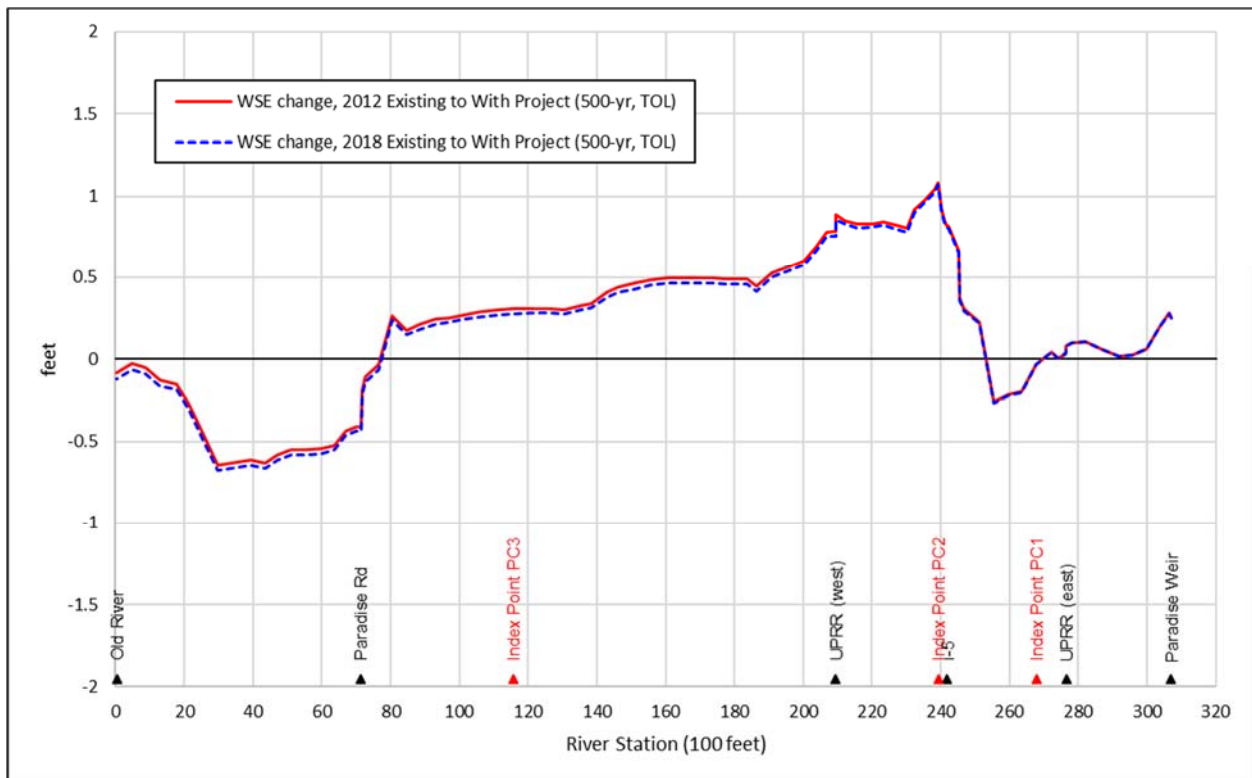


Figure B-8. “Existing” to “With Project” 500-year water surface elevation change, Paradise Cut

“Existing” to “With Project”, Old River

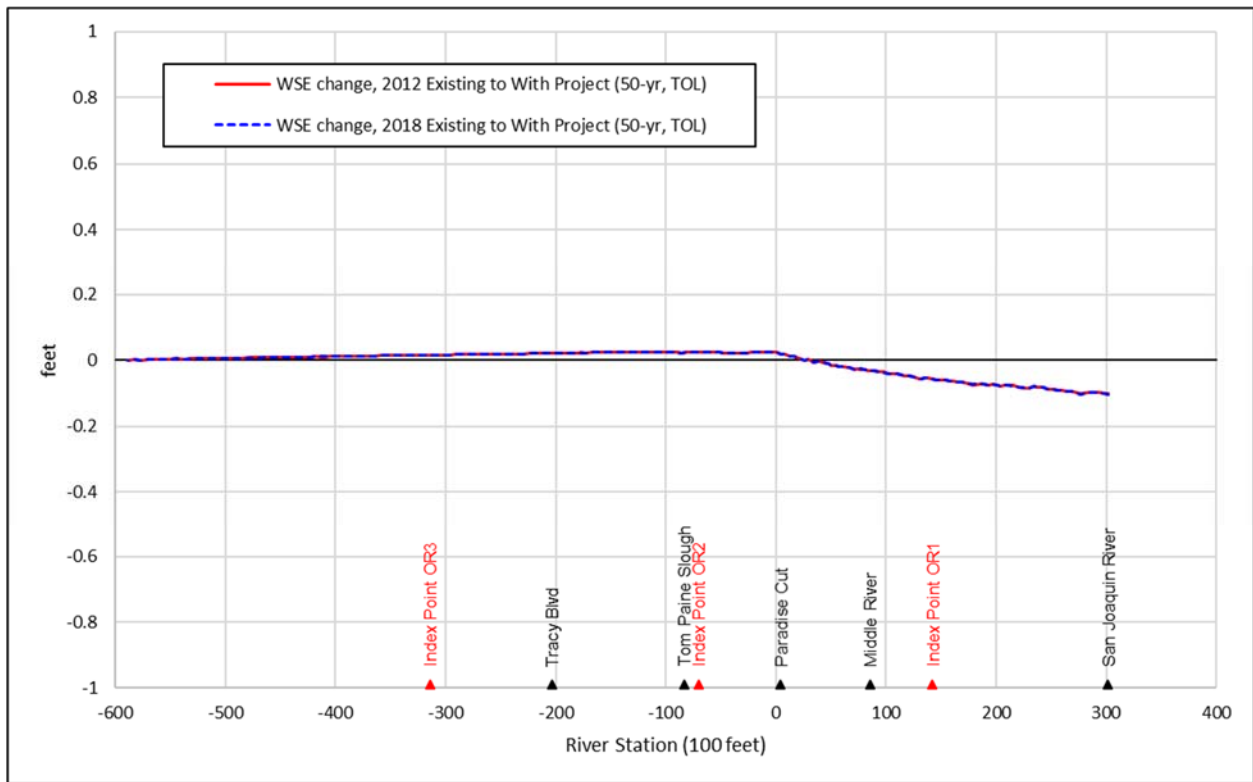


Figure B-9. “Existing” to “With Project” 50-year water surface elevation change, Old River

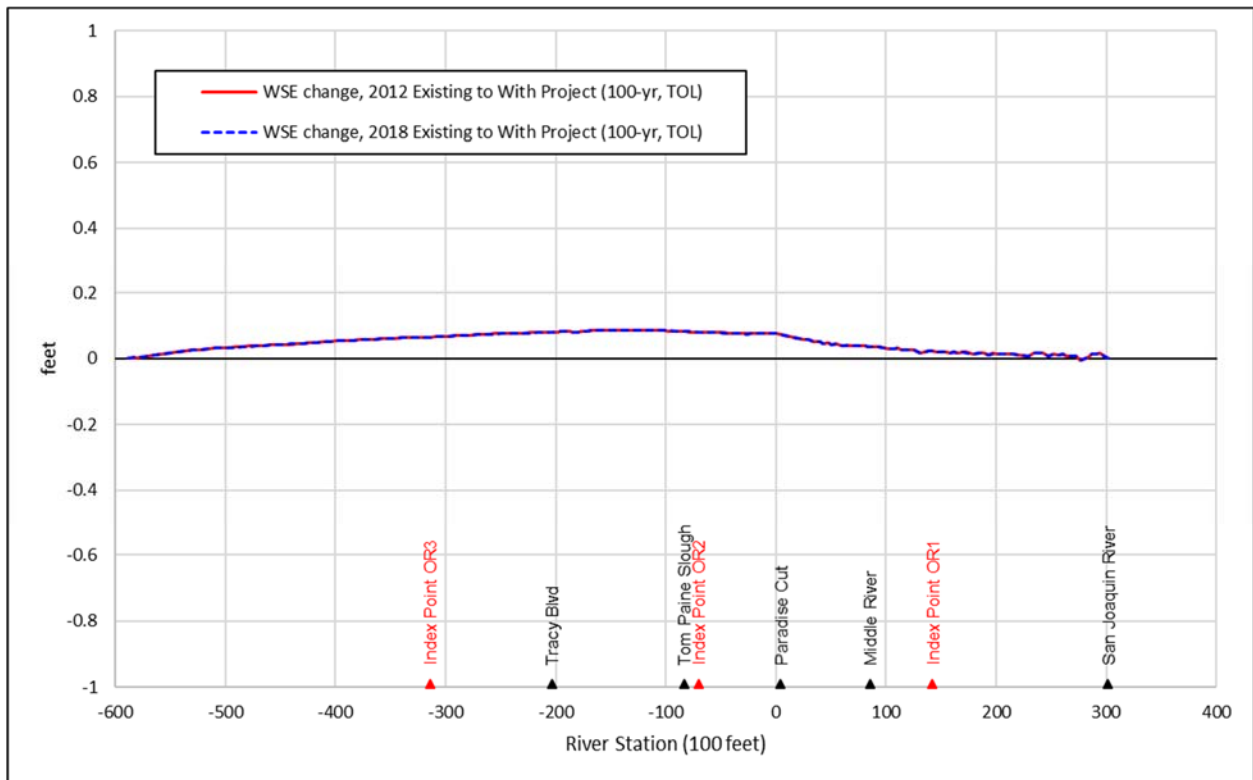


Figure B-10. “Existing” to “With Project” 100-year water surface elevation change, Old River

“Existing” to “With Project”, Old River

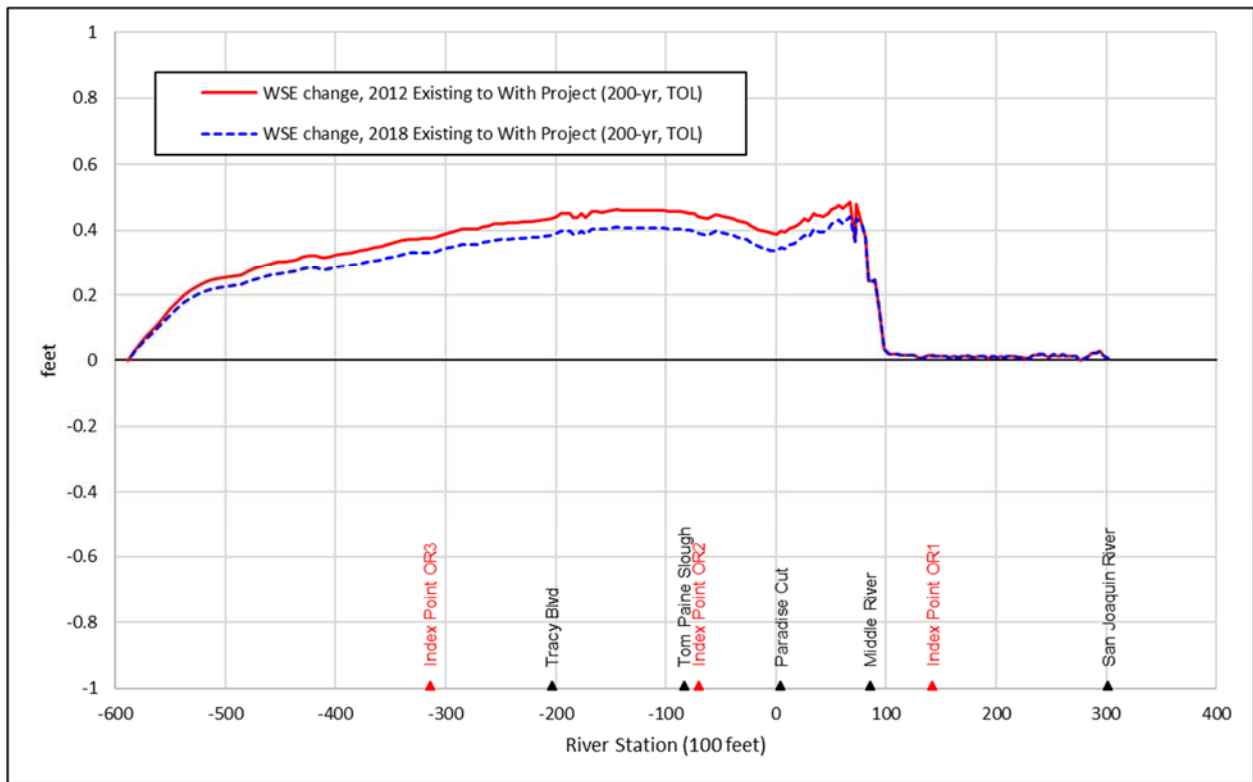


Figure B-11. “Existing” to “With Project” 200-year water surface elevation change, Old River

