

**AMENDMENT NO. 1 TO  
NAPA COUNTY FLOOD CONTROL AND  
WATER CONSERVATION DISTRICT AGREEMENT NO. 220223B (FC)**

**PROFESSIONAL SERVICES AGREEMENT**

**THIS AMENDMENT NO. 1** (“Amendment”) **OF NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT AGREEMENT NO. 220223B (FC)** (“Agreement”) is made and entered, effective as of the 14th day of March, 2023 by and between the NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, a special district of the State of California, hereinafter referred to as “DISTRICT,” and HDR Engineering, Inc., a Nebraska corporation, whose mailing address is 2365 Iron Point Road, Suite 300 Folsom, CA 95630, hereinafter referred to as "CONTRACTOR."

**RECITALS**

**WHEREAS**, on January 4, 2022, DISTRICT and CONTRACTOR entered into the Agreement for specialized services to complete the design of the Floodwalls North of the Bypass Project to a 35% level, as directed by DISTRICT; and

**WHEREAS**, DISTRICT and the U.S. Army Corps of Engineers (USACE) will be proceeding with the Napa River/Napa Creek Flood Protection Project (Project) under section 204 of the Water Resources Development Act which authorizes the design and construction of water resource development projects by non-federal interests; and

**WHEREAS**, CONTRACTOR is willing to continue to provide such specialized services to complete the design of the Floodwalls North of the Bypass Project to 100% level as well as additional tasks related to the Project, as directed by DISTRICT; and

**WHEREAS**, DISTRICT and CONTRACTOR now desire to modify the provisions of the Agreement to modify the scope of work and increase the maximum compensation by \$4,289,501 to a new total of \$5,472,461.

**TERMS**

**NOW, THEREFORE** DISTRICT and CONTRACTOR hereby agree to amend the Agreement as follows:

1. Paragraph 2 of the Agreement is hereby amended to read as follows:
2. **Scope of services.** CONTRACTOR shall provide DISTRICT those services set forth in Exhibit “A,” attached to the original Agreement, and Exhibit “A-1,” attached to this Amendment 1 and incorporated by reference herein.

2. Paragraph 3(c) of the Agreement is hereby amended to read as follows:

(c) Maximum Amount. Notwithstanding subparagraphs (a) and (b), the maximum payments under this Agreement shall not exceed a total of FIVE MILLION FOUR HUNDRED SEVENTY-TWO THOUSAND FOUR HUNDRED SIXTY- ONE DOLLARS AND ZERO CENTS (\$5,472,461.00), with \$1,182,960 attributed to the original contract and \$4,289,501 attributed to Amendment 1, for professional services and expenses; provided, however, that such amounts shall not be construed as guaranteed sums, and compensation shall be based upon services actually rendered and reimbursable expenses actually incurred.

3. This Amendment No. 1 shall be effective as of the Effective Date first set forth above.

4. Except as provided in (1), (2), and (3), above, the terms and provisions of the Agreement shall remain in full force and effect as last approved.

*[REMAINDER OF PAGE LEFT BLANK INTENTIONALLY]*

**IN WITNESS WHEREOF**, the parties hereto have caused this Amendment No. 1 of the Agreement No. 220223B (FC) to be executed as of the date written on the first page of this Amendment.

HDR ENGINEERING, INC., a Nebraska Corporation

By:   
HOLLY L. KENNEDY, Senior Vice President

“CONTRACTOR”

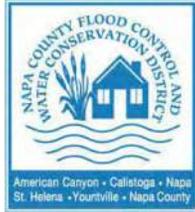
NAPA COUNTY FLOOD CONTROL AND  
WATER CONSERVATION DISTRICT, a special  
district of the State of California

By: \_\_\_\_\_  
RYAN GREGORY,  
Chairperson of the Board of Directors

“DISTRICT”

<p>APPROVED AS TO FORM Office of County Counsel</p> <p>By: <u>Shana A. Bagley</u> District Counsel</p> <p>Date: February 22, 2023</p>	<p>APPROVED BY THE BOARD OF DIRECTORS OF THE NAPA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT</p> <p>Date: _____ Processed By: _____</p> <p>_____ Deputy Secretary of the District Board</p>	<p>ATTEST: NEHA HOSKINS Secretary of the District Board</p> <p>By: _____</p>
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# EXHIBIT A-1



# Napa North of the Bypass Floodwall

Amendment 1  
to Agreement  
No. 220223B



February 27  
**2023**





# Napa North of Bypass Floodwall Amendment #1 to Agreement No. 220223B (FC)

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## PROJECT BACKGROUND

The Napa River/Napa Creek Flood Protection Project (Project) was authorized by the Flood Control Act of 1965. The original approved plan is described in the Final Supplemental General Design Memorandum (SGDM) dated October 1998. The plan was designed to provide a 100-year level of flood protection to the City of Napa (downstream to Imola Avenue) while maintaining or enhancing the river's natural processes.

