Sacramento River Bank Protection Project

Appendix B - Site Selection and Implementation Process

1.0 Introduction and Purpose

This memorandum documents the proposed Site Selection and Implementation Process for bank repair under the Sacramento River Bank Protection Project (SRBPP). Currently there are about 200[1] erosion sites identified (accounting for over 260,000 linear feet) in the Sacramento River Flood Control System (SRFCS). It was determined a process was needed to prioritize site repairs since it is not possible to design and construct repairs for all sites within the current authorizations. The proposed process builds upon the existing Site Selection and Implementation practice which is updated to adapt to new guidance and changing work environment. This process will be applied in a series of overlapping construction cycles. Construction cycles are five years long, and include three years, or phases of construction. Since some sites may be in more urgent need of repair, the process will identify critical erosion sites throughout the system and allow for an expedited path for the critical sites and a non-expedited path for non-critical sites.

This document provides a general outline of the process and specific details will be addressed during the design phase by the Site Selection and Implementation workgroup, which includes representatives from the USACE's disciplines relative to this project. This will allow the team to incorporate the best available tools and information into the Site Selection and Implementation process as they become available. California Department of Water Resources (DWR) Real Estate will be included at the inception of the site selection process as the real estate component is a significant element of the implementation schedule. The team recommends the general process outlined in this document be adopted for future bank repairs. This document and the flowchart in **Attachment A** describe the proposed process.

2.0 Background

The levees and banks of the Sacramento River and Tributaries have been repaired under the authority of the Sacramento River Bank Protection Project since the original authorization in 1960. The original authorization (Phase I) was for the repair of 435,000 linear feet. Phase II was authorized for an additional 405,000 linear feet in 1974. At this time, fewer than 2,000 linear feet from the Phase II authorization remain. In 2007, Water Resources Development Act amended the 1974 Phase II authorization to add an additional 80,000 linear feet. The process described in this memorandum is proposed to select sites for repair for the additional linear footage.

It is not clear how sites were chosen for repair after the original 1960 authorization. Following the 1996-1997 large flood events, which resulted in a levee breach and many flood fighting efforts throughout the system, the US Army Corps of Engineers (USACE) decided it needed to inventory the erosion within the system to direct repairs towards the sites most in need of repair.

[1]2015 Annual Erosion Inventory Draft Report.

Since 1997, USACE Sacramento District has conducted field reconnaissance trips on an annual basis to identify new erosion sites and update the status of previously inventoried sites. The number of erosion sites continued to grow at a steady pace. The rate of production declined dramatically following the 1980s, before picking back up at a lesser pace in 2006. Reasons for the decline are not known by current project personnel, but changes in USACE priorities, practices, and regulatory context are believed to have been contributing factors. Difficulties acquiring rights-of-way may have played a role as well. Some temporary gaps in production have been caused by challenges in consultations with resource agencies and funding limitations. Since 2013, four sites have been repaired. With the limited construction, the banks of the system continued to erode and many of the previously identified erosion sites became critical, meaning that the site has a high likelihood that a breach might occur from the next large flood event. Critical sites are described in more detail in Step 2 of the Site Selection and Implementation Process.

In 2004, a set of four ranking methodologies was developed as part of the annual erosion inventory to assist with prioritizing and selecting bank repair sites. These methodologies served the intended purpose, but a better procedure incorporating new guidance and addressing all disciplines was developed for the Phase II 80,000 LF and is described in Appendix B.

On February 24, 2006, following sustained heavy rainfall and runoff, Governor Arnold Schwarzenegger declared a State of Emergency for California's levee system. Following this declaration, the USACE and the California DWR repaired critical erosion sites. Repairs of both critical and non-critical erosion sites continue, but growth in the amount of erosion outpaces repairs. The most recently published inventory, based upon 2017 field observations, reports more than 350,000 LF of erosion in the flood system at 192 sites, of which 29 are considered critical.

3.0 Site Selection and Implementation Process

Listed below is the step-by-step process that the SRBPP is proposing in order to select erosion sites for repair. A flowchart of the steps and a timeline are provided as attachments.

3.1 Step 1 –Annual Reconnaissance/Erosion Inventory

The Site Selection and Implementation process begins with the erosion inventory. The erosion inventory consists of a visual reconnaissance of the levees and banks of the SRFCS by the Engineering Division of the USACE. The primary inspection method is by boat to have the best view of the levees and banks. However, the entire system is not navigable, so some portions are inspected by car.