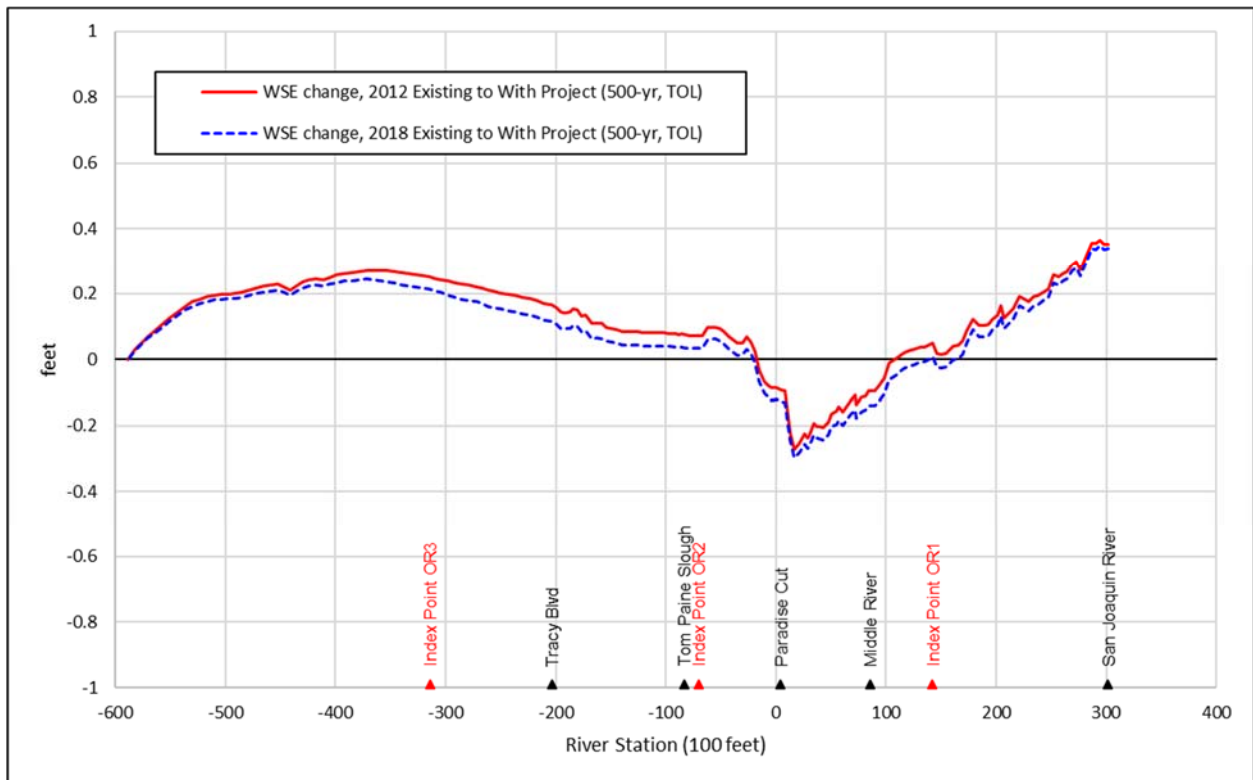


Figure B-12. “Existing” to “With Project” 500-year water surface elevation change, Old River

“Existing” to “With Project”, Grant Line Canal

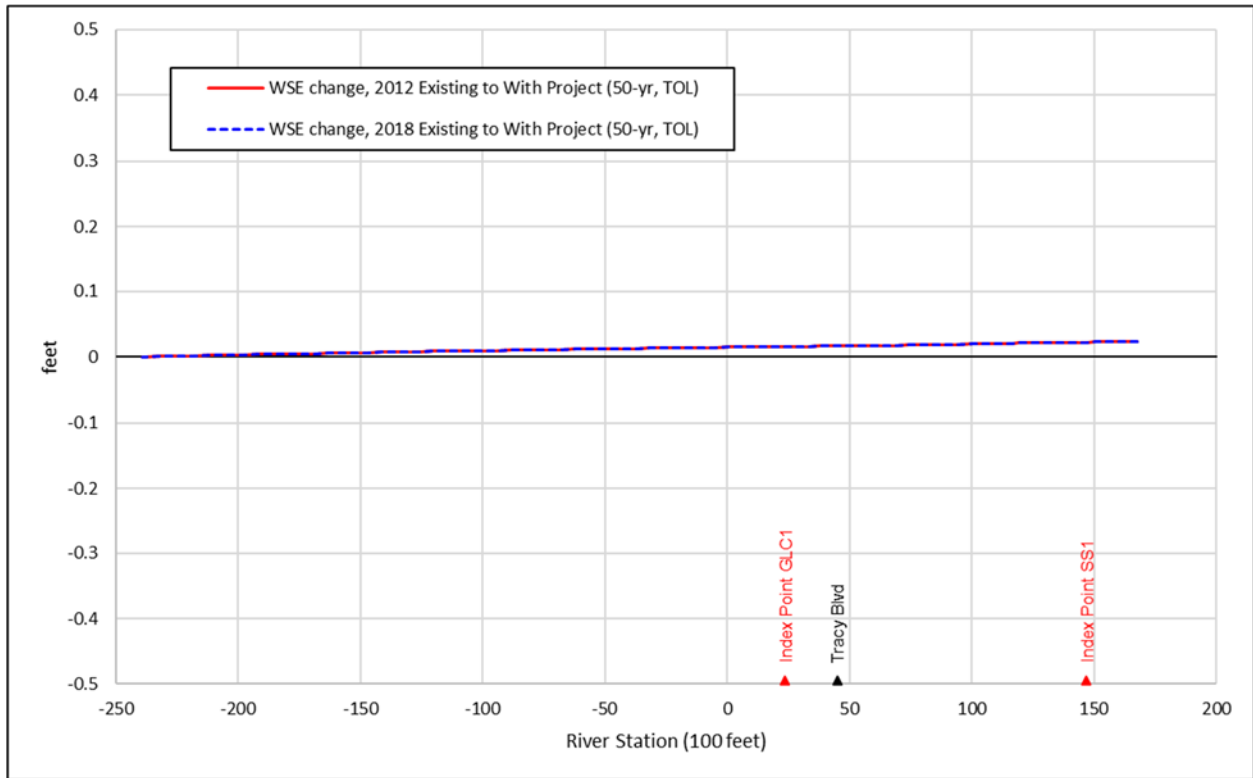


Figure B-13. “Existing” to “With Project” 50-year water surface elevation change, Grant Line Canal

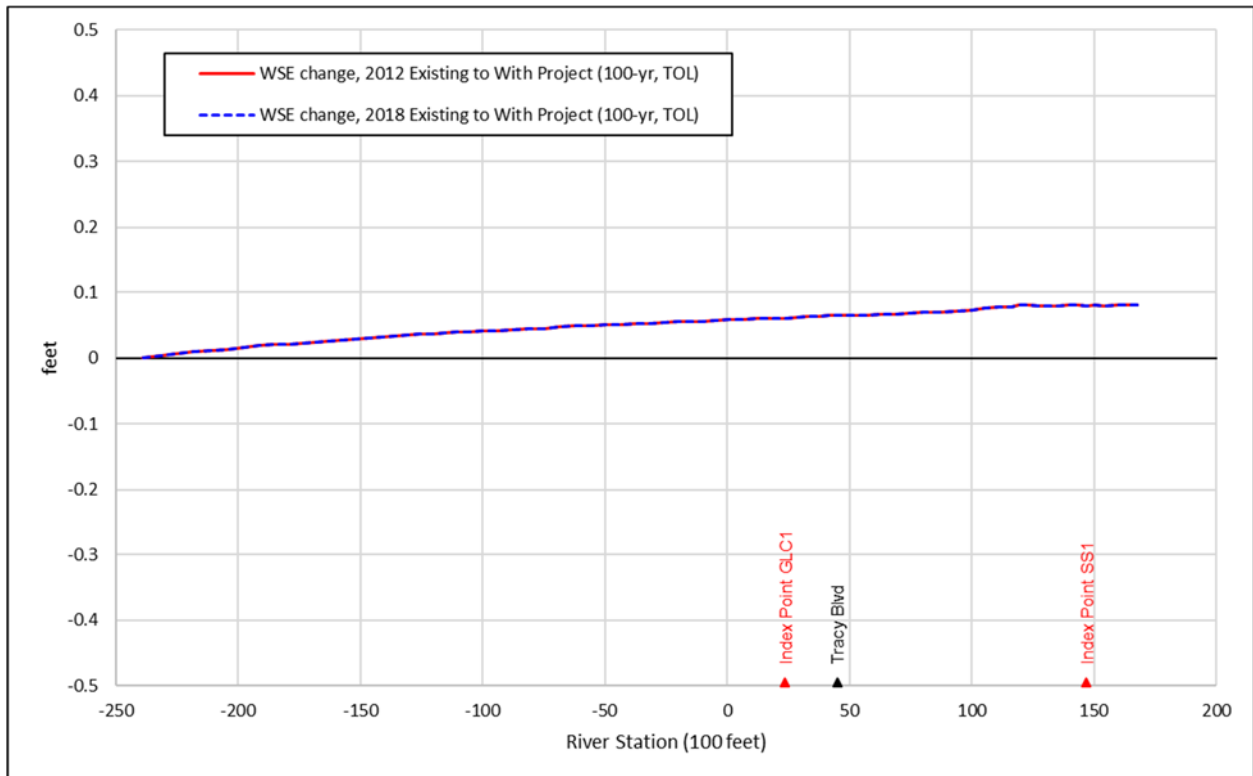


Figure B-14. “Existing” to “With Project” 100-year water surface elevation change, Grant Line Canal

“Existing” to “With Project”, Grant Line Canal

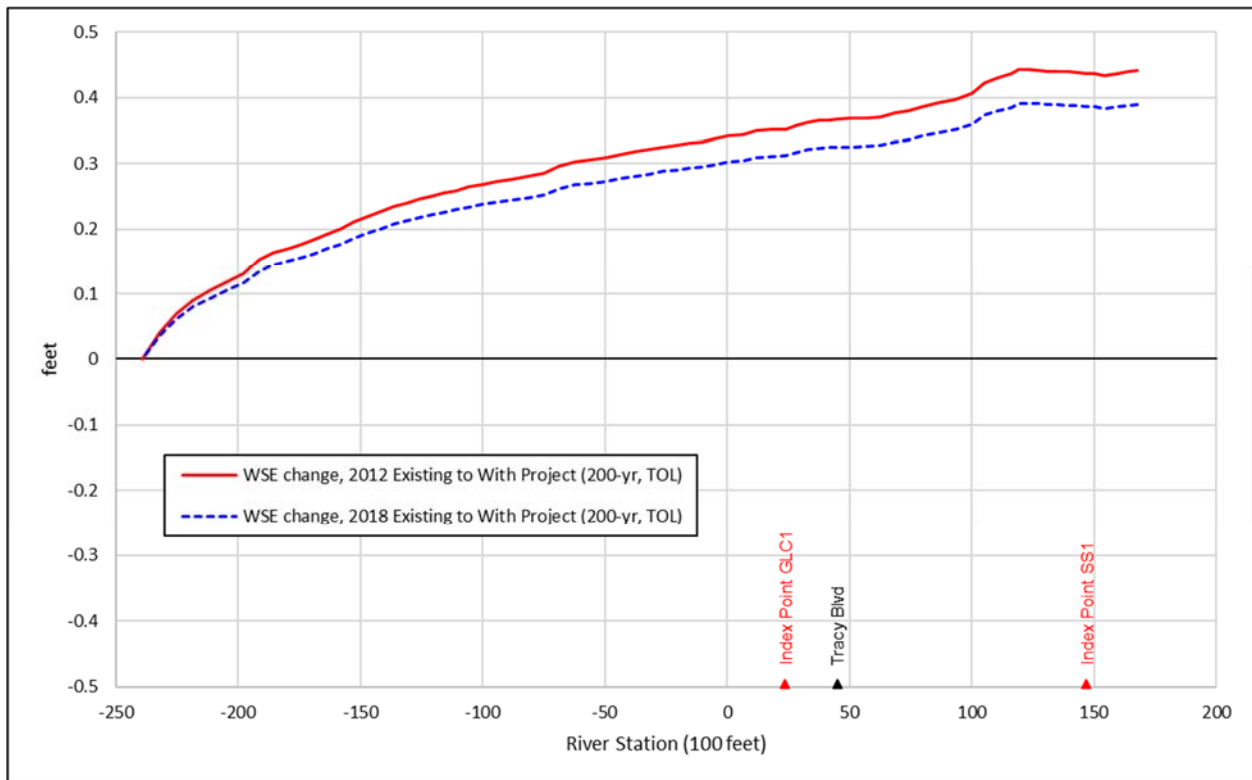


Figure B-15. “Existing” to “With Project” 200-year water surface elevation change, Grant Line Canal