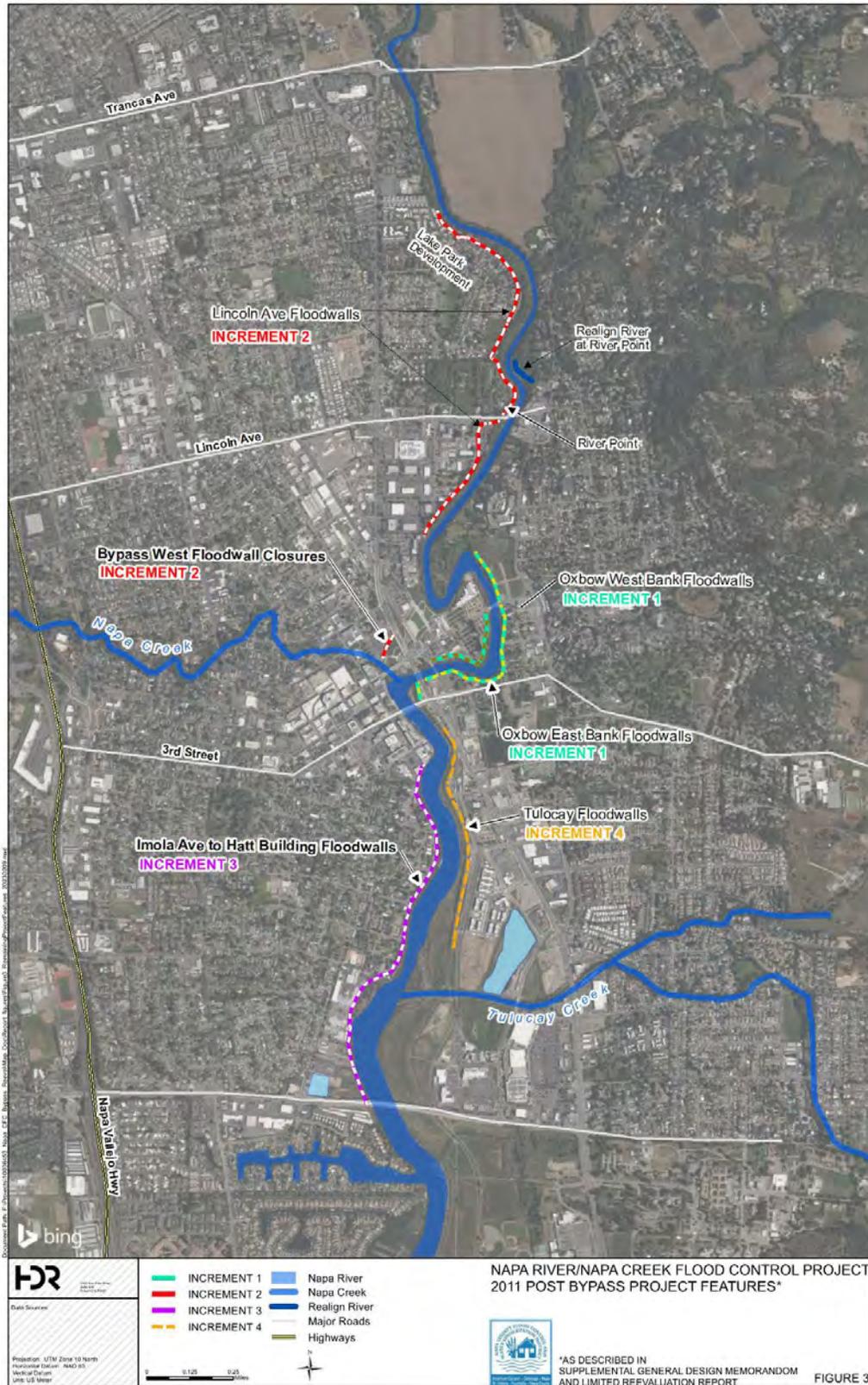
Construction of the Project's approved plan began in FY 2000, but due to shortfalls in federal appropriations, construction has been intermittent. The District's most recent construction was the Bypass Channel, completed in 2015. At that time, USACE said the Bypass Channel was the last project feature that was economically justified for federal investment. To continue the Project and provide the needed flood protection, the District undertook an effort that included a value engineering study and an incremental analysis of remaining Project features to identify remaining increments that USACE could find economically justifiable. The District retained HDR to assist with this effort and the study was called the Post-Bypass Value Engineering and Incremental Analysis (VEIA).

The District completed the VEIA in 2017, and through that effort the District found additional economically justifiable project increments, primarily by eliminating the three pump stations in USACE's original SGDM. Elimination of these pump stations reduced cost and enabled two remaining project increments to achieve favorable Benefit Cost Ratios (BCR). Those two remaining increments, increments 2 and 3, are both on the west side of the Napa River, and they are the Imola to Hatt floodwalls and the floodwalls north of the Bypass also known as the Lincoln area floodwalls, refer to Figure 1. Following the USACE review of the VEIA, USACE produced a Federal Interest Determination, which essentially concurred with the VEIA's findings and confirmed federal interest in these two increments.

USACE received funding for these two increments in their FY 2021 Workplan, which necessitated the need for an amendment to the Project Partnership Agreement (PPA) While the PPA process was underway, the District moved forward with making changes to the floodwall alignment in the Ace and Vine, River Point, and Lake Park areas to address stakeholder concerns, and with initiating the 35% design of the floodwalls north of the Bypass (Increment 2 in the VEIA).

The District has since entered a Section 204 MEMORANDUM OF UNDERSTANDING (MOU) with the USACE. Under this MOU, the District will provide the design for the proposed work in accordance with the terms and conditions of this MOU and requirements of applicable Federal laws and implementing regulations, including guidance issued for Section 204, as amended. The design will entail several required tasks, and those are described on the following pages.

Figure 1 - Napa Project Increments Map



## **SCOPE OF WORK**

The following scope of work progresses the design of Increment 2 from 35% to 100% in accordance with the Section 204 MOU. The task structure is consistent with the schedule and fee schedule.

### **TASK 1. PROJECT MANAGEMENT**

HDR's project manager will provide project management services for the duration of the task order. Activities include coordination between HDR's design disciplines, developing and maintaining quality control and assurance activities, and coordination with the District and USACE. HDR's project manager will provide monthly invoices and project progress reports to the District. The project progress reports will provide a summary of the work performed during the month, current task order budget, and schedule status. The project progress reports will identify technical, budget, or schedule issues.

#### **HDR Project Management Plan (PMP)**

The PMP will present the objectives, organization, scope of services, schedule, budget, communication protocols, document control, cost controls, invoicing procedures, and reporting. HDR will coordinate with the District to comply with the USACE Section 204 invoicing/reporting requirements. It will identify the key project delivery team members, including HDR, the District and the USACE.

#### **USACE Project Management Plan**

The HDR PMP will be included in the USACE developed PMP as an appendix. HDR will also perform a review, provide comments and coordinate with Napa and USACE on the development of the USACE PMP.

#### **HDR Quality Management Plan (QMP)**

The QMP will provide the procedures and actions to be taken as part of the Quality Assurance and Quality Control (QA/QC) process. The plan will identify key personnel that will conduct reviews of the project deliverables. The plan will layout the process for project delivery team (PDT) reviews, Agency Technical Reviews (ATR) and Safety Assurance Reviews (SAR).

#### **USACE Implementation Plan**

HDR will perform a review, provide comments, and coordinate with Napa and USACE on the development of the USACE Implementation Plan.

#### **USACE Review Plan**

HDR will perform a review, provide comments, and coordinate with Napa and USACE on the development of the USACE Review Plan.

## **Primavera Project Schedule**

HDR will prepare an integrated P6 schedule that will provide a detailed plan for Full Design, Environmental compliance thru NEPA and CEQA and Permitting. HDR will coordinate with the District to provide a monthly updated schedule showing the latest status of the project.