There are two parts to the erosion inventory which are typically referred to as the "annual erosion inventory" and the "extended erosion inventory." The annual erosion inventory includes the portions of the system that are inspected every year. This includes the reaches that convey flow through the system on an annual basis. The extended inventory is only inspected after high flow events or every five years. The extended erosion inventory includes portions of the system

that either convey seasonal flow or do not typically convey flow on an annual basis, such as the bypasses. Table 1 shows reaches of the system inspected annually and inspected under the extended inventory, as well as the method of inspection.
During the reconnaissance trip, the team reviews the existing erosion sites, identifies new sites, and checks the previously repaired sites. Existing sites are checked for changes from the previous year, and checked for additional erosion or slumping, exposed tree roots, increased site length, changes in vegetation, changes in bank width or slope, or if the site is starting to heal (i.e. new deposition, or erosion has shifted to the opposite bank).

For new sites, in addition to the erosion details, basic information is collected, such as: location, berm width, bank slope, site length, soil material, erosion mechanism, revetment details, visible encroachments, and general notes. The site length is calculated with GPS points, but the berm width and bank slope are visually estimated using engineering judgment. Photo documentation is taken at each of the erosion sites.

Table 1. Inspected Reaches of the Sacramento River Flood Control System.

SRFCS Reach	River Miles or Length	Inspection Frequency	Inspection Method
American River	RM 0 - 13	Annual	Boat
Arcade Creek	2 miles	Extended	Car
Bear River	RM 0 - 14	Annual	Car
Best Slough	2 miles	Extended	Car
Butte Creek	15 miles	Extended	Car
Butte Slough	7 miles	Extended	Car
Cache Creek and Cache Creek Settling Basin	11 miles	Annual	Car
Cache Slough	14 miles	Annual	Boat
Cherokee Canal	20 miles	Extended	Car
Chico/Sycamore Creek	2 miles	Extended	Car
Colusa Basin Drainage Canal and Sycamore Slough	35 miles	Extended	Car
Colusa Weir Bypass	1 mile	Extended	Car
Coon Creek Interceptor	5 miles	Extended	Car
Cottonwood Creek	1 mile	Extended	Car
Deer Creek	5 miles	Extended	Car
Dry Creek (North)	9 miles	Extended	Car
Dry Creek (South)	2 miles	Extended	Car

Table 1. Cont. Inspected Reaches of the Sacramento River Flood Control System.

SRFCS Reach	River Miles or Length	Inspection Frequency	Inspection Method
East Interceptor Canal	3 miles	Extended	Car
Elder Creek	4 miles	Extended	Car
Elk Slough	9 miles	Annual	Boat
Feather River	RM 0 - 34	Annual	Boat
Feather River	RM 34 - 60	Extended	Car
Hass Slough	8 miles	Extended	Car
Honcut Creek	4 miles	Extended	Car
Jack Slough	6 miles	Extended	Car
Knights Landing Ridge Cut	6 miles	Extended	Car
Lindsey Slough	7 miles	Extended	Car
Marysville Ring Levee	7 miles	Extended	Car
Miner Slough	7 miles	Annual	Boat
Moulton Weir Bypass	2 miles	Extended	Car
Mud Creek	7 miles	Extended	Car
Natomas Cross Canal	5 miles	Extended	Car
Natomas East Main Drainage Canal	4 miles	Extended	Car
Pleasant Grove Canal	4 miles	Extended	Car
Putah Creek	9 miles	Extended	Car
Sacramento Bypass	2 miles	Extended	Car
Sacramento River	RM 3 - 196	Annual	Boat
Steamboat Slough	11 miles	Annual	Boat
Sutter Bypass	34 miles	Extended	Car
Sutter Slough	6 miles	Annual	Boat
Three Mile Slough	3 miles	Annual	Boat
Tisdale Weir Bypass	4 miles	Extended	Car
Ulatis Creek	4 miles	Extended	Car
Wadsworth Canal	5 miles	Extended	Car
West Interceptor Canal	2 miles	Extended	Car
Western Pacific Interceptor Canal	6 miles	Extended	Car
Willow Slough Bypass	8 miles	Extended	Car
Yankee Slough	4 miles	Extended	Car
Yolo Bypass	37 miles	Extended	Car
Yuba River	RM 0 - 5	Extended	Car

Repaired sites are checked to make sure the repairs are still in good condition, no new erosion has formed at the upstream or downstream transitions, and for anything else of concern or significance. Sites repaired within the previous year are removed from the erosion inventory and moved to a revetment database. Occasionally a site will be removed from the erosion inventory based on more detailed information, changing site conditions (e.g. a site has changed from erosional to depositional and no longer qualifies), or a repair under a different program.