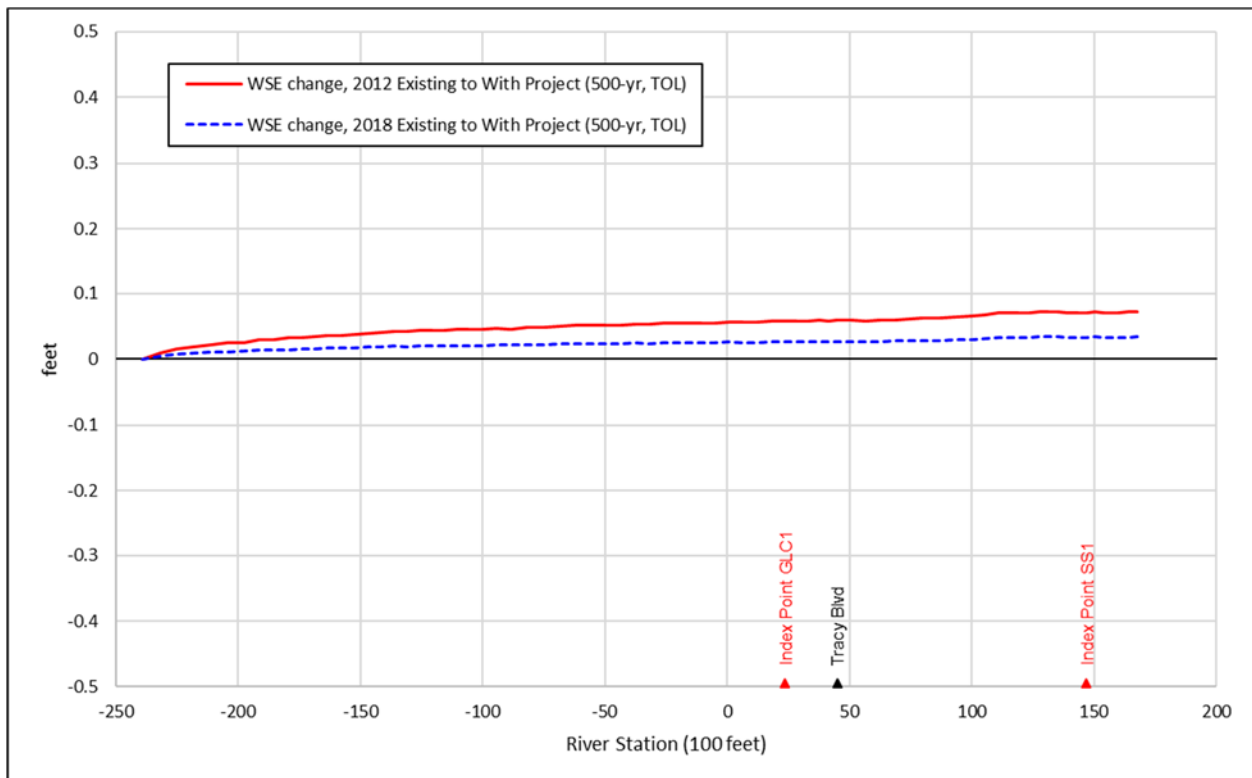


Figure B-16. “Existing” to “With Project” 500-year water surface elevation change, Grant Line Canal

“Existing” to “With Project”, Middle River

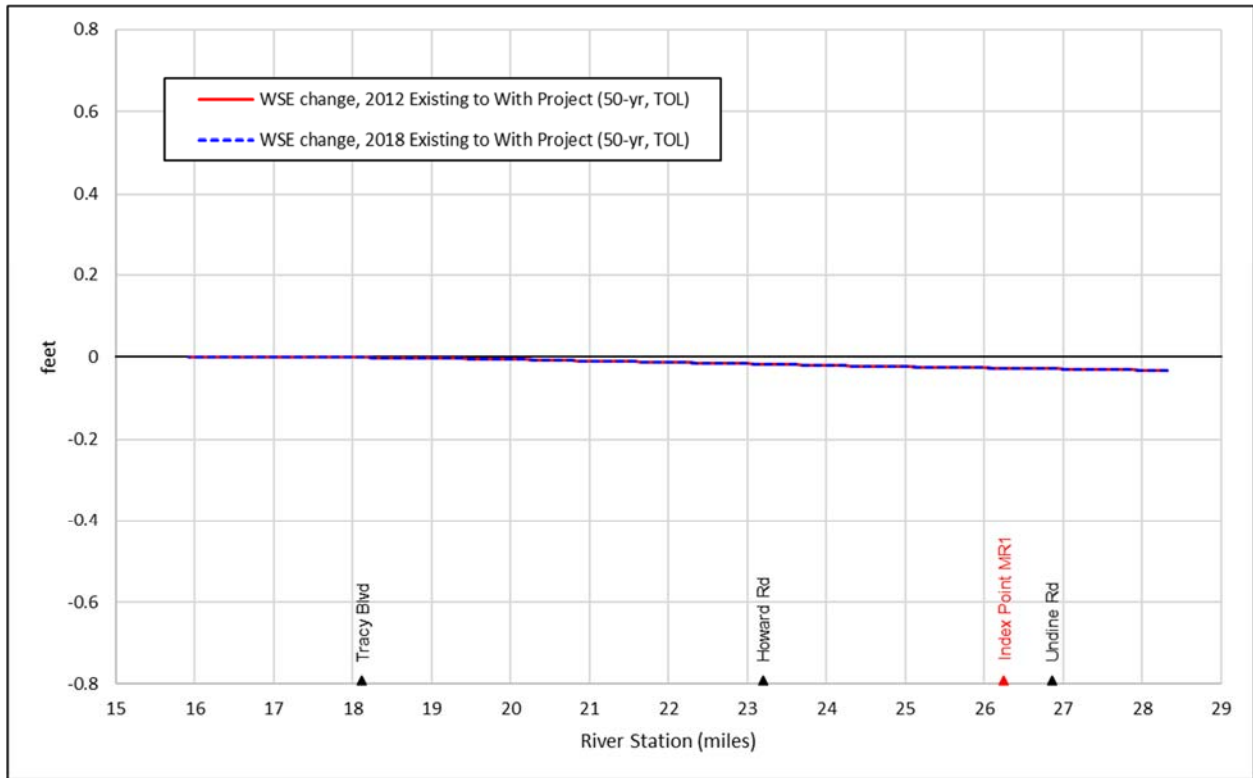


Figure B-17. “Existing” to “With Project” 50-year water surface elevation change, Middle River

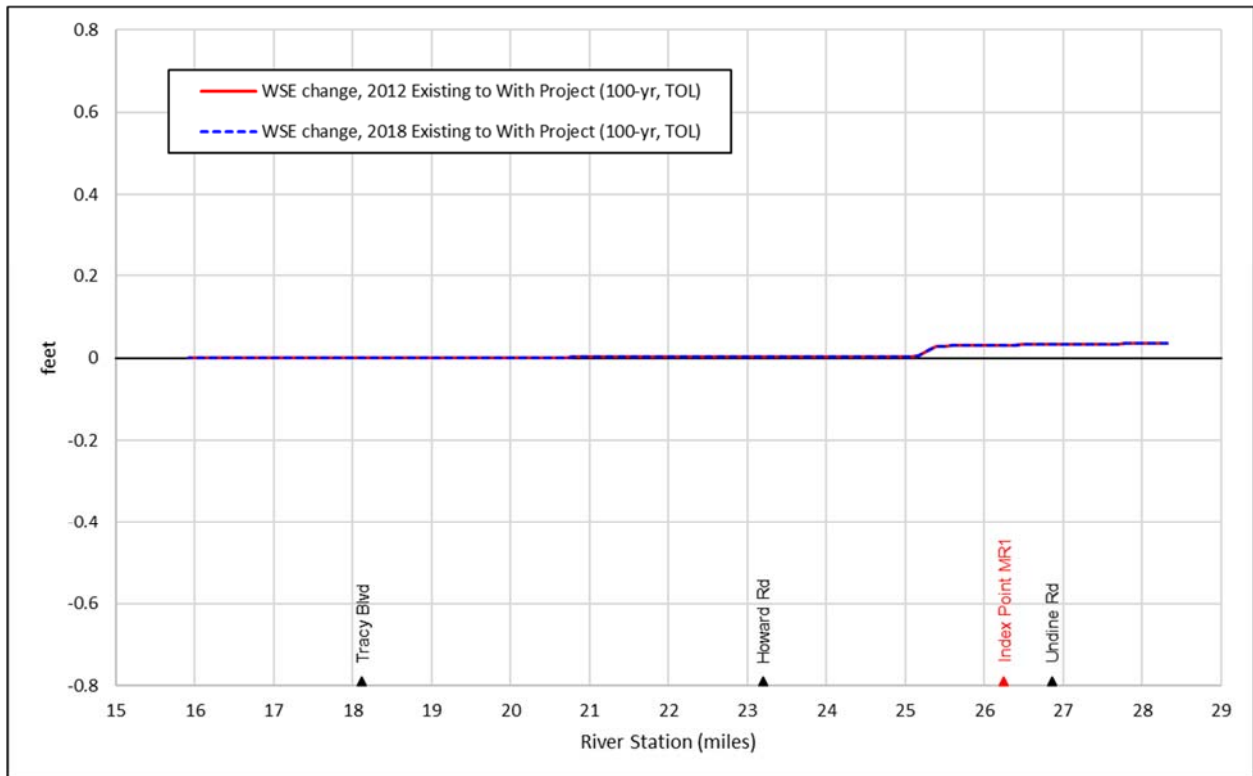


Figure B-18. “Existing” to “With Project” 100-year water surface elevation change, Middle River

“Existing” to “With Project”, Middle River

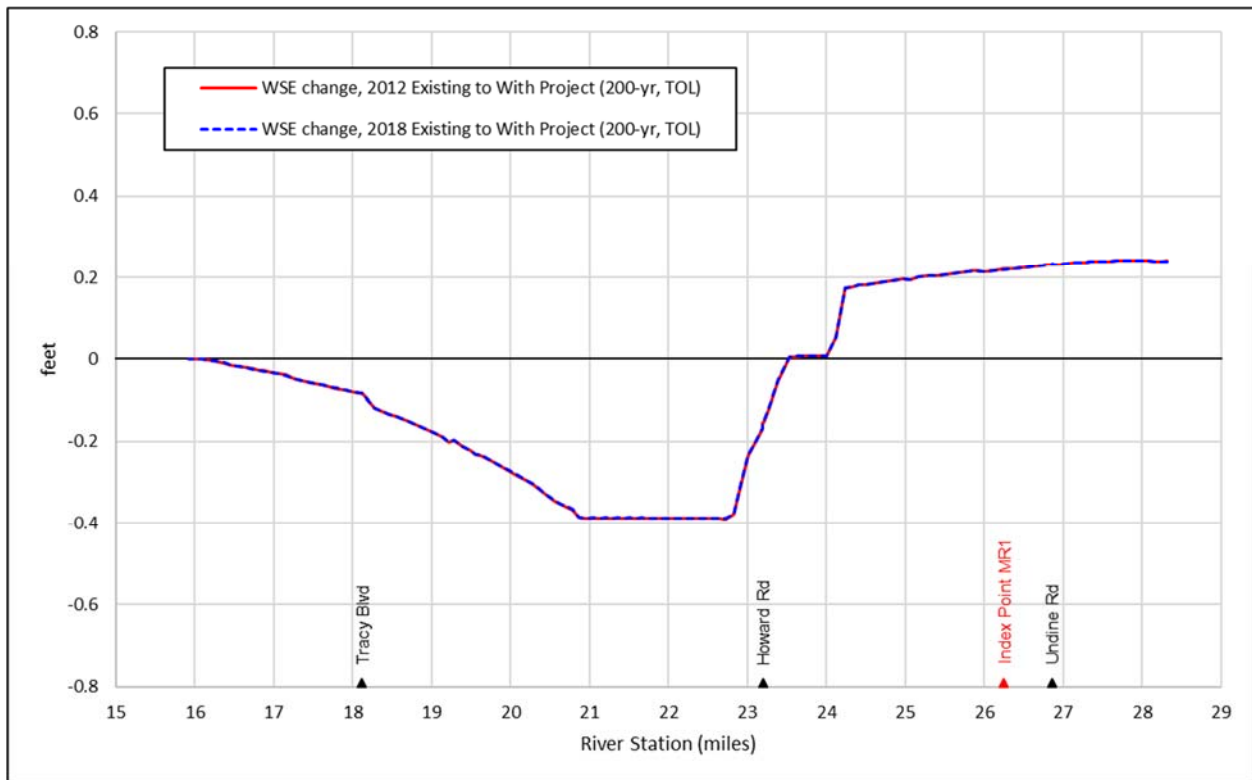


Figure B-19. “Existing” to “With Project” 200-year water surface elevation change, Middle River