### **Deliverables:**

- HDR PMP
- Review comments on USACE PMP
- QMP
- Monthly Invoice & Progress Report
- Review comments on Implementation Plan
- Review comments on Review Plan
- Primavera Project Schedule
- Primavera Monthly Schedule update

### **Assumptions:**

- A NTP 03/01/2023
- The project will have a 13-month duration
- The District and USACE will identify their respective ATR members
- The District and USACE ATR process will run in parallel.
- The District will coordinate with the USACE on the approval and contracting of the BOSC members

## **TASK 2. PROJECT DELIVERY TEAM COORDINATION MEETINGS**

HDR will attend 26 bi-weekly coordination meetings with representatives of the District and the USACE, throughout the 13-month duration of the work. Meetings will inform the parties of progress to date, critical activities, interdependencies of work products, key issues and resolutions, and key decisions.

### **Deliverables:**

- Meeting agendas and notes
- Decision log

### **Assumptions:**

- District Coordination meetings will be held bi-weekly, will be virtual, and attended by up to five HDR professionals as needed.
- District Coordination Meeting duration is assumed to be two hours each
- Weekly delivery team coordination meetings will be held as needed to discuss ongoing coordination between the disciplines.
- Delivery team coordination meeting duration is assumed to be one hour each
- The project will have a 13-month duration

### **TASK 3. ENGINEERING SUPPORT FOR ENVIRONMENTAL SUBCONSULTANT**

HDR will provide engineering support and coordination with an Environmental Subconsultant. The support will consist of providing a description of project features, temporary and permanent construction footprints, likely construction equipment and construction schedule, haul routes, truck trips, and other engineering and construction items to support the development of California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documents.

#### Deliverables:

- Written description of project features, CAD or GIS linework outlining critical project areas, input on types of equipment, haul routes, truck trips, or similar information requested in support of the CEQA and NEPA documents.

#### Assumptions:

- Subconsultant will be under a separate contract with the District.
- Bi-weekly coordination meetings with the Environmental Subconsultant for the first four months of the project.

### **OPTIONAL TASK – ENVIRONMENTAL DOCUMENTATION AND PERMITTING (includes Supplemental EA/EIR [Option 1])**

The Project is subject to compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) as well as several other environmental regulations, specifically the Endangered Species Act (ESA), the California Endangered Species Act (CESA), Clean Water Act (CWA), Clean Air Act (CAA), and National Historic Preservation Act (NHPA).

### **ENVIRONMENTAL DOCUMENTATION**

#### ***Geotechnical Notice of Exemption***

In order to carry out geotechnical investigations to inform the project design development, HDR recommends that a Categorical Exemption (Cat Ex) be prepared per CEQA State Guidelines Section 15304, Class 4 (Minor Alterations to Land) and Section 15306, Class 6 (Information Collection) since the geotechnical investigations are not anticipated to result in significant effects to environmental resources, due to the short-term and localized nature of the activities. HDR will support the District in the District's development of the Cat Ex package by conducting limited desktop environmental reviews of publicly available databases, aerial imagery, and other existing and readily available sources of information to verify that the geotechnical investigations will not have potential environmental impacts.

HDR will also help develop environmental protocols for the District's consideration and that should be included as part of the geotechnical investigations (i.e., archaeological and biological worker awareness training, BMP fencing). HDR will provide the aforementioned relevant information to the District for their compilation of the Cat Ex package. HDR assumes that the District will prepare the notice of exemption (NOE) form and will submit the NOE to the County Clerk for compliance with CEQA. HDR assumes that the District will be responsible for paying the filing fee for the NOE.

### ***CEQA/NEPA Validation of Approach***

Building from the 1999 Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and the VEIA, our environmental team will work closely with the District and the design team in the evaluation of the currently proposed floodwall design and alignment north of the Bypass. Although additional environmental analysis is likely required to encompass project changes since 1999, HDR will compare the Project Description from the 1999 EIS/IR with updated information from the VEIA, 35% design, and the EDR to determine the extent of changes. HDR will also prepare a preliminary environmental review utilizing the CEQA Guidelines Appendix G Checklist and the Council on Environmental Quality (CEQ) Regulations and Guidance to help identify the appropriate level of CEQA/NEPA analysis and documentation required for the Project changes.

HDR project manager and environmental leads, as necessary, will also host a virtual validation meeting with the District and the USACE after the initial environmental review is finalized to discuss the findings and the recommended CEQA/NEPA compliance approach. After direction from the District and the USACE, HDR will develop the necessary CEQA/NEPA documentation for the District and USACE review and consideration. The goal of this validation step is to determine the appropriate and most defensible level of analysis and documentation for the project. For the purpose of this scope of work and level of effort, HDR has assumed that the appropriate level of environmental documentation for the project would be a Supplemental Environmental Assessment/Environmental Impact Report (EA/EIR).

Therefore, the following scope provides the tasks related to preparation and approval of a Supplemental EA/EIR. If during or as a result of this validation step it is determined that a different level of analysis and documentation is required (i.e., Environmental Impact Statement/Environmental Impact Report or Environmental Assessment/Initial Study) by the District and/or the USACE, HDR will submit additional scope and budget to the District for review and approval, as necessary.

### ***Option 1 - Supplemental EA/EIR***

HDR assumes that the District will be the CEQA lead agency and the USACE will be the NEPA lead agency and that both entities will participate in the review of the Supplemental EA/EIR.

### ***Draft Project Description***

HDR will prepare a draft project description as required by CEQA/NEPA. The draft project description will provide the background for the project, the District and USACE's purpose and need and objectives of the project, and the location and boundaries of the project area and related construction activities (i.e., laydown and staging areas, work limits), which will be shown on one or more figures based on existing maps. The project description will also describe the alternatives to be considered in the Draft Supplemental EA/EIR. The draft project description will provide a general description of the proposed project's technical, environmental, and construction details, including construction sequencing. The draft project description will include information regarding the project schedule and adequate information to assess the proposed project's potential impacts on the environment.

HDR will submit the draft project description electronically to the District and the USACE for review. Upon receipt of the District's and the USACE's comments, HDR will revise the draft project description to incorporate comments and will prepare a final project description for use in the Supplemental EA/EIR. HDR will submit the final project description electronically to the District and USACE for approval.

Deliverables:

- Microsoft Word and PDF copy of draft and final project description for review and approval by the District and USACE.