Part of the erosion inventory reconnaissance includes observations for the USACE Levee Safety Policy for vegetation on levees. During field surveys, vegetation on levees will be observed and notes will recorded for each site. These observations will be considered when evaluating the potential need for a USACE Levee Safety Policy for vegetation variance request. The observations on levee vegetation will supplement cross-sections obtained from the best available topographic data, which will provide the levee prism for each site. After looking at the levee prism and considering survey observations, a preliminary decision will be made on the need for a variance request. This preliminary decision will be either “unlikely, likely, or unknown” and will be refined later in the Site Selection and Implementation process.

3.2 Step 2 – Critical and Non-Critical Erosion Site Decision

Decision Step 2 of the Site Selection and Implementation process will identify critical erosion sites (if any) throughout the system and allow for an expedited path for the critical sites and a non-expedited path for non-critical sites. Critical sites are those where based on engineering judgement, it was identified a breach may occur. The term “critical” refers only to the likelihood of a breach occurring and not the consequences of a breach. Therefore it is not a term that describes risk, which is comprised of both the likelihood of failure and the consequence of failure. Final selection of sites for repair includes both the likelihood of failure and the consequence of the failure. Therefore it is possible that critical sites may not be selected for repair if the consequences of failure do not justify construction in accordance with USACE policy. For example, if the site is deemed critical but is located in a basin that is not economically justified, the site will not be selected for repair.

Sites deemed critical in Step 2 and found in Step 4 to be located in economically justified basins will follow the same Site Selection and Implementation process as all other repair sites, but in an expedited manner. These sites will have an additional step, Step 4B, and will skip Step 7 and Step 8 because critical sites located in economically justified basins will automatically be selected for repair, and because critical sites will already have been recorded in Step 4B. Critical sites which are not located in economically justified basins will be elevated to Corps management, and the Sponsor (DWR/CVFPB and Levee Maintaining Agencies) after Step 4B to determine alternative program or project authorities which can conduct the repair.

Generally sites will be selected for repair periodically as needed. However, critical erosion sites can be selected for repair outside the regular periodic site selection process in order to quickly repair these critical sites. Therefore, the Critical Site Memorandum for the Record (Step 4B),

which records critical sites, will be added to Step 3 and Step 8 of the regular process. However, non-critical sites will wait for the next planned site selection cycle to occur before being considered for site-selection and implementation. See Steps 4 - 8 for additional details.

3.3 Step 3 – Engineering Ranking and Report

The third step of the Site Selection and Implementation process is to develop a report and engineering site ranking based on the results of the information collected during the annual erosion reconnaissance. An aerial atlas will also be created which provides a visual representation of the erosion sites in the system. The Engineering Ranking and Report occurs annually based on the annual field reconnaissance.

The site prioritization, or ranking, is based on engineering factors that contribute to levee breach or failure. These are site length, berm width, bank slope, soil type, velocity, erosion rate, and additional factors such as trees with exposed roots, holes, slumping, vertical sections, or cracks. Scores will be assigned to each factor to compile a total score, where the higher the score the worse the site and the higher priority for repair. There will be no tie breakers if two or more sites end up with the same score. The engineering score in the engineering ranking is essentially an estimate of the condition of a site relative to the other sites and is not a site selection score. Site justification in Step 4 and other opportunities and constraints identified in Step 5 are critical for prioritizing and selecting sites for repair.

3.4 Step 4 –Justification Screening

This step includes an economic analysis and other work necessary to determine if repairing a site is justified using a risk based approach. While Step 3 looks only at the likelihood of a breach, this step looks at the consequences as well. An Economic Reevaluation Report (ERR) will be prepared prior to each draft DDR for SPD approval. To minimize delays due to the economic analysis, and to avoid expending funds on sites that may not be economically justified, the first DDR will be limited to the seven previously identified economically justified basins. Basins that were previously evaluated and found to not be economically justified will be addressed in the second ERR, and basins that include critical erosion sites, but were not previously evaluated for the PACR, will be addressed in either the second ERR or a subsequent ERR. Thereafter, the ERRs will be updated every five years on average. Critical erosion sites will go through this step once a site is identified as critical. The risk based justification screening for non-critical sites will be based on the latest Engineering Ranking and Report from Step 3. Only repair sites located in justified basins will be repaired.