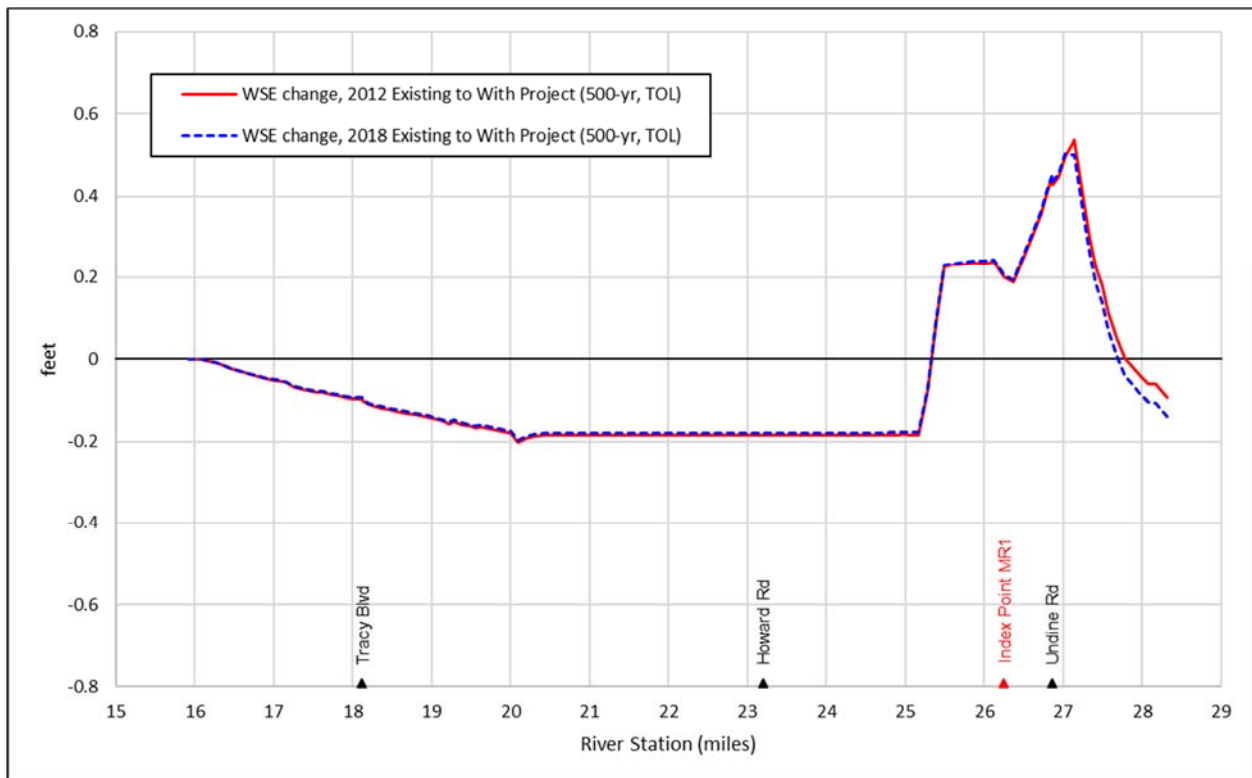


Figure B-20. “Existing” to “With Project” 500-year water surface elevation change, Middle River

Appendix C

Profile Plots of Water Surface Elevation Impacts in Rivers

“Base” to “No Action”

“Base” to “No Action”, San Joaquin River

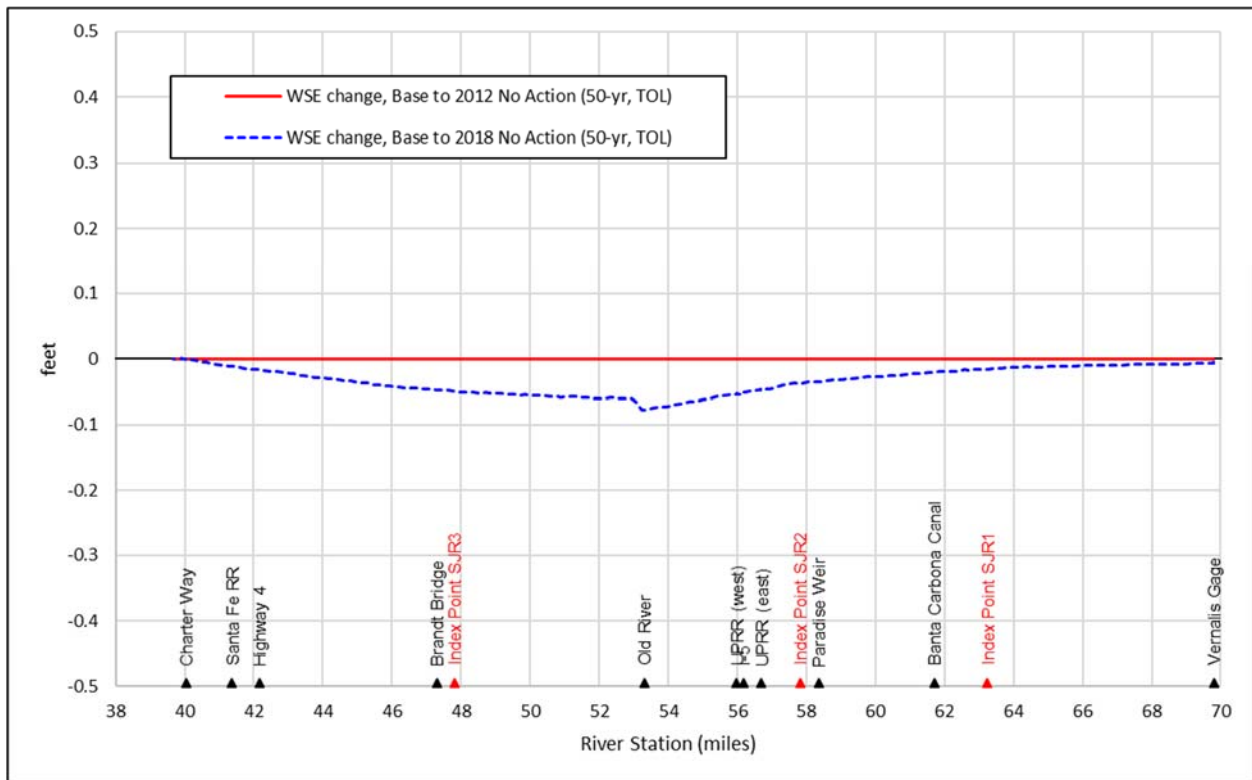


Figure C-1. “Base” to “No Action” 50-year water surface elevation change, San Joaquin River

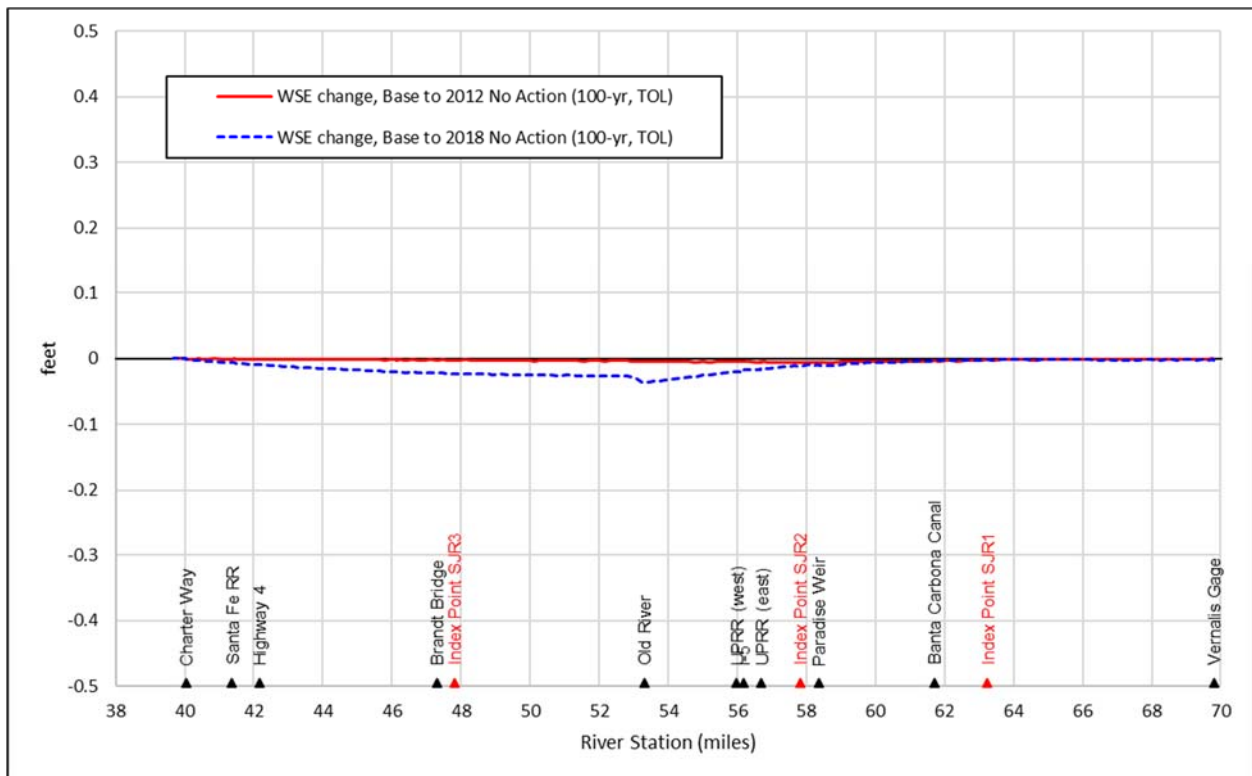


Figure C-2. “Base” to “No Action” 100-year water surface elevation change, San Joaquin River

“Base” to “No Action”, San Joaquin River

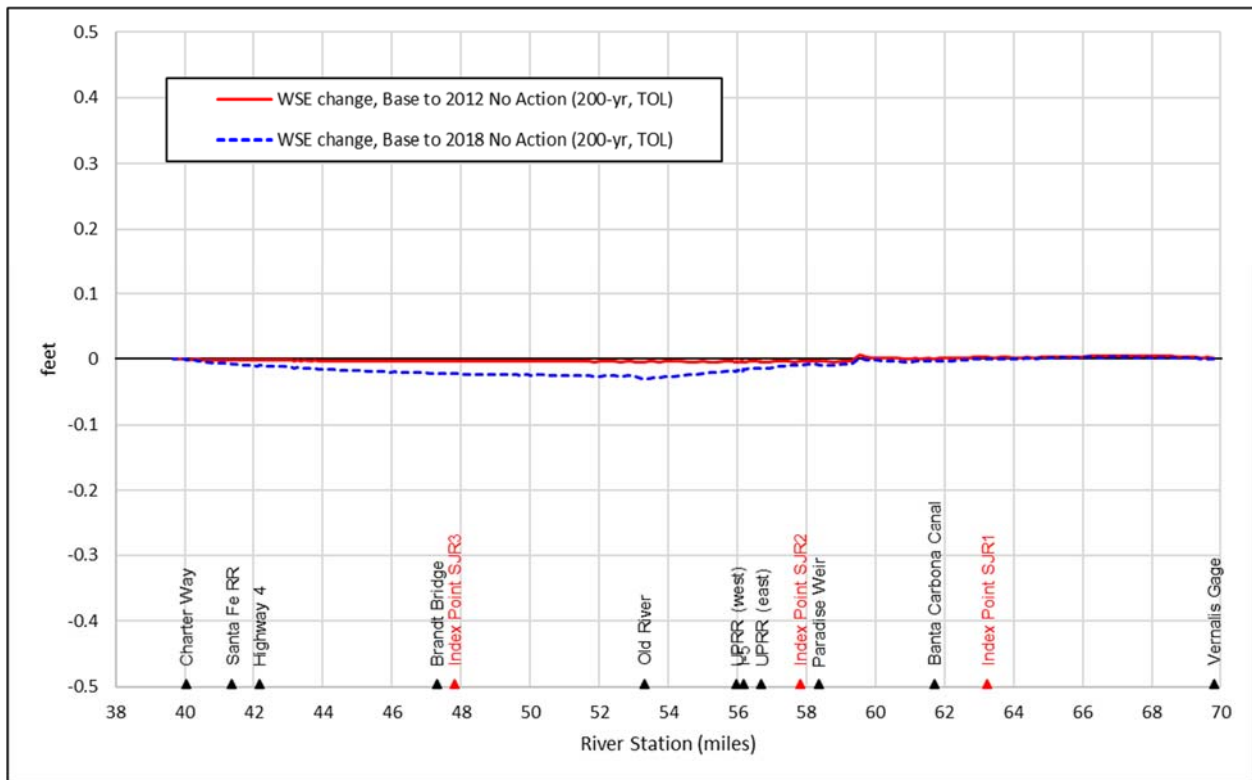


Figure C-3. “Base” to “No Action” 200-year water surface elevation change, San Joaquin River