#### **Initial Study Checklist and Notice of Preparation**

Because the anticipated level of documentation under CEQA is an EIR, scoping is required for the Project (scoping is only required under NEPA for an EIS). To better evaluate and confirm the potential impacts of the project, HDR will utilize the effort completed under the validation step described above and will conduct a desktop analysis and go through the CEQA Guidelines Appendix G Environmental Checklist and prepare an IS Checklist and Notice of Preparation (NOP) for the project based on the project description.

As specified in Section 15064(a) of the state CEQA Guidelines, if there is substantial evidence (such as the results of the IS) that a project, either individually or cumulatively, could have a significant effect on the environment that cannot effectively be mitigated to a less-than-significant level, the lead agency must prepare an EIR. Based on preliminary review of the project design, the proposed improvements may result in a potentially significant impact on the environment specifically due to the proximity to the Napa River and the special-status species that may inhabit the project area and the urban/built nature of the project area. Therefore, for the purposes of the scope of work we anticipate that the IS Checklist will confirm the need to prepare an EIR.

HDR will use the IS Checklist step of analysis to identify those resource areas that might be impacted significantly, where mitigation might reduce impacts to a less than significant level, or where the District might be able to eliminate certain resource topics from further evaluation in the Supplemental EA/EIR. HDR will submit the Draft IS Checklist and Draft NOP electronically to the District for review and comment. Upon receipt of the District's comments, HDR will revise the Draft IS Checklist and Draft NOP to incorporate the District's comments and will prepare a Final IS Checklist and Final NOP. HDR will submit the Final IS Checklist and Final NOP electronically to the District for approval.

HDR assumes that the District will develop the mailing list/notice list for the NOP distribution. HDR will prepare for and attend one evening public open house format NOP scoping meeting. We will help prepare up to eight poster boards and one handout, to share information about the Supplemental EA/EIR process along with relevant project information. We will provide comment cards at the scoping meeting to enable the public to provide written comments. We anticipate that only three key team members will need to attend the NOP scoping meeting. The HDR Team will review comments received on the NOP and at the public scoping meeting and will consider these comments in the preparation of the Supplemental EA/EIR.

In addition, AB 52 consultation for the Project will be initiated at the NOP stage and will be conducted as described above.

Deliverables:

- Microsoft Word and PDF copy of draft and final IS Checklist for review and approval by the District.
- Microsoft Word and PDF copy of draft and final NOP for review and approval by the District.

#### **Administrative Draft Supplemental EA/EIR**

The Administrative Draft Supplemental EA/EIR will include a description of the environmental setting; identify direct, indirect, and cumulative effects of the proposed project and alternatives; and recommend mitigation measures to avoid or reduce those impacts. Mitigation measures will be developed, and the discussion of each measure will clearly explain how implementation of the mitigation measure would reduce the related environmental impacts to a less-than-significant level if possible. If there are off-site mitigation areas (i.e., biological resources) proposed, these areas will need to be identified and evaluated in the Supplemental EA/EIR as well. The Administrative Draft Supplemental EA/EIR will be prepared in a format that is easily understood and accessible to the public and will be submitted to the District and the USACE for review.

Deliverables:

- Microsoft Word and PDF copy of Administrative Draft Supplemental EA/EIR for review by the District and USACE.

#### **Public Draft Supplemental EA/EIR**

Upon receipt of the District's and USACE's comments, HDR will incorporate comments on the Administrative Draft Supplemental EA/EIR and prepare the Public Draft Supplemental EA/EIR that will be circulated to the public for a 45-day public review period as required by CEQA (30-day review period for an EA). As part of this process, HDR will provide the District and the USACE with an electronic copy of a screen check Public Draft Supplemental EA/EIR to review and determine if the District's and the USACE's comments have been appropriately addressed prior to finalization of the Public Draft Supplemental EA/EIR. The screen check Public Draft Supplemental EA/EIR will include the Notice of Availability (NOA) to meet the requirements of both CEQA and NEPA. The NOA will be reviewed and approved by the District and the USACE. Upon approval, HDR will finalize the NOA.

Once the District and USACE review and approve the screen check Public Draft Supplemental EA/EIR, HDR will finalize the Public Draft Supplemental EA/EIR and prepare a NOC. On behalf of the District, HDR will submit the Public Draft Supplemental EA/EIR to the State Clearinghouse through CEQAnet along with the NOC transmittal form and Summary form. The District will be responsible for distribution of the document to interested parties and noticing the availability of the Public Draft Supplemental EA/EIR for review (i.e., newspaper or direct mailer).

HDR assumes that the District will develop the mailing list/notice list for the Public Draft Supplemental EA/EIR as was assumed for the NOP. We can assist the District with updating

the mailing/notice list developed prior to the scoping period to include those commenters, interested tribes, and stakeholders that commented during the scoping period. It is assumed that the District will electronically send out the NOA for the Public Draft Supplemental EA/EIR, as well as notices of the public meeting for the Public Draft Supplemental EA/EIR to those included on the mailing list.

HDR will prepare for and attend one public open house format meeting for the Public Draft Supplemental EA/EIR. We will prepare a brief PowerPoint presentation for the meeting, as well as up to eight poster boards and one handout to share information about the project and the Public Draft Supplemental EA/EIR analyses. We anticipate that up to five Team members will need to attend the public meeting for the Public Draft Supplemental EA/EIR.

Deliverables:

- Microsoft Word and PDF copy of screen check Public Draft Supplemental EA/EIR for the District and USACE to review.
- Microsoft Word and PDF copies of the Public Draft Supplemental EA/EIR and NOA.
- PDF copies of the Notice of Completion and Summary Form for CEQAnet.

#### **Response to Comments, Final Supplemental EA/EIR, and Mitigation, Monitoring and Reporting Program**

After the 45-day public review period for the Public Draft Supplemental EA/EIR, we will review comments received on the Public Draft Supplemental EA/EIR. We will develop a Comment-Response Matrix and work with the District to develop appropriate responses. Due to the uncertainties associated with the level of effort needed to respond to comments, HDR has provided a contingency estimate of 80 hours for this effort. HDR will then prepare the Administrative Final Supplemental EA/EIR, which will include a Comment-Response chapter summarizing the public comments received on the Public Draft Supplemental EA/EIR and formal responses.

