Natomas Post Authorization Report
Background Information for Upcoming Construction Partnership Agreement

On 18 August 2016, The Corps of Engineers, represented by ASA(CW) Darcy, along with Mr. Rick Johnson of the Sacramento Area Flood Control Agency (SAFCA) and Mr. Bill Edgar of the State of California's Central Valley Flood Protection Board (CVFPB) will execute a partnership agreement for construction of the Natomas PAC Congressionally authorized project. Following is a timeline of major events that have led to execution of this agreement.

- Between 1911 and 1915, the Natomas levee system is constructed by the Natoma Dredging Company. Once completed, the entire system was adopted into the Sacramento River Flood Control System which was authorized by Congress in 1917. The State of California's Reclamation Board (predecessor to the CVFPB) established Reclamation District (RD) 1000 for O&M of this system.

- Construction of the Natomas levee system established approximately 56,000 acres for farming purposes. The system of levees includes 42 miles of levee in a ring around the system. Natural channels adjacent to Natomas that were leveed include the Sacramento River and the American River. Additionally, manmade channels and levees were constructed which include the Natomas Cross Canal, the Pleasant Grove Creek Canal, and the Natomas East Main Drainage Canal.

- Throughout the 1930's and 1940's, the City of Sacramento permitted development into the Natomas Basin. During this time, approximately 30,000 people moved into the basin.

- The 1955 flood event caused some distress of the Natomas levee system, but there was no threat of imminent failure. The 1964 flood event also caused distress but no imminent threat of failure.

- In the early 1970's, the National Flood Insurance Program was established. This program established a base level flood event as a baseline: If areas did not have this minimum level of flood protection, they were not certifiable and were therefore within the regulatory floodplain; areas that did meet this standard were certifiable and were not in the regulatory floodplain. The 100-year flood event was established as the base level flood event. The entire Sacramento River Flood Control Project was grandfathered into providing base level flood protection.

- The 1986 flood event caused much distress in the Natomas Basin and in numerous locations, failures were in progress. Extensive flood fight efforts are the only thing that prevented full levee failure. The 1986 flood event was established as approximately an 80-year flood event. With this information, FEMA certification was withdrawn for the Natomas Basin.

- In 1991, the Corps working with the Reclamation Board completed a feasibility study for flood protection for the city of Sacramento. The main element of the recommended plan was a flood detention dam near the town of Auburn. Levee improvements throughout the city, including Natomas, was also included in this plan. The Auburn Dam component was highly controversial and Congress did not move to authorize the recommended plan.

- In lieu of authorizing the recommended plan, Congress took two steps. First, they directed the Corps to address many of the concerns that had been expressed regarding Auburn Dam in a

supplement to the feasibility study. Second, they authorized in the 1993 Defense Appropriations Act for SAFCA to construct the North Area Local Project (NALP). The NALP raised and strengthened approximately 10 miles of the Natomas levee system.

- In 1996, the Corps completed this updated feasibility study which was called the Supplemental Information Report (SIR). Auburn Dam was part of this recommended plan as well. Congress was not interested in authorizing Auburn Dam but they did not want to stand in the way of flood protection for the city of Sacramento.

- Congress reviewed the SIR, looking at the recommended plan as well as the other two candidate plans and pulled out features that were "common" to all three plans. They packaged these features up and included them in the Water Resource Development Act (WRDA) of 1996 as the American River Common Features (ARCF) project. Features included in this project included 24 miles of seepage and stability improvements along the American River, height and stability improvements along 12 miles of the Sacramento River in Natomas, 3 telemetry streamflow gages above Folsom Dam, and a flood warning system for the city of Sacramento.

- The 1997 flood event caused much to be learned about the nature of levee failures throughout the Sacramento River Flood Control project. Seepage induced problems were thought to be through levee seepage only. Between the 1986 and 1997 flood events, extensive lengths of shallow seepage cutoff walls were constructed in the city of Sacramento as well as elsewhere. The 1997 flood event showed that extensive seepage was still occurring on these segments and further evaluation showed that it was caused by deep underseepage.

- Between 1996 and 1999, Congress decided to not authorize Auburn Dam and instead decided to authorize a hybrid of the other two candidate plans from the 1996 SIR. The hybrid plan involved modifying Folsom Dam to 1) temporarily each year reallocate storage capacity in Folsom Reservoir from water supply storage to flood control, and 2) to increase the outlet capacity through the dam to first be able to release the downstream channel capacity of 115,000 cfs at a much lower stage in the reservoir and second to be able to safely increase release capacity to 160,000 cfs. This plan was authorized in WRDA 1999 as the Folsom Dam Modification Project.

- With the authorization of the hybrid plan as opposed to the recommended plan from the SIR, the ARCF project needed to be modified. This modification occurred in WRDA 1999 as well. The change resulted in the need to increase the channel capacity from 115,000 cfs to 160,000 cfs. Features authorized included various segments of levee raising and strengthening along the American River, a closure structure on the Mayhew Drain (which flows into the American River), and 5 miles of raising and strengthening along the Natomas Cross Canal.

- Construction of the ARCF project began in 1999. Costs for construction greatly exceeded the authorized cost from WRDA 1996 and modified by WRDA 1999. The reason for this was because deep underseepage cutoff walls were constructed as opposed to shallow walls as anticipated in the authorizations. This was because of lessons learned from the 1997 flood event were incorporated.

- In 2004, Congress modified the authorized cost to account for this discrepancy.

- In 2002, The Corps, realizing that the problems identified with underseepage along the American River also applied to the authorized work in Natomas as well as most of the rest of the Natomas levee system. The district was directed to complete a GRR for Natomas to better understand the problems in Natomas as well have a better handle on solutions, cost for solutions, and federal interest in solutions.

- Because of manpower limitations and lack of funding, this GRR was not completed until 2010. The report is referred to as the Natomas Post Authorization Change Report (PAC).

- In 2014, Congress authorized the Natomas project as part of the Water Resources Reform and Development Act (WRRDA) of 2014.

- Immediately after authorization, the Corps and SAFCA entered into a design agreement to begin design of the first reach. This reach is the American River portion of the Natomas Basin.

- In 2015, the design agreement was amended twice. Both amendments involved increasing the cost for design of the first reach. One amendment also involved adding the State of California's CVFPB to the agreement.

- In 2016, between February and August, the district, working with our partners, completed drafting the construction agreement and vetting it with SPD, HQUSACE, and the ASA(CW). On 29 July 2016, the district received approval to execute the construction agreement, which is planned to be completed on 18 August 2016.

- In 2007, SAFCA in conjunction with the State, decided to move out ahead of the Corps to start building improvements to the Natomas Basin. This work was completed in four phases, under four Section 408 approvals and with four separate Section 104 credit consideration approvals. The district is currently reviewing the first Section 104 credit request document.

- SAFCA completed improvements to 18 miles of the 42 miles of Natomas Basin levees. Federal construction will focus on the remaining 24 miles and on approximately six 200 feet (plus or minus) long windows in the seepage and stability improvements.