Risk and uncertainty for site selection as well as the project as a whole is addressed in the Cost Schedule Risk Assessment (CSRA) which is included in the Engineering Appendix (Appendix A). The CSRA takes into account the unknowns that may occur during project initiation, development, and implementation.

3.4.1 Step 4B – Critical Site Memorandum for the Record

This step will only occur in the expedited pathway meant for critical sites. All sites deemed critical will be recorded in the Critical Site Memorandum. Since critical sites will go through an expedited pathway, this Memorandum serves the purpose of documenting which sites were identified as critical. To maintain consistency and organization in the Site Selection and Implementation process, the Memorandum will be added to the Engineering Ranking Report (Step 3) and the Site Selection Report (Step 8). This step will occur prior to determining if the site is located in a justified basin. This will ensure all critical sites are recorded in the Memorandum, not just the ones located in economically justified basins.

3.5 Step 5 – Identify Opportunities and Constraints

During this step of the process we identify the potential issues and opportunities associated with each site. This will address the following:

- Life Safety – Community and population considerations.
- Real Estate – Right of way issues, easements, encroachments, etc.
- Environmental – Affected habitat, mitigation requirements (onsite or offsite mitigation), listed species (Federal and State), re-establish habitat, etc.
- Constructability – What types of repairs are feasible or not possible, is there an opportunity to do a setback levee, etc.
- Cultural Resources – Identify historic and pre-historic properties.
- Another Program/Agency is planning a repair.
- Grouping of sites for more efficient repairs.
- Other issues and opportunities – other conditions observed that could impact or enhance the repair.
- USACE Guidance, Policies, and Budget.

Under this step each USACE discipline in the PDT will identify potential issues and opportunities which may affect, delay, or otherwise influence the repair of the site.

3.6 Step 6 – Conceptual Level Alternatives

Under Step 6, the PDT will develop conceptual level designs and costs. For each site, multiple design alternatives will be generated based on engineering judgment. Conceptual cross sections and footprints will be generated. These will be based on the best available topography. If topography does not match the present day bankline, estimated present day banklines may be added to the sketch. Preliminary and simplified cost estimates will be developed. These costs will be approximate based on engineering judgment.

Historically, sites have been repaired mostly with riprap. As SRBPP has progressed, a need has been identified to repair sites with design alternatives that minimize environmental impact

while providing bank protection. The PDT is now looking at multiple design alternatives such as planting benches and setback levees. If a site is selected for repair, further analysis and data collection will occur during the preconstruction engineering and design phase to verify and refine conceptual alternatives as necessary.

Setback levees will be considered at each economically justified site. The River Basin Monetary Association Act of 1974 authorized the use of bank erosion control and setback levees and urged special consideration be given to preserving areas of riparian vegetation "insofar as practicable consistent with protecting critical levee areas." If a setback levee were chosen as the design alternative, it would be constructed behind the current levee, allowing the current levee to erode, and expanding the floodplain to the extent of the setback levee. Feasibility will be determined on a site-by-site basis and may not be feasible at all sites. The following criteria are key factors in considering a setback levee alternative:

- The length of the eroded bank is extensive.
- There are multiple erosion sites in close proximity.
- Channel capacity is limited.
- A setback levee produces positive hydraulic impact, for example reduced flow velocity.
- A setback levee creates strategic habitat improvement.
- Real estate is available through sponsor.

In addition to having the above criteria, a setback levee alternative will have to be cost-effective in order to be pursued. If a setback levee alternative were to degrade natural habitat or have negative hydraulic impacts, it is unlikely the design alternative will be deemed feasible.

3.7 Step 7 – Site Selection

Step 7 will select which of the sites will move on to the list for site repairs. Selected sites are generally anticipated to be repaired over a three year period which makes up a construction cycle (see section 5.0 for more on construction cycles). This step will start with the engineering ranking developed in Step 3 for sites that pass the justification screening in Step 4. Next the PDT will investigate the issues identified in Step 5 and see if sites should be moved up or down in the ranking. For example, a site may be moved up if there is a justification for why a repair cannot wait or if a site is adjacent to a higher ranked site and the two sites could be repaired together. Another example could be a repair that is moved down on the list if there is a justification that the repair could cause more negative impacts than positive impacts. This step has an iterative component where conceptual level alternatives in Step 6 may be modified. Selections will be recorded the Site Selection Report (Step 8).