HDR assumes no changes to the project description, technical analyses, or substantial modifications will be necessary for preparation of the Administrative Final Supplemental EA/EIR. It is also assumed that recirculation of the Draft Supplemental EA/EIR will not be required due to the public and agency comments received. The Administrative Final Supplemental EA/EIR may include minor corrections, changes, or revisions to the Public Draft Supplemental EA/EIR as result of comments and as appropriate. HDR will submit the Administrative Final Supplemental EA/EIR electronically to the District and USACE for review. Upon receipt of comments, HDR will revise the Administrative Supplemental EA/EIR to incorporate the District's and USACE's comments and will prepare a Final Supplemental EA/EIR. HDR will submit the Final Supplemental EA/EIR electronically to the District and USACE for approval.

HDR will prepare the Finding of No Significant Impact (FONSI) for the Project in accordance with NEPA. HDR will submit the FONSI to the USACE for review. Upon receipt of the USACE's comments on the FONSI, HDR will revise and finalize the FONSI. HDR assumes that the USACE will distribute and post the FONSI in the Federal Register.

A draft Findings of Fact will be prepared for rationale of each significant impact identified in the Supplemental EA/EIR in accordance with CEQA. A draft Statement of Overriding Considerations, if applicable, will be prepared to support the District's action for approval of the project. The Statement of Overriding Considerations will discuss the benefits that outweigh the project's significant and unavoidable impacts.

HDR will also prepare a Mitigation Monitoring and Reporting Program (MMRP) for the project in accordance with CEQA. The MMRP will specify the project impacts to be mitigated, initiation/timing of mitigation, monitoring frequency, responsibility for verification of compliance, performance criteria, the date compliance is completed, and other specifications, as necessary. The MMRP will be provided at the same time as the Findings and Statement of Overriding Conditions.

The HDR CEQA/NEPA lead will attend one public hearing for approval of the Final Supplemental EA/EIR. This meeting will be held during the District's Board meeting and HDR will prepare a brief presentation for the Board. Assuming that the project is approved by the District, HDR will prepare a Notice of Determination (NOD). HDR will submit the NOD to the District for review and signature. Upon receipt of the signed NOD, HDR will assist the District with filing the NOD with the County Clerk and the State Clearinghouse through CEQAnet. The California Department of Fish and Wildlife (CDFW) filing fees for adoption of a Supplemental EA/EIR must accompany the NOD when filing it with the County Clerk.

Once the NOD is filed with the County Clerk and the CDFW filing fees are paid, HDR will submit the NOD, receipt of acceptance of the NOD by the County Clerk, and receipt of payment of the CDFW filing fees to the State Clearinghouse through CEQAnet for compliance with CEQA. HDR assumes that the District will be responsible for paying the filing fees.

#### Deliverables:

- Microsoft Word and PDF copy of Comment-Response Matrix for review and approval by the District and the USACE.
- Microsoft Word and PDF copy of Administrative Final Supplemental EA/EIR and Final Supplemental EA/EIR for review and approval by the District and the USACE.
- Microsoft Word and PDF copy of Draft Findings of Fact, Statement of Overriding Considerations, and MMRP for review and approval by the District; PDF copy of the NOD.
- Microsoft Word and PDF copy of the FONSI for review and approval by the USACE.

#### Assumptions:

- HDR will support the District and USACE in validating the approach and findings to support the CEQA/NEPA process. If subsequent analysis or documentation is necessary, HDR will work with the District to determine the additional level of effort and will provide scope and fee to support this effort.
- No other studies, modeling, or surveys are included in this scope of work outside of what is provided below to support the CEQA/NEPA document.

- A one-day site visit for up to three staff members is included in this task to allow resource leads to review the project site and local area, and to take photos that may be used in the CEQA/NEPA analysis.
- Deliverables will be submitted electronically.
- District comments will be consolidated and provided to HDR electronically in a single tracked-changes Microsoft Word document.
- USACE comments will be consolidated and provided to HDR electronically in a single tracked-changes Microsoft Word document.
- The District will be the Lead Agency for CEQA and is the only reviewing agency for the Supplemental EA/EIR. No other CEQA Responsible or Trustee Agencies will be included in the Supplemental EA/EIR development.
- The USACE will be the Lead Agency for NEPA and is the only reviewing agency for the Supplemental EA/EIR. No other CEQA Responsible or Cooperating Agencies will be included in the Supplemental EA/EIR development.
- The District will be responsible for maintaining the mailing list and CEQA noticing, publications, and other lead agency activities.
- The USACE will be responsible for maintaining the mailing list and NEPA noticing, publications, and other lead agency activities.
- It is assumed that the District will coordinate and pay facility rental fees for the scoping and public meetings. No court reporter, professional facilitator, or meeting transcripts are included in the cost estimate.
- Expenses - placement (fees) of ad in one newspaper for the NOP Scoping Period and Meeting. HDR will prepare eight poster boards and one handout (up to 150 copies) for the NOP Scoping Meeting. For the Public Draft Supplemental EA/EIR the placement (fees) of an ad in one newspaper for the Public Review Period and Meeting is included. HDR will prepare a brief PowerPoint presentation, as well as eight poster boards and one handout (up to 150 copies) for the Public Meeting.
- The District will be responsible for filing fees associated with filing the Supplemental EA/EIR and NOD with the County Clerk.
- The USACE will be responsible for posting the EA and FONSI in the Federal Register.
- It is assumed that no recirculation of the Draft Supplemental EA/EIR will be required due to the public and agency comments received.
- It is assumed no substantive changes to the Project Description, technical analyses, or substantial modifications will be necessary for preparation of the final Supplemental EA/EIR.
- Meetings with the District and project team associated with the development of the Supplemental EA/EIR are included in the fee estimate. Monthly project meetings for the up to 14-month CEQA/NEPA schedule will be virtual, via Webex or telephone.

- Supplemental EA/EIR will need to be compliant with AB 434 for accessibility and therefore, this effort is included in the fee. The scope and fee do not assume that the CEQA/NEPA document needs to be Section 508 compliant (federal).
- Schedule is dependent on the timeliness of the project team's response to data needs and review of document sections.
- AB 52 compliance documentation will be developed under a separate task.