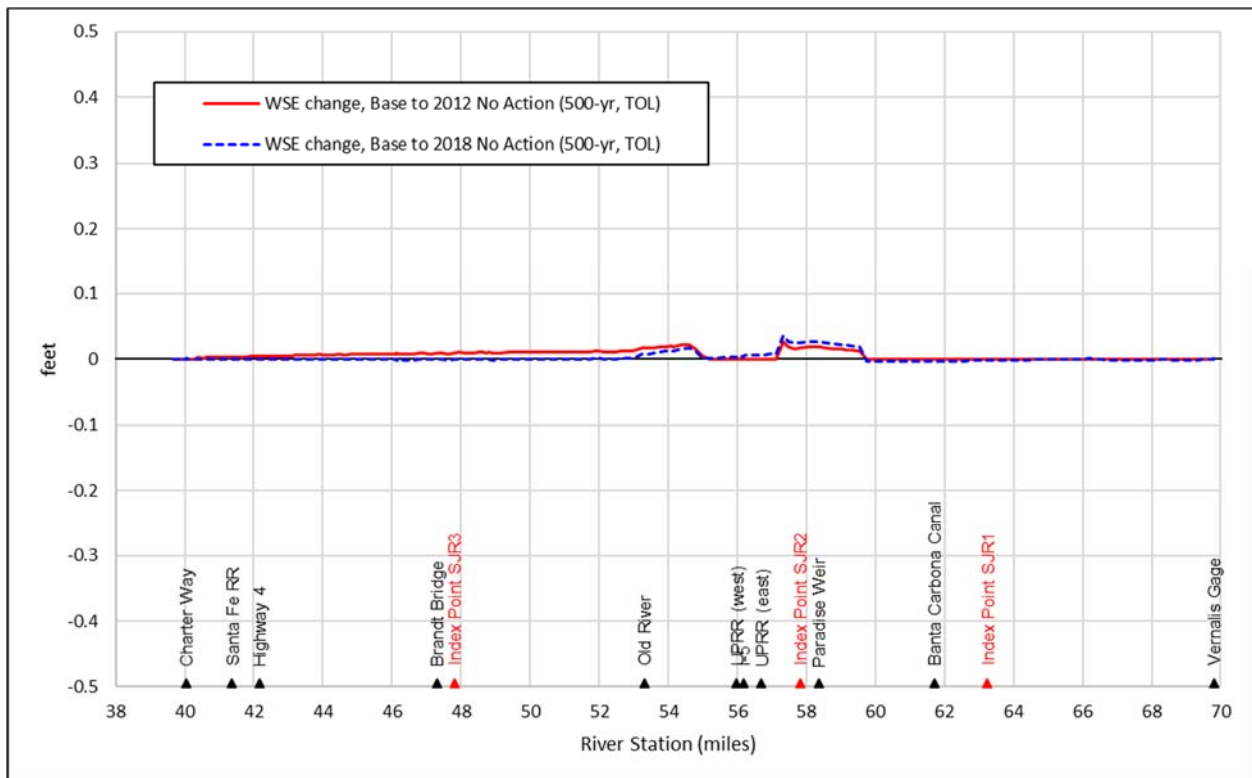


Figure C-4. “Base” to “No Action” 500-year water surface elevation change, San Joaquin River

“Base” to “No Action”, Paradise Cut

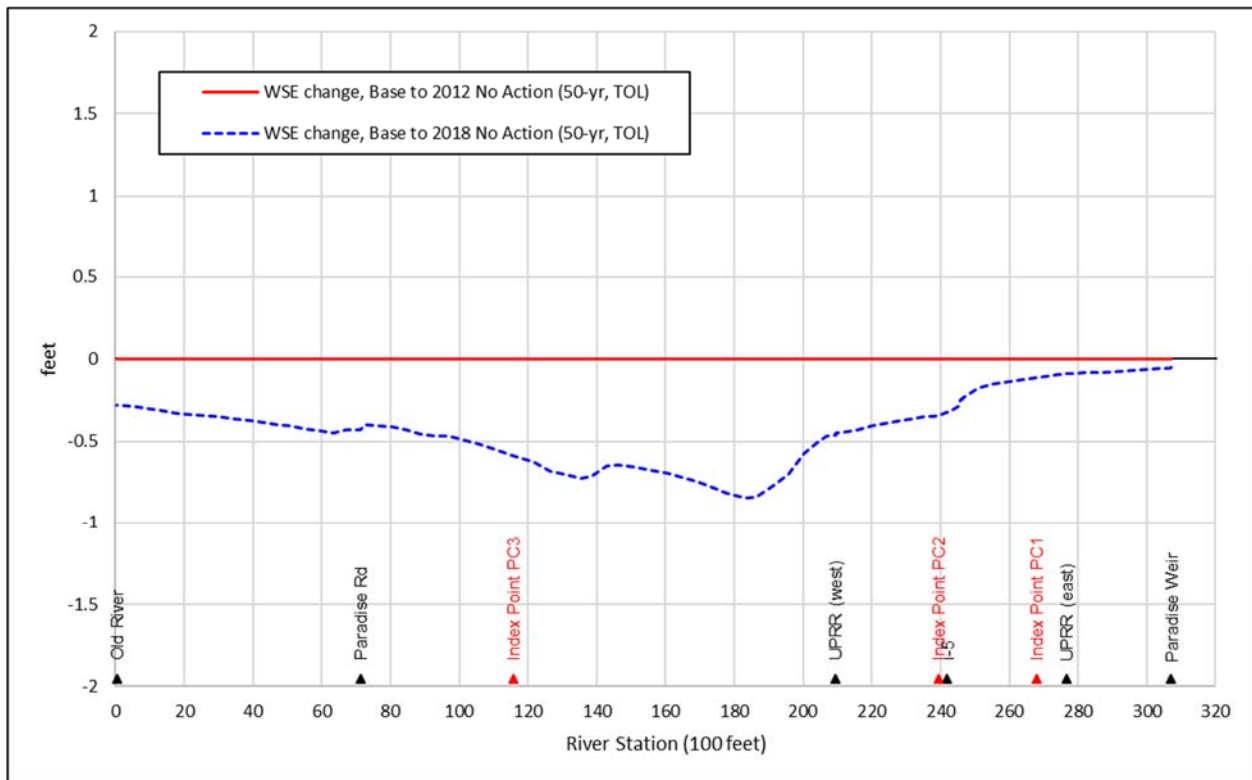


Figure C-5. “Base” to “No Action” 50-year water surface elevation change, Paradise Cut

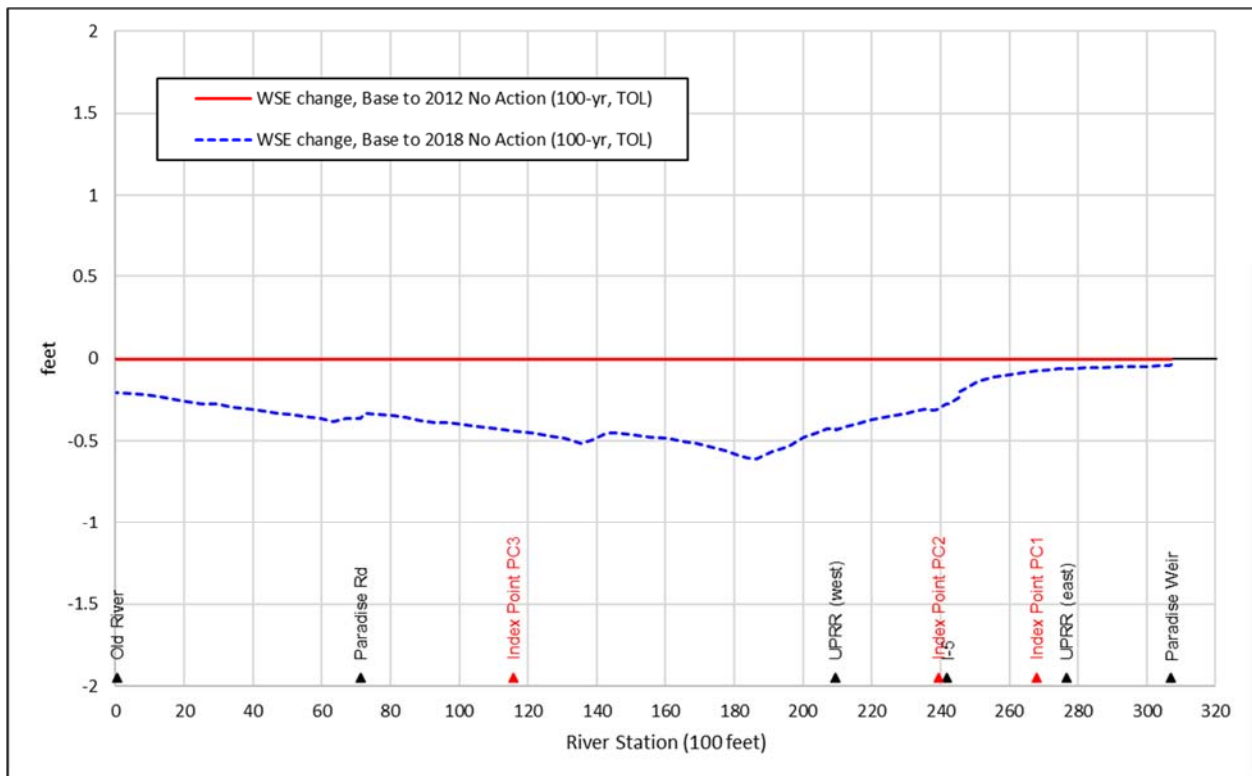


Figure C-6. “Base” to “No Action” 100-year water surface elevation change, Paradise Cut

“Base” to “No Action”, Paradise Cut

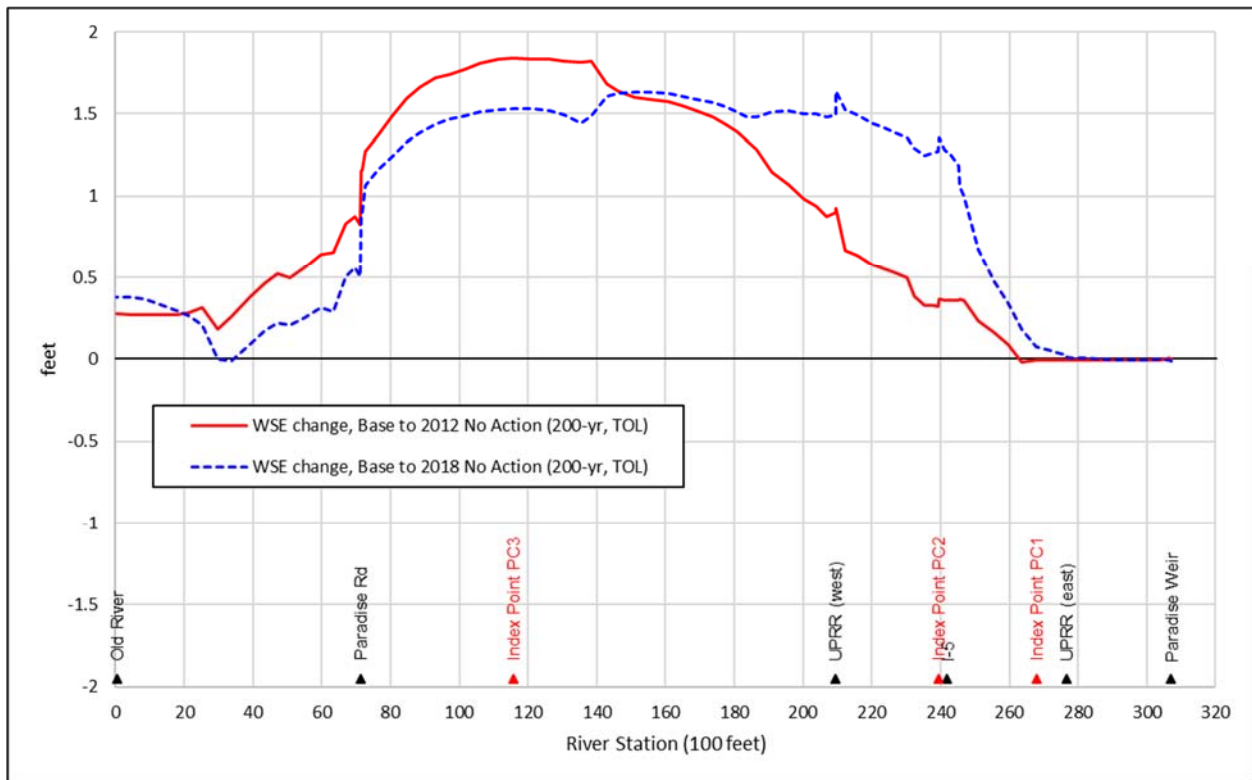


Figure C-7. “Base” to “No Action” 200-year water surface elevation change, Paradise Cut

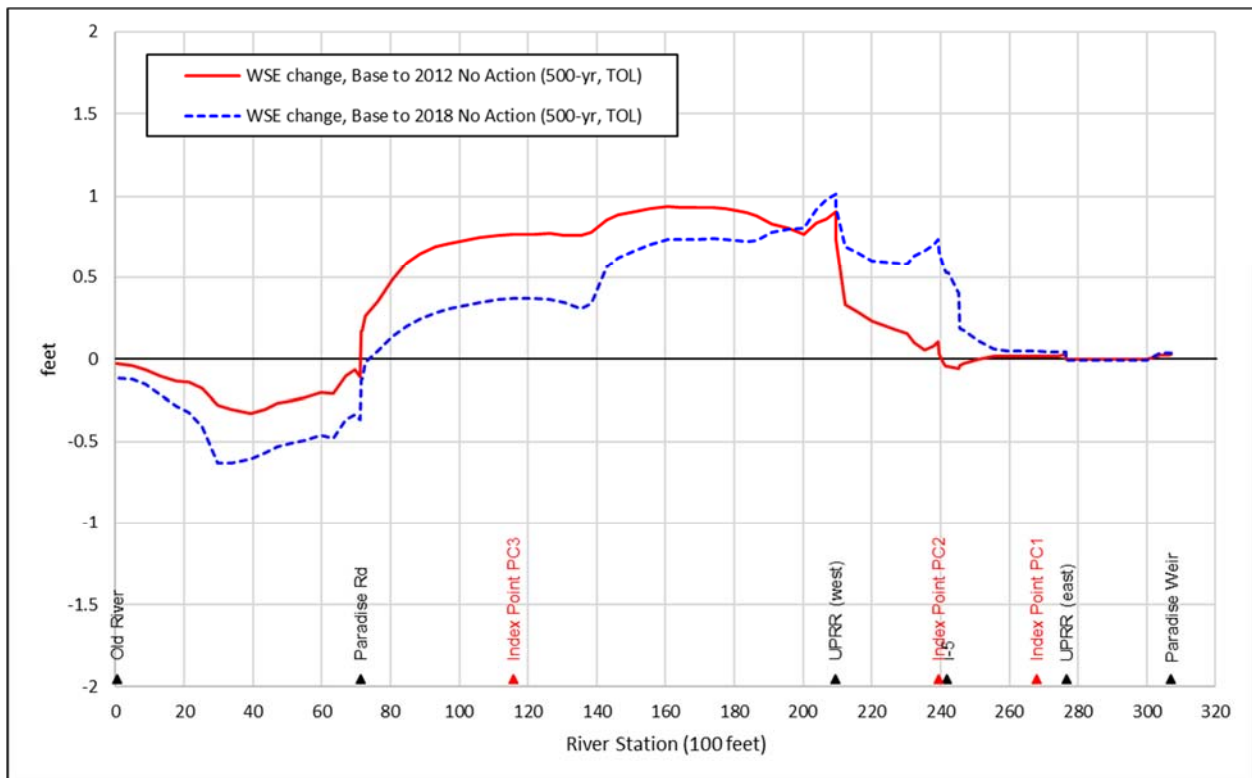


Figure C-8. “Base” to “No Action” 500-year water surface elevation change, Paradise Cut