In addition, if another program, project, or entity is planning to repair an identified erosion site in the near future, the site will drop out of the site selection list. However, the site will remain in the inventory until repaired.

The top identified sites will be locked in for repair in the next construction cycle and the remaining sites will continue to be evaluated in the annual erosion inventory and be considered for lock-in during the next cycle. If a site becomes critical (critical only in terms of likelihood of breach and not considering consequences) before the next site selection and implementation cycle, then it may be fast-tracked to Step 8. If this occurs in the years between site selection cycles, an addendum to the latest Site Selection Report will be prepared for these fast-tracked critical erosion sites. A critical site that is fast-tracked means it will be moved to construction as quickly as possible. However, construction could be delayed due to site-specific issues and the site may not be repaired for some time as a result. Sites identified as critical between site lock-in documentations will be added to the latest Site Selection Report as an addendum. As noted previously, critical sites are identified in the annual Engineering Ranking and Report and considers likelihood of breach only and not the consequences of the breach.

3.8 Step 8 – Site Selection Report

For Step 8, the top sites chosen in Step 7 and the fast-tracked critical sites will be considered the locked-in sites selected for repair in the construction cycles (see section 5.0 for information on construction cycles). The number of selected sites will vary depending on a number of factors, such as construction limitations (e.g. funding, location, length, etc.). A report will be written to document how and why the locked-in sites were selected for repair. This report will primarily be for USACE use and to keep a historical record of the process. The identified sites will be grouped into construction cycle-years, based on the required time needed to acquire real estate and similar construction repair methods or site proximity in order to enhance the value per dollar spent.

3.9 Step 9 – Data Collection and Analysis

For this step the PDT will start collecting the data needed to develop the designs. The exact information and the level of detail collected at each site will vary from site to site. Some of the data to be collected includes topographic surveys, geotechnical explorations, tree inventory, potentially impacted endangered species and associated habitat, Hazardous Toxic Radioactive Waste (HTRW) survey, cultural information, and utility survey.

Topographical surveys, including bathymetry of the underwater portion of the river, will be needed for each site. The topography should cover the entire project area, capture the landside toe, extend to cover the opposite bank, and extend far enough upstream and downstream of the site for the hydraulic modeling needs.

During the survey and follow-up activities, the design team will identify existing visible encroachments on the levee that may interfere with proposed repairs, such as gas/oil pipelines, telecommunication lines, utilities, boat docks, stairs, intake and discharge facilities, and other improvements or structures. The design team will note if removal or relocation is the appropriate option for encroachments. Based on the data collected in the field, USACE Real

Estate and DWR Real Estate will develop a timeline and process for an encroachment that needs to be removed or relocated.

Geotechnical data may be acquired if needed.

Topographical surveys, tree surveys, and bathymetry data will be used to evaluate if a site will require a variance request. After sites have been selected, the PDT will look at the preliminary evaluation results of "unlikely, likely, or unknown" made in Step 1 and compare them with the survey data. Then a determination of "yes or no" will be made to identify which of the selected sites will likely require a variance request, based on the chosen design alternative.

A survey and database search of Federal and State listed species and associated habitats will be performed. This will include a survey of threatened and endangered species, special status species, and sensitive habitat for fish, wildlife, and flora.

A HTRW survey will determine if there are identified environmental hazards.

Cultural resources surveys and database searches will be performed to identify cultural resources located in each project footprint.

A real estate survey will be conducted to identify potential impediments to securing the site for repair. This review will include an in-depth inspection of both the waterside and landside of the levee. It will be conducted jointly between USACE Real Estate personnel, DWR Real Estate personnel, and the responsible Reclamation District or Levee Maintaining Agency. A representative from the USACE design team and the DWR Flood Management personnel will join in the field review.

3.10 Step 10 – Preliminary Designs and Draft NEPA/CEQA Compliance Document

Step 10 will begin the design process and the draft NEPA/CEQA compliance document. The design alternatives will be selected and 30 percent designs (plans, specifications, Design Document Report (DDR), real estate addendum, and cost estimate) will be completed. Following that, the hydraulic modeling will begin. District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR) reviews will be conducted in accordance with the approved project Review Plan.