## ENVIRONMENTAL TECHNICAL STUDIES

### ***Biological Resources***

HDR will conduct a biological resources assessment to inventory botanical, fish, and wildlife species and sensitive habitats that may be affected by the proposed project. The initial phase of the assessment will involve a desktop analysis of the project site. During this phase applicable data from the U.S. Geological Survey, NMFS, USFWS, CDFW, California Native Plant Society, and other publicly available data will be reviewed, compiled, and analyzed. These data will then be used to develop preliminary delineations of onsite land uses, and further refine special-status species with the potential to occur in the project vicinity.

The second phase of the assessment will be to conduct thorough field surveys of the project area. These surveys serve to ground-truth and refine data collected during the desktop analysis. Data collected during field surveys result in the description and mapping of land use patterns on and adjacent to the project, and the identification and classification of the suitability of those land uses for utilization by special-status species. These data will be used to prepare a biological resources assessment that will summarize the existing conditions in the proposed project area, in addition to the CEQA biological resources section and permitting packages. The draft version of the biological resources assessment will be submitted electronically to the District for review and comment. Comments and edits will be addressed, and the final version of the document will be prepared and submitted to the District and used in subsequent permitting efforts.

An aquatic resources delineation would also be completed by HDR biologists concurrently with the biological resources assessment. Aquatic resources delineations utilize standardized methods to identify wetlands and other water features that may be considered waters of the U.S. and subject to Clean Water Act jurisdiction. Guidance on identifying aquatic resources is provided in the *1987 USACE Wetlands Delineation Manual*, the *2008 Regional Supplement to the USACE Wetland Delineation Manual: Arid West (Version 2.0)*, the USACE's regulatory guidance letter regarding *Ordinary High Water Mark Identification* (2005), and *2007 USACE Jurisdictional Determination Form Instructional Guidebook*.

The methodologies outlined in these reference documents would be utilized to delineate the extent and location of aquatic resources in the survey area. Additionally, the extent of CDFW jurisdiction will also be mapped; however, these data will only be incorporated into the CDFW 1602 permit application package and will not be incorporated into the delineation report. Positional data will be collected using a GPS antenna with sub-meter accuracy. The draft version of the aquatic resources delineation report will be submitted electronically to the District for review and comment. Comments and edits will be addressed, and the final version of the

delineation report will be prepared and submitted to the USACE for verification by HDR on the District's behalf.

Deliverables:

- Draft and Final Biological Resources Assessment Report
- Draft and Final Aquatic Resources Delineation Report
- Associated spatial data

Assumptions:

- Access to the project area will be granted prior to field mobilization.
- Field surveys can be completed by two HDR biologists in no more than two 10-hour field days, including travel time.
- No additional site visits will be required to finalize tasks.
- No more than one round of District review of the technical report will be necessary.

***Cultural and Tribal Resources***

HDR assumes that the project will require compliance with both Section 106 of the National Historic Preservation Act (NHPA) and CEQA. Section 106 and CEQA require federal and state agencies to consider the effects/impacts of their projects on historic properties (cultural resources eligible for or listed on the National Register of Historic Places [NRHP]) and historical resources (cultural resources eligible for or listed on the California Register of Historical Resources [CRHR]). The cultural resource effort will be conducted to comply with both Section 106 and CEQA.

HDR's approach will be designed to identify and evaluate, to the extent possible, previously recorded and/or newly discovered archaeological sites and historic built environment resources. Prior to fieldwork, HDR will request an archaeological records search from the Northwest Information Center of the California Historical Resources Information Center at Sonoma State University to identify previously conducted studies and previously recorded archaeological sites and built environment resources. The field survey will follow the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and will be conducted at no more than 15-meter-wide survey transects.

Documentation of encountered sites and built resources will follow the California Office of Historic Preservation's (OHP's) Instructions for Recording Historical Resources, utilizing Department of Parks and Recreation 523 series forms. The resource locations will be recorded with a Global Positioning System receiver using the North American Datum 83 and the Universal Transverse Mercator system, and the data downloaded into a Geographical Information System database for conversion into relevant graphics. The results of these surveys will be provided in a technical report of findings following the OHP's *Archaeological Resources Management Report Guidelines*.

To the extent possible, precontact and historic-era archaeological sites will be evaluated for CRHR and NRHP eligibility at the survey level. Historic built environment resources will be evaluated for significance through the development of a historic context, identification of a period of significance, and assessment of the resource's significant qualities (if any). A review of

the 1999 Napa River/Napa Creek FRP FSEIS/EIR indicates that, in coordination with the State Historic Preservation Officer (SHPO), a Memorandum of Agreement (MOA) was to be developed to implement appropriate mitigation measures for the destruction of precontact archaeological site CA-NAP-261 (the River Glen Site). The status of the MOA is unknown but once identified may prescribe additional efforts regarding CA-NAP-261 that are not covered by this scope of work. If additional evaluation steps are necessary to assess potential effects beyond those described above, HDR will provide a separate scope of work and fee for these efforts.

To identify tribal resources as part of the Native American consultation requirements under federal and state guidelines (including Assembly Bill [AB] 52) HDR will support the District by conducting a Sacred Lands File search with the Native American Heritage Commission. HDR will provide the information from the Sacred Lands File search to the District to aid in the District's development of consultation letters. The District will send consultation letters to interested tribal groups and representatives. HDR assumes that the District will also conduct follow up calls to each of the identified individuals requesting information regarding known tribal resources in the vicinity of the project. HDR will support the District in the AB 52 tribal consultation process, but for the purposes of this scope of work and fee, will not facilitate or attend tribal consultation telephone calls and/or in-person meetings.

**Deliverables:**

- A draft and final cultural resource technical report summarizing previous efforts, the records search, field verification of resources, Native American consultation, and CRHR/NRHP eligibility determinations (if necessary).
- Spatial data to incorporate into project design for avoidance purposes if necessary.

**Assumptions:**

- Access to the project area will be granted prior to field mobilization.
- Field surveys can be completed by two HDR archaeologists in no more than two 10-hour field days, including travel time.
- Extensive archaeological field studies (i.e., boundary definition, Phase 2/3 excavations) will not be necessary.
- Funds to prepare mitigation and/or treatment plans for adverse effects/significant impacts have not been included.
- No cultural resource specific permits will be required (e.g., Archaeological Resources Protection Act, Fieldwork Authorization).
- No more than one round of District review of the technical report will be necessary.
- HDR will only serve as a support function to the District for the AB 52 tribal consultation effort and the District will lead this effort.