“Base” to “No Action”, Old River

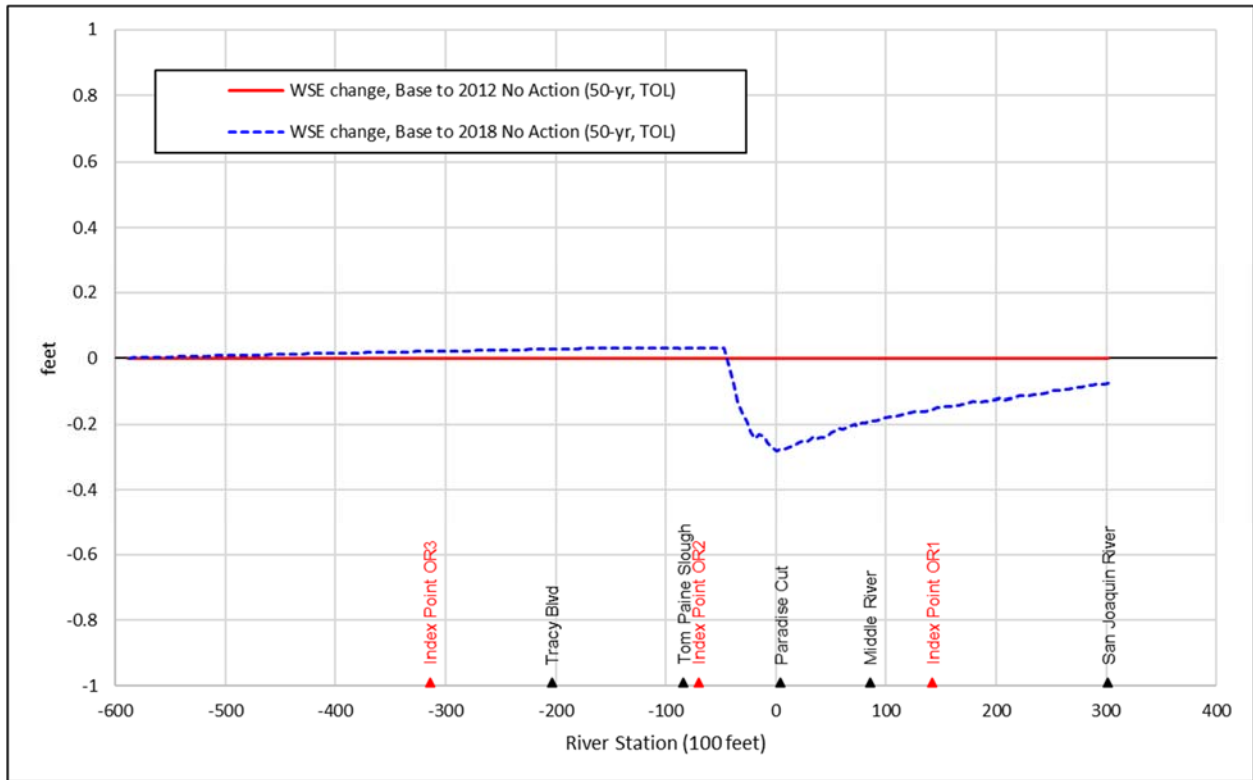


Figure C-9. “Base” to “No Action” 50-year water surface elevation change, Old River

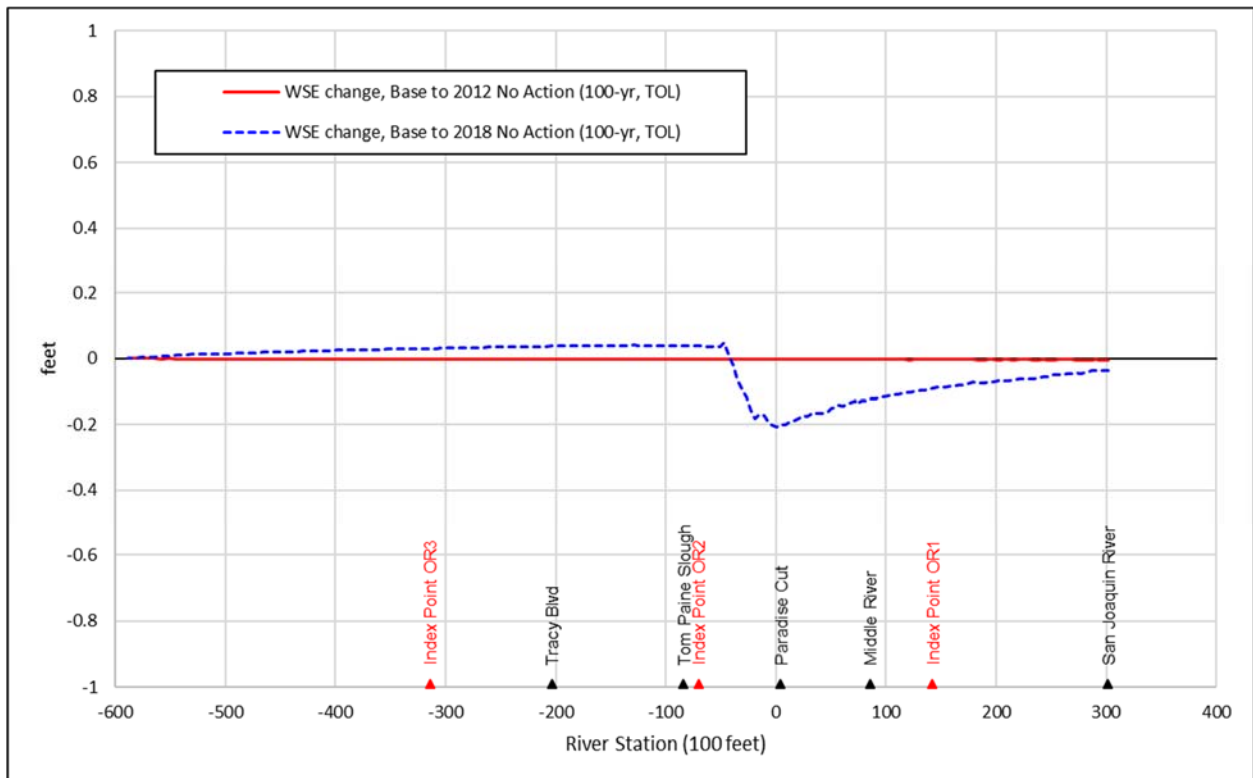


Figure C-10. “Base” to “No Action” 100-year water surface elevation change, Old River

“Base” to “No Action”, Old River

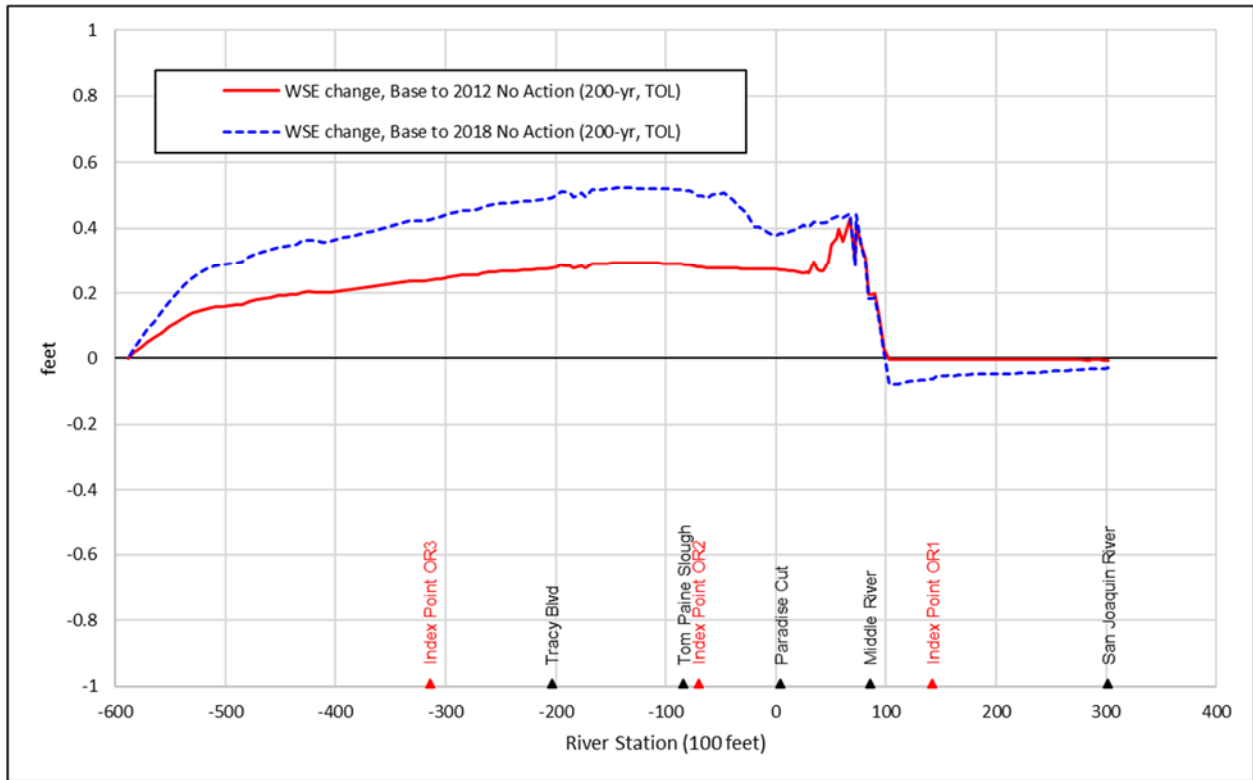


Figure C-11. “Base” to “No Action” 200-year water surface elevation change, Old River

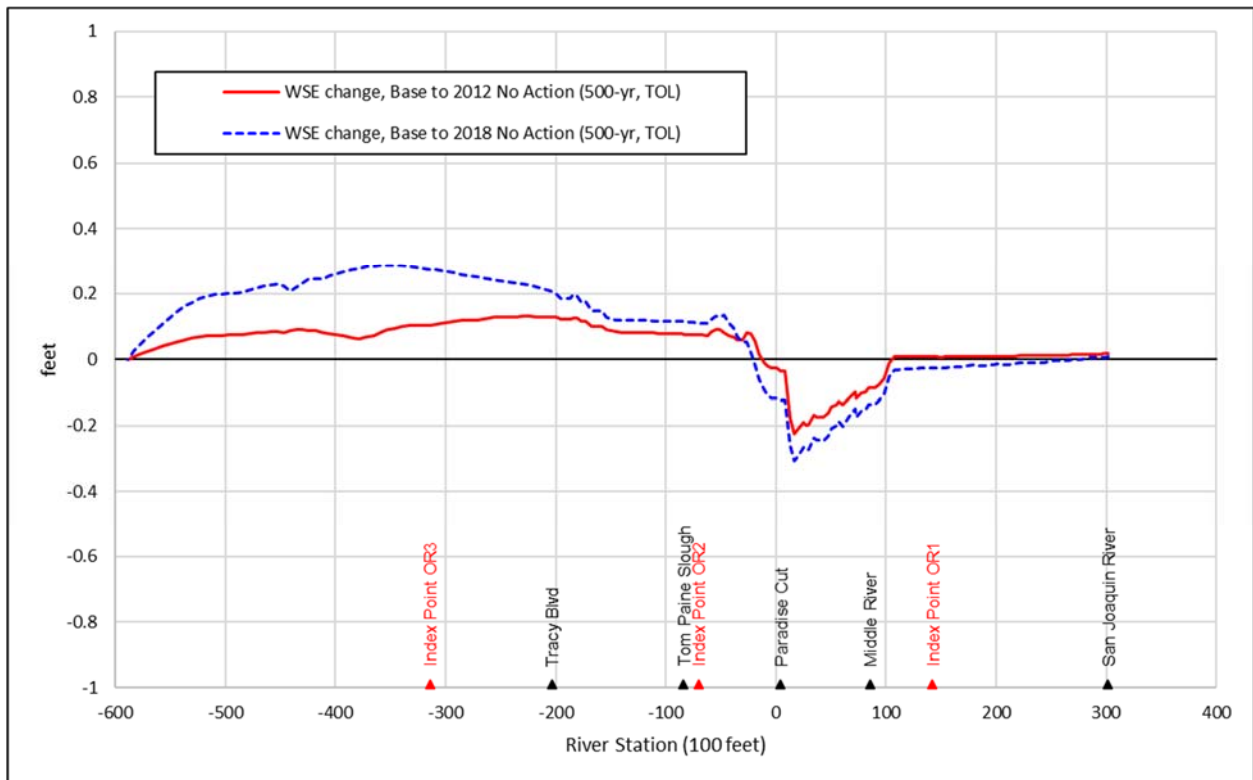


Figure C-12. “Base” to “No Action” 500-year water surface elevation change, Old River