Each DDR will address and comply with the most current applicable USACE engineering guidance at the time that it is prepared, including the most recent guidance regarding risk-informed decision-making, climate change, and relative sea level rise. The most appropriate hydrology available will be used in developing each DDR.

After the 60 percent designs, subject to USACE procedures, the construction footprints will be handed off to Real Estate to develop the take-letters for DWR Real Estate to begin the certification process.

During this step, the draft NEPA/CEQA compliance document will be developed and released for public review and comment. In conjunction with that document, the cultural resources section will consult with the State Historic Preservation Office (SHPO) and the Native American Tribes.

3.11 Step 11 – Draft Final Design, Final NEPA/CEQA Compliance Document, and Pre-Construction Activities

Under this step the 60 percent Plans and Specifications will be reviewed, and the cost estimate updated. The results of the analyses of the survey(s) and database search of Federal and State listed species and associated habitats will lead to the development of a site specific biological assessment to be provided to resource agencies during formal consultation under Section 7 of the Endangered Species Act, the Magnuson-Stevens Act and the Clean Water Act. This will include a survey of threatened and endangered species, special status species, and sensitive habitat for fish, wildlife, and flora, and assessment of potential impacts to these species or habitats and potential mitigative measures. In addition, coordination with the USFWS and NMFS will be initiated under the Fish and Wildlife Coordination Act. Results of the biological survey and databases searches, as well as input provided by USFWS and NMFS, will be used to inform design considerations to avoid or minimize effects to special status species with the potential to occur at the site.

The team will finish writing the draft DDR. After an internal review of the plans, the 90 percent Plans and Specifications will be developed. The hydraulic modeling, cost estimate, and Real Estate requirements will be adjusted as needed. Following an internal review, the 90 percent Plans, Specifications, and DDR will be sent for reviews. The final NEPA/CEQA compliance document will be completed with a signed Finding of No Significant Impact (FONSI) and Mitigated Negative Declaration (MND), unless an Environmental Impact Statement or Report is required. The DDR and NEPA/CEQA document will be approved by SPK or SPD. The real estate addendum will be reviewed and approved by SPD.

3.12 Step 12 – Review and Final Design

The official ATR and IEPR (Type II IEPR, Safety Assurance Review (SAR)) will be performed throughout the development of the Plans and Specifications and the DDR. The ATR will serve as the Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) characteristics review of the plans, specifications, and NEPA/CEQA compliance document. Revisions to the designs and contract documents will be made based on these reviews, resulting in the 100 percent DDR and Plans and Specifications for Contract advertisement.

3.13 Step 13 – Contracting Process

For this step, USACE will compile the final plans and specifications, provide the signed BCOES, and process the funding element for construction. Real Estate certification will be complete with a statement from DWR Real Estate and certification by USACE Real Estate. These items are provided to Contracting who then prepares the bid documents and solicits bids based on the

chosen contracting vehicle. The contract is awarded and the chosen Contractor is given a Notice to Proceed.

3.14 Step 14 – Construction

For step 14, the contractor will construct the bank repair following the Notice to Proceed from step 13.

3.15 Step 15 – Mitigation Monitoring

On-site mitigation will require monitoring to ensure the establishment criteria is met for vegetation growth and survival. The monitoring period must be sufficient to demonstrate that the compensatory mitigation has met performance standards, but not less than five years (see 33 CFR 332.6(b)). Monitoring reports are required on a yearly basis. If the compensatory mitigation has met its performance standards in less than five years, the monitoring period length can be reduced, as long as there are at least two consecutive monitoring reports that demonstrate that success.

3.16 Step 16 – Site Turn-over

Once the construction and mitigation monitoring is complete, USACE will turn the site over to the Central Valley Flood Protection Board (CVFPB), which will then turn the site over to the local maintaining agency. USACE will provide the as-built drawings, Project Cooperation Agreement letter, and addendum to the supplemental Operations, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) Manual, and letter of transmittal.

4.0 Economically Justified Basins Decision Point

As discussed in Step 3, identified erosion sites will be documented in a report and ranked, but only the sites located in economically justified basins, as defined by the most current ERR, will move to Step 5. Erosion sites not located in economically justified basins will be reconsidered in future economic updates as additional data are obtained that warrant an economic update.