**ENVIRONMENTAL PERMITTING AND CONSULTATION SUPPORT**

***Clean Water Act Section 404 Permit***

HDR assumes the project would need Section 404 coverage and that project impacts will qualify under a nationwide permit. A preconstruction notification (PCN) and an aquatic resources delineation is required due to impacts on waters of the U.S. and the potential for impacts on

federally protected species. A PCN application package will be prepared by HDR in accordance with USACE standards. The draft version of the PCN will be submitted electronically to the District for review and comment. Comments and edits will be addressed, and the final version of the permit application package will be prepared and submitted to USACE by HDR on the District's behalf.

Deliverables:

- Draft and Final Section 404 Package

Assumptions:

- Only one round of comments on the Section 404 package will need to be addressed in order to finalize this deliverable.
- No coordination with USACE is included in this task. Agency coordination required to obtain permits is provided under the Agency Coordination Subtask.
- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with the District and USACE.

### ***Clean Water Act Section 401 Water Quality Certification/Waste Discharge Requirements Program***

Section 401 of the Clean Water Act requires that federal permit (i.e., USACE Nationwide permit), which authorizes the discharge of dredge or fill material into waters of the U.S. obtain certification from a state agency stating that the proposed activities comply with this regulation. The State of California has tendered their authority for this program to the Water Board. HDR will support the District through the Water Quality Certification process. The District and USACE were issued order no. 99-074 through the Waste Discharge Requirements Program in September 1999.

It is our understanding that the District has continued to coordinate with the San Francisco Bay Regional Water Quality Control Board under this order and is planning to utilize this order for the project. Therefore, HDR will not prepare an application under this scope for a Section 401 Water Quality Certification but will provide support to the District and USACE for the additional coordination efforts needed to address updates to the project since 1999 and when the order was issued.

Deliverables:

- None

Assumptions:

- HDR will only provide support to the District and will not prepare a permit application under this task.
- Associated permit fees will be paid by the District.
- Permitting approaches will determined and confirmed by the District and USACE.

### ***NMFS ESA Section 7 Consultation***

Section 7(a)(2) of the ESA requires federal agencies to consult with NMFS to verify that the activities they authorize, fund, or carry out do not jeopardize the continued existence of federally

protected species or their critical habitats. Federally listed salmonids occur in the Napa River at the proposed project location; therefore, HDR will prepare a biological assessment (BA) in accordance with agency standards. Data provided in previous project documentation will be utilized to the greatest extent practicable; however, a habitat assessment will be conducted concurrently with aquatic resources delineation to capture data gaps needed to complete the biological assessment. The BA will analyze potential impacts on federally-listed or candidate species along with the appropriate avoidance, minimization, and conservation measures. The draft version of the biological assessment will be submitted to the District for review. Comments and edits will be addressed, and the final version of the BA will be prepared for submittal with the USACE 404 package to facilitate their consultation with NMFS.

Deliverables:

- Draft and Final NMFS BA

Assumptions:

- Only one round of comments on the biological assessment will need to be addressed in order to finalize this deliverable.
- No coordination with NMFS is included in this task. Agency coordination required to obtain permits is provided under the Agency Coordination Subtask.
- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with the District and USACE.

***USFWS ESA Section 7 Consultation***

Section 7(a)(2) of the ESA requires federal agencies to consult with USFWS to make sure that the activities they authorize, fund, or carry out do not jeopardize the continued existence of federally protected species or their critical habitats. Federally-listed species have the potential to occur at the proposed project location; therefore, HDR will prepare a BA in accordance with agency standards. Data provided in previous project documentation will be utilized to the greatest extent practicable; however, a habitat assessment will be conducted concurrently with aquatic resources delineation to capture data gaps needed to complete the biological assessment. The BA will analyze potential impacts on federally-listed or candidate species along with the appropriate avoidance, minimization, and conservation measures. The draft version of the biological assessment will be submitted to the client for review. Comments and edits will be addressed, and the final version of the BA will be prepared for submittal with the USACE 404 package to facilitate their consultation with USFWS.

Deliverables:

- Draft and Final USFWS BA

Assumptions:

- Only one round of comments on the biological assessment will need to be addressed in order to finalize this deliverable.
- No coordination with USFWS is included in this task. Agency coordination required to obtain permits is provided under the Agency Coordination Subtask.

- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with the District and USACE.

### ***CDFW 2081 Incidental Take Permit***

Section 2081 subdivision (b) of the Fish and Game Code allows CDFW to authorize take of species listed as endangered, threatened, candidate, or a rare plant, if that take is incidental to otherwise lawful activities and if certain conditions are met. State-listed species have the potential to occur at the proposed project location; therefore, HDR will prepare a 2081 incidental take permit application package in accordance with agency standards. Data provided in previous project documentation will be utilized to the greatest extent practicable; however, a habitat assessment will be conducted concurrently with aquatic resources delineation to capture data gaps needed to complete the permit package. The 2081 application package will analyze potential impacts on state-listed species along with the appropriate avoidance, minimization, and conservation measures. The draft version of the 2081 permit package will be submitted to the District for review. Comments and edits will be addressed, and the final version of the permit package will be prepared for submittal to CDFW.

#### Deliverables:

- Draft and Final CDFW 2081 Permit Package

#### Assumptions:

- Only one round of comments on the permit package will need to be addressed in order to finalize this deliverable.
- No coordination with CDFW is included in this task. Agency coordination required to obtain permits is provided under the Agency Coordination Subtask.
- This task will commence once the 65% design milestone has been achieved.
- Permitting approaches will be confirmed with the District and USACE.

### ***CDFW Lake and Streambed Alteration Agreement***

Section 1602 of the California Fish and Game Code requires a person, state or local governmental agency, or public utility to notify CDFW before beginning an activity that would substantially modify a river, stream, or lake. If CDFW determines that the activity could substantially adversely affect an existing fish and wildlife resource, a 1602 permit is required. The proposed project is expected to require a 1602 permit; therefore, HDR will prepare a notification package for submittal to CDFW. The draft version of the 1602 permit package will be entered into the CDFW Environmental Permit Information Management System (EPIMS) portal and submitted to the District for review. Comments and edits will be addressed, and the final version of the permit package will be prepared for submittal to CDFW by HDR on the District's behalf.

#### Deliverables:

- Draft and Final Streambed Alteration Agreement (electronic version in EPIMS portal)

#### Assumptions:

- Only one round of comments on the 1602 notification will need to be addressed in order to finalize this deliverable.