“Base” to “No Action”, Grant Line Canal

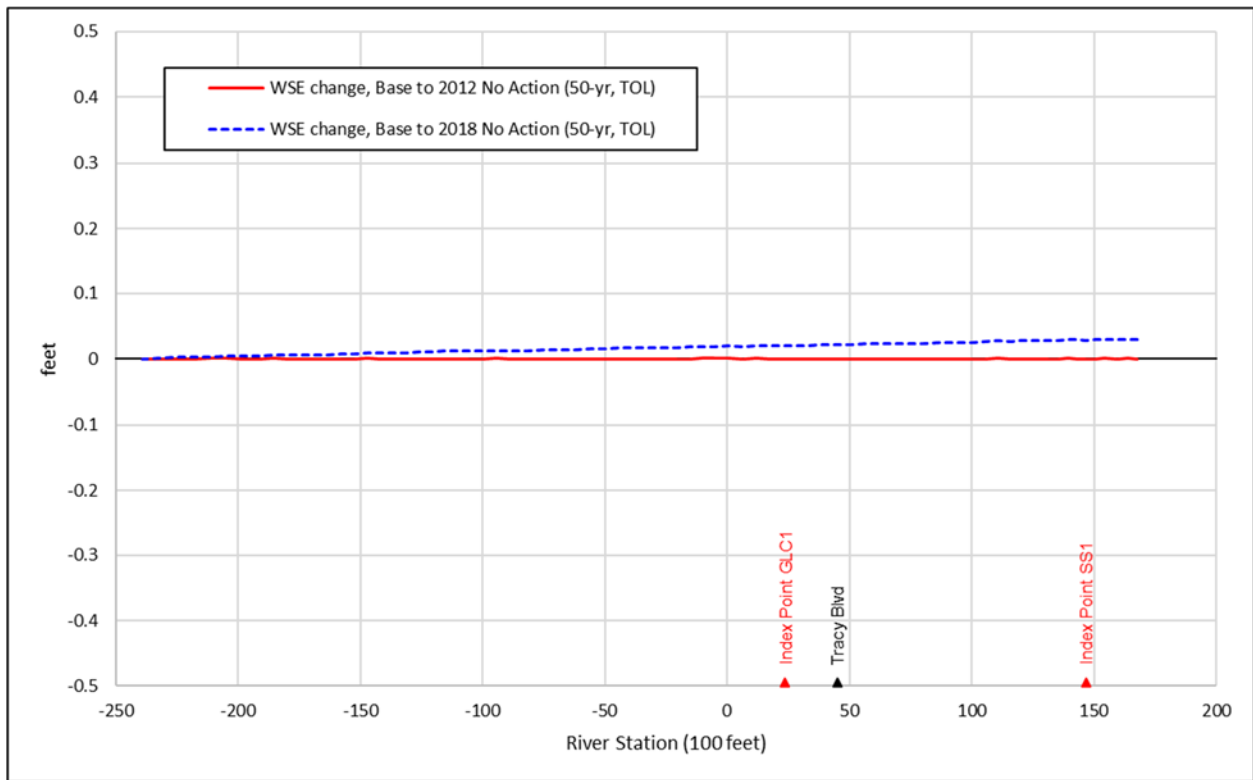


Figure C-13. “Base” to “No Action” 50-year water surface elevation change, Grant Line Canal

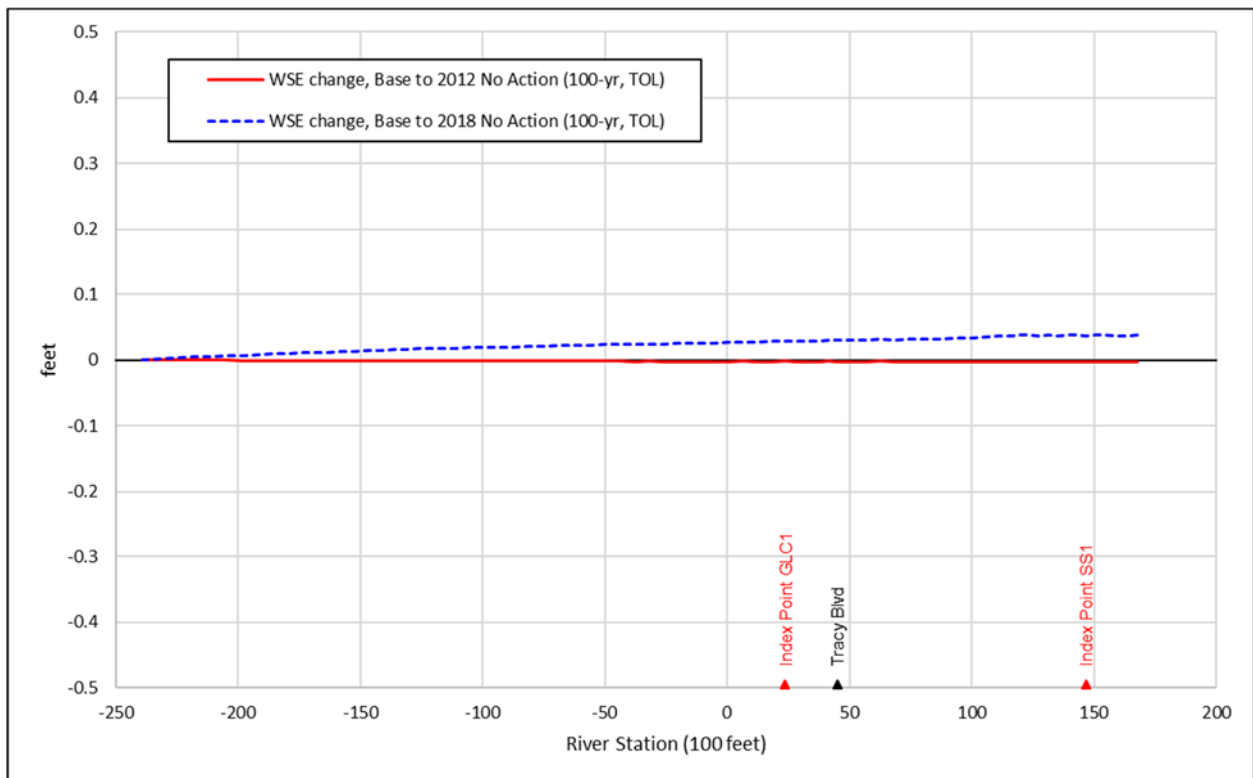


Figure C-14. “Base” to “No Action” 100-year water surface elevation change, Grant Line Canal

“Base” to “No Action”, Grant Line Canal

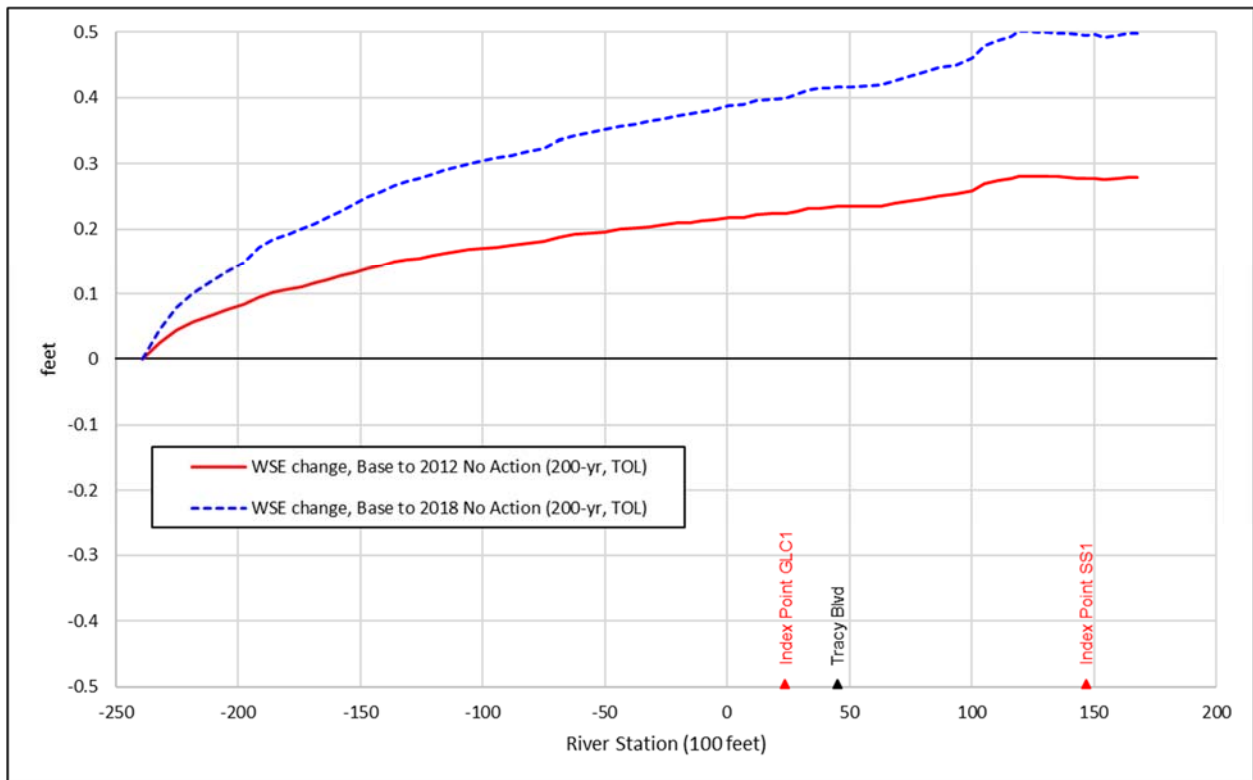


Figure C-15. “Base” to “No Action” 200-year water surface elevation change, Grant Line Canal

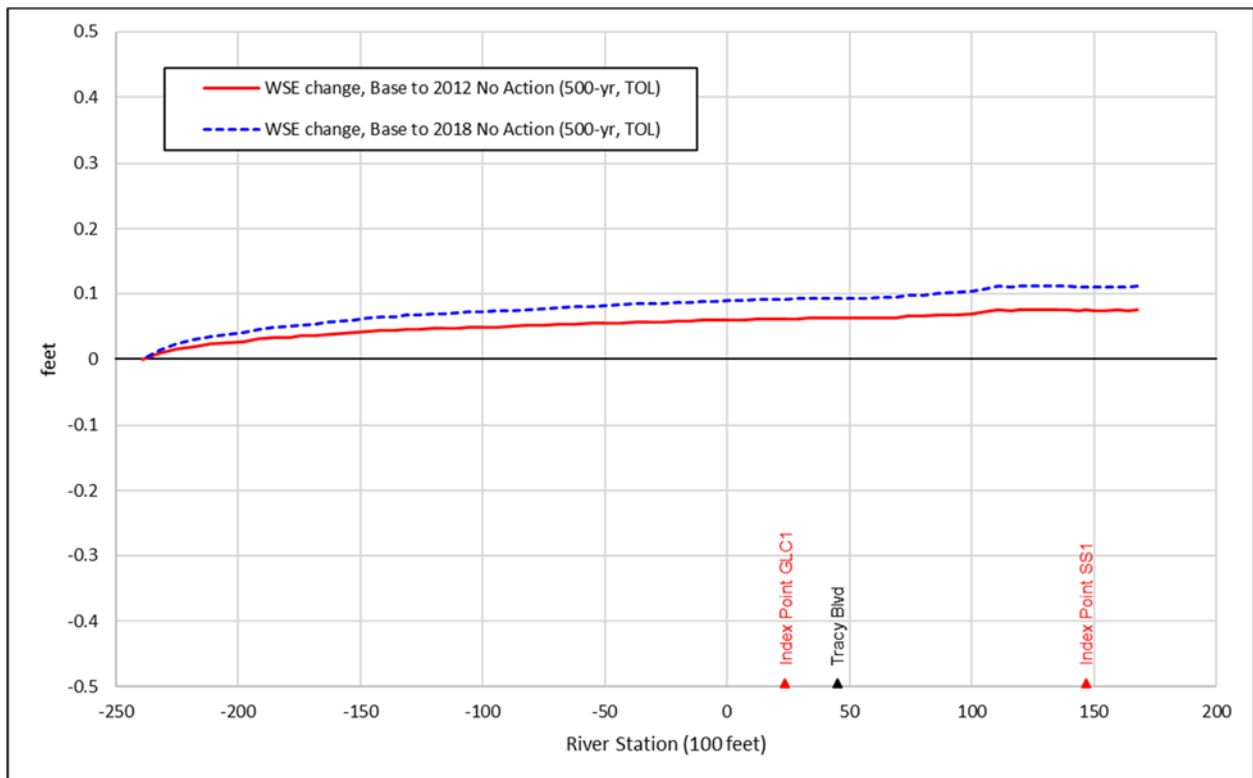


Figure C-16. “Base” to “No Action” 500-year water surface elevation change, Grant Line Canal