5.0 Construction Cycles

The Site Selection and Implementation process will be applied in a series of overlapping construction cycles. A single construction cycle is shown in the **Attachment A**. Table 2. Construction Cycles. and **Attachment B** show a timeline illustrating the multiple overlapping construction cycles. The construction cycles are five years long, and include three years, or phases, of construction. The construction will be broken into these three phases (years) and the sites distributed among the three phases. The first year of the cycle produces the site lock-in list and data collection. The second year includes: 1) developing the preliminary plans, specifications, and DDR for the sites in the construction cycle, 2) the NEPA/CEQA compliance document, and 3) the final plans, specifications, and DDR for the first construction phase. The third year will include the construction of the Phase 1 sites and the final plans, specifications, and DDR of the Phase 2 sites. The fourth year will include the construction of the Phase 2 sites and the final

plans, specifications, and DDR of the Phase 3 sites. The fifth year will include the construction of the Phase 3 sites. A new construction cycle will begin in Year 4 of the current cycle to ensure ongoing construction. These overlapping cycles will allow SRBPP to continuously construct repairs every year assuming funding is available.

Generally sites will be grouped into cycle-years based on ability to acquire real estate and similar construction repair methods or site proximity in order to enhance the value per dollar spent. It is anticipated that Phase 1 will include higher priority sites with no significant issues that could delay construction, such as real estate issues. It is anticipated that Phase 3 will include lower priority sites and/or higher priority sites with issues that take longer to resolve, such as real estate issues. It is anticipated Phase 2 will include the remaining sites. For example, Phase 1 may include sites with existing rights and no encroachments (or encroachments that can be protected in-place), Phase 2 may include sites without existing rights and no encroachments (or encroachments that can be protected in-place), and Phase 3 may include sites without existing rights and encroachments or setback levee sites.

Table 2. Construction Cycles.

Construction Cycle				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Site Selection Report and Data Collection (Phase 1 - 3 Sites)	Preliminary Plans, Specifications, DDR, and NEPA/CEQA compliance document (Phase 1 - 3 Sites) Plans, Specifications, and DDR (Phase 1 Sites)	Construction (Phase 1 Sites) Plans, Specifications, and DDR (Phase 2 Sites)	Construction (Phase 2 Sites) Plans, Specifications, and DDR (Phase 3 Sites)	Construction (Phase 3 Sites)