“Base” to “No Action”, Middle River

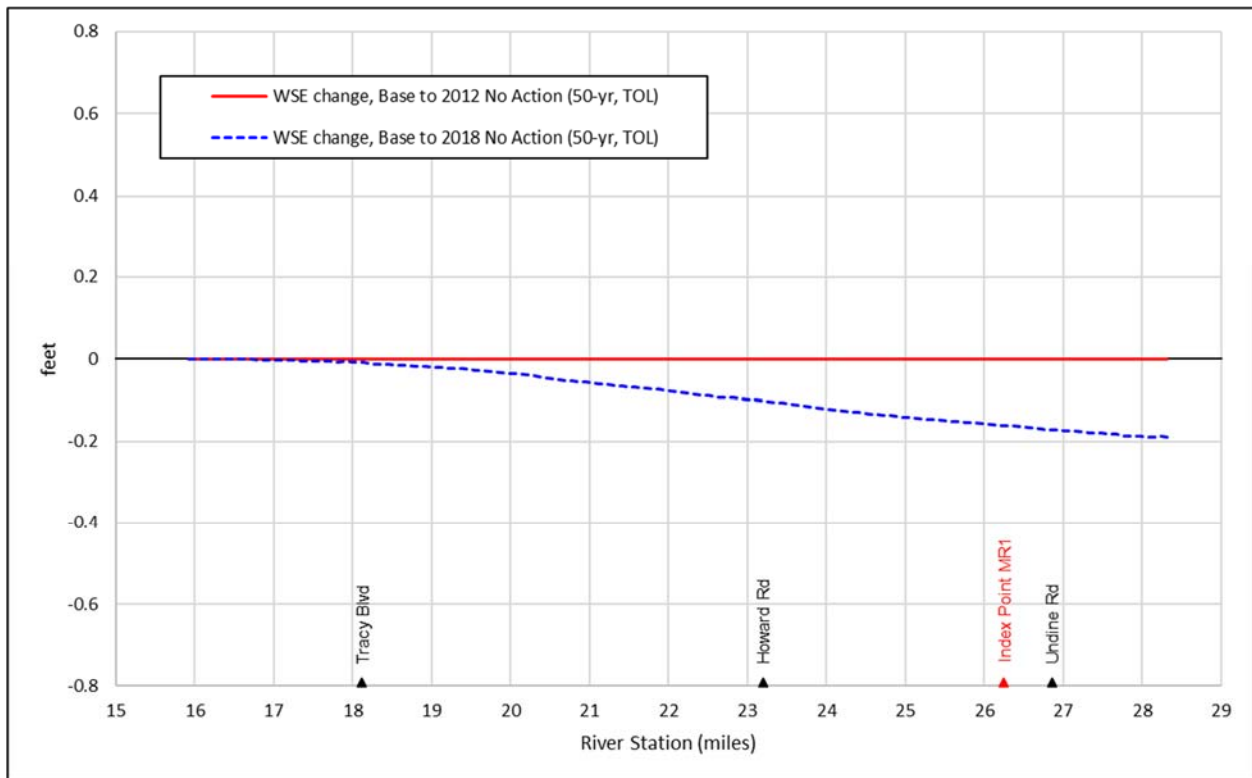


Figure C-17. “Base” to “No Action” 50-year water surface elevation change, Middle River

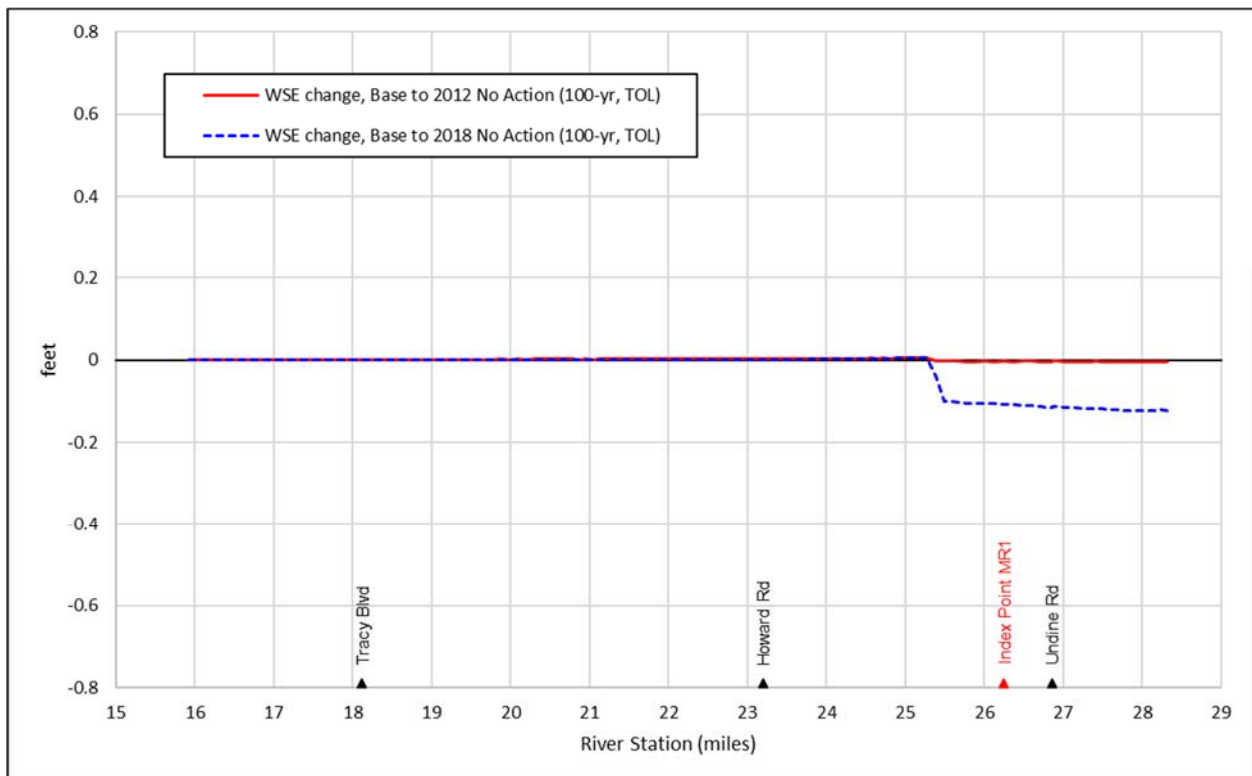


Figure C-18. “Base” to “No Action” 100-year water surface elevation change, Middle River

“Base” to “No Action”, Middle River

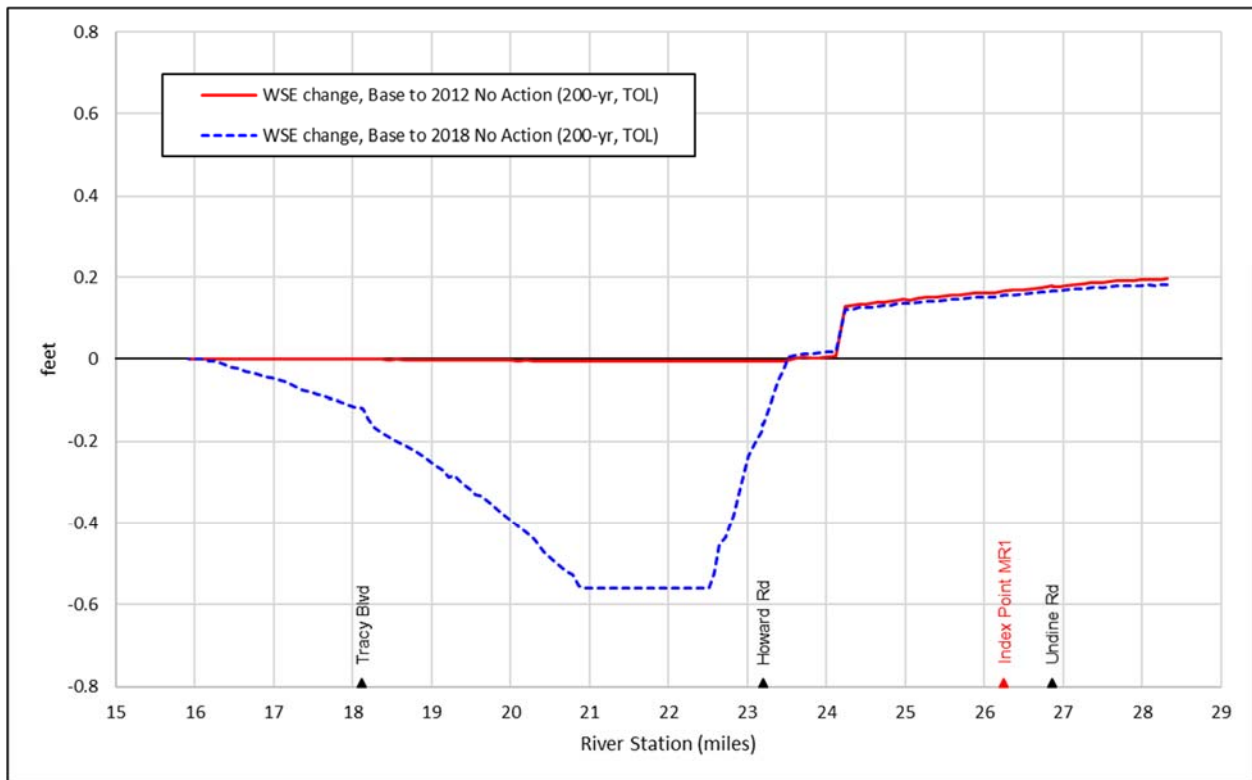


Figure C-19. “Base” to “No Action” 200-year water surface elevation change, Middle River

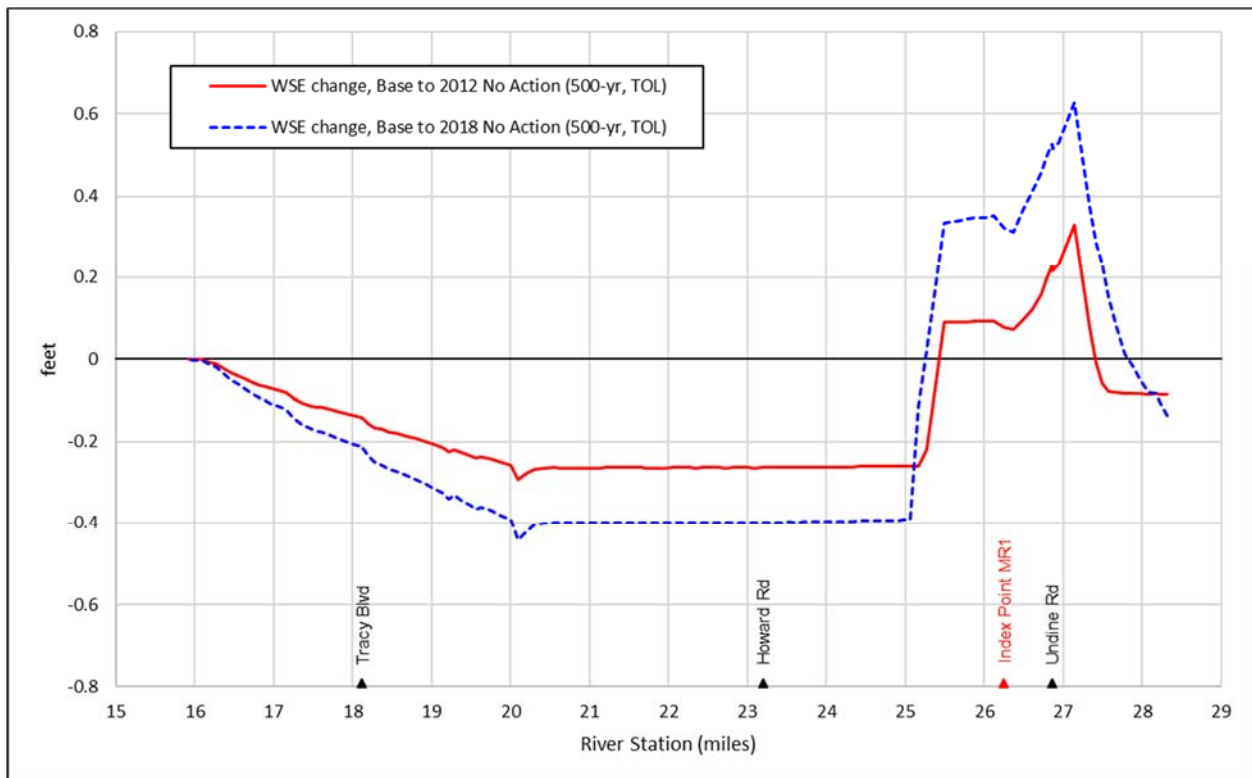


Figure C-20. “Base” to “No Action” 500-year water surface elevation change, Middle River