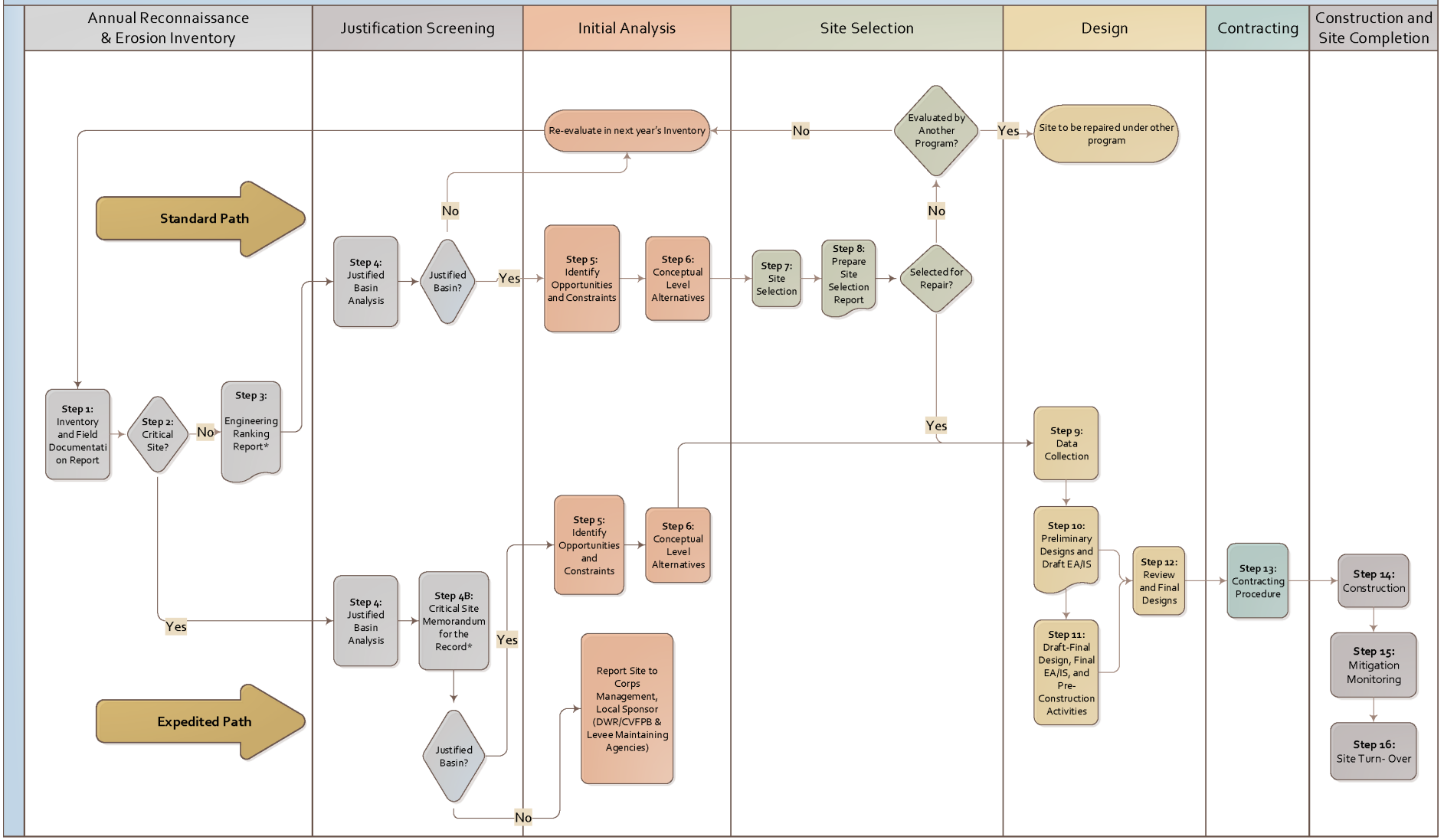
6.0 Conclusion

New guidance and changing work environment requires the current Site Selection and Implementation practice to be updated. The Site Selection and Implementation working group developed and recommends the process outlined in this report. This process includes a Site Selection and Implementation process that is applied in multiple construction cycles. Each construction cycle will last five years and a new cycle begins in the fourth year of the previous cycle. This process may need to be modified in the future to adapt and meet future changes to project requirements and conditions. However the team recommends adopting the general process outlined in this document for identifying and repairing erosion sites for the Sacramento River Bank Protection Project at this time.

Attachment A

Site Selection and Implementation Process Flow Chart

Attachment A - Sacramento River Bank Protection Project – Site Selection & Implementation Procedure



*The Critical Site Memorandum for the Record (Step 4B in the Expedited Pathway) will be included in the applicable Engineering Ranking Report and the Site Selection Report (Steps 3 and 8, respectively, in the Standard Pathway).

Attachment B

Example Timeline of Multiple Construction Cycles

Attachment B. Example Timeline of multiple Construction Cycles

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report	Annual Erosion Inventory Engineering Ranking and Report
Construction Cycle 1	Site Selection Report and Data Collection (Phase 1-3 Sites)	Preliminary Plans, Specifications, DDR, and EA/IS (Phase 1-3 Sites) Final Plans, Specifications, and DDR (Phase 1 Sites)	Construction (Phase 1 Sites) Final Plans, Specifications, and DDR (Phase 2 Sites)	Construction (Phase 2 Sites) Final Plans, Specifications, and DDR (Phase 3 Sites)	Construction (Phase 3 Sites)						
Construction Cycle 2				Site Lock-In List and Report Data Collection (Phase 1-3 Sites)	Preliminary Plans, Specifications, DDR, and EA/IS (Phase 1-3 Sites) Final Plans, Specifications, and DDR (Phase 1 Sites)	Construction (Phase 1 Sites) Final Plans, Specifications, and DDR (Phase 2 Sites)	Construction (Phase 2 Sites) Final Plans, Specifications, and DDR (Phase 3 Sites)	Construction (Phase 3 Sites)			
Construction Cycle 3							Site Selection Report and Data Collection (Phase 1-3 Sites)	Preliminary Plans, Specifications, DDR, and EA/IS (Phase 1 - 3 Sites) Final Plans, Specifications, and DDR (Phase 1 Sites)	Construction (Phase 1 Sites) Final Plans, Specifications, and DDR (Phase 2 Sites)	Construction (Phase 2 Sites) Final Plans, Specifications, and DDR (Phase 3 Sites)	Construction (Phase 3 Sites)