- No coordination with CDFW is included in this task. Agency coordination required to obtain permits is provided under the Agency Coordination Subtask.
- This task will commence once the 65% design milestone has been achieved.
- Associated permit fees will be paid by the District.

### ***Agency Coordination***

HDR's senior biologist will coordinate directly with resource agency staff to facilitate timely permit issuance. This coordination will involve:

- One, one-hour, virtual pre-application coordination meeting with each resource agency – USACE, CDFW, NMFS, and USFWS – to discuss the proposed project, site conditions, anticipated impacts; along with proposed avoidance, minimization, and mitigation measures to obtain early feedback that can be incorporated into the permitting documents.
- One, one-day site visit with USACE to verify the delineation. No other agency site visits are included in this scope of work.
- Up to two, one-hour virtual post-application coordination meeting with each resource agency –USACE, CDFW, NMFS, and USFWS – to reconcile comments on the proposed project and permit applications.
- 40 hours of post-application submittal coordination time for each resource agency – USACE, CDFW, NMFS, and USFWS – to provide written responses to resource agency comments necessary to deem the applications complete.

### ***NHPA SECTION 106***

Upon review and acceptance of the technical report and if requested, HDR will draft a transmittal letter and prepare a submittal package for the 30-day State Historic Preservation Officer (SHPO) review. HDR is also available to assist with tribal consultation by drafting letters, contact tribes, attending consultation meetings, and preparing summary presentations of the findings. HDR will also assist with drafting the appropriate cultural and tribal resource sections for the 401 and 404 permit applications described above.

Deliverables:

- Draft and Final Native American and SHPO consultation letters.
- Draft and final cultural and tribal resource sections of the 401 and 404 permit applications.

Assumptions:

- No more than one round of review per letter will be necessary.
- More extensive consultation efforts including site visits, interviews, and ethnographic research into descendent communities are not included.

### **TASK 4. HAZARDOUS AND TOXIC MATERIALS SUPPORT**

The District will lead the Phase I Environmental Site Assessment (ESA) and HDR will provide minimal support to the District in the form of response to comments and questions by the district that arise during the Phase I ESA.

Deliverables:

- Written email responses to comments from the District.

Assumptions:

- The District will lead the Phase I ESA.
- HDR will have one Senior Environmental Planner attend up to four, one-hour meetings and respond to questions on the Phase I ESA.

## TASK 5. ECONOMICS

HDR proposes to prepare the HEC-FDA model in support documenting that the proposed work is economically justified. To complete this effort, HDR will utilize the HEC-FDA model developed for previous iterations of the VEIA. The model will be updated to current economic conditions following appropriate federal guidance. Then the model will be utilized to establish if economic conditions have changed since the VEIA and to demonstrate economic feasibility.

The methodology in this economic analysis will be consistent with standard economic practices related to the evaluation of flood damages and benefit-to-cost analysis (BCA). Primary reference sources for the economic analysis include:

- Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. (P&G); and
- Updated Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies. (PR&G);
- Engineering Regulation 1105-2-100, Planning Guidance Notebook; and
- Engineering Manual 1110-2-1619, Risk Based Analysis for Flood Damage Reduction Studies.

A comprehensive flood risk model will be constructed using the Hydraulic Engineering Center's Flood Damage Analysis (HEC-FDA) model version 1.4 to estimate changes in the potential flood damages. The model uses relationships between flood discharges and stages, structure and content value, elevation data, and stage damage curves in a risk and uncertainty-based framework. Results include a monetary value of the damage to property and infrastructure resulting from a range of floods (50 percent Annual Chance Exceedance [ACE] event to the 0.2 percent ACE event). Damages are presented as the weighted average of damages across a range of floods, referred to as expected annual damages (EAD). The following tasks outline the steps necessary to perform the analysis.

### Subtask 5.1 - Structure Inventory Database Update

**5.1.1 – Data Collection** – HDR will update the structure inventory in the HEC-FDA to reflect changes in land use. This will involve collecting information on structures within the 0.2% annual chance exceedance (ACE) event floodplain boundary plus a small buffer to account for uncertainty. Assessors data in GIS format is the best source of information.

Necessary data includes assessors GIS parcel coverage (spatial locations of structures), structure type (residential, non-residential), structure use or occupancy type, valuation, building square footage, material and condition.

This information will be compared to the previous inventory and changes in land use will be made to bring the inventory to current conditions.

**5.1.2 – Determine Depreciated Replacement Value** – HDR will update depreciated replacement values (DRV) for structures in accordance with USACE guidance document 95-R-9. HDR will develop a random sample of structures and estimate DRV using the Marshall and Swift<sup>®</sup> cost estimator. Those values will be used to develop cost per square foot for each structure type and applied to the remaining structures in the inventory.

### **Subtask 5.2 - Prepare HEC-FDA Model**

**5.2.1 – Model inputs** – HDR will prepare the HEC-FDA model and the required model inputs. After populating the model with the inputs, the model will be prepared to run the existing and future without project conditions. Specific hydrologic and hydraulic model inputs required beyond the structure inventory are as follows:

- Depth rasters from HEC-RAS featuring for 2-, 5-, 10-, 25-, 50-, 100-, 250-, and 500-yr return periods.
- Risk and uncertainty analysis from HEC-RAS sensitivity analysis

### **Subtask 5.3 - Future without Project Conditions HEC-FDA Model Runs**

**5.3.1 – Model Calibration** – It is expected that initial model simulations must be completed to better calibrate structure characteristics, especially those related to elevation and occupancy type. Due to the generic nature of occupancy types, particular structures may show unexpected damage figures that could not be known prior to modeling. These structures may require reassignment of occupancy type to better reflect the point at which damages begin at the structure. The same will be true of elevations that are currently based on the location of a centroid on the LiDAR. Due to inconsistencies in foundation elevations, these centroids may need to be moved to alternate locations within the structure outlines to better define the onset of damages at the structure.

**5.3.2 - Calculate Expected Annual Damages** – After completing calibration, HDR will run the HEC-FDA model to estimate expected annual damages for the future without project condition. HDR will use the results to compute total damages for each ACE.

### **Subtask 5.4 - Future with Project Conditions HEC-FDA Model Runs**

**5.4.1 – Calculate Expected Annual Damages** – HDR will run with-project conditions based on water surface profiles for the project conditions. HDR will run up to two with-project conditions. HDR will use the results to compute total damages for each ACE. The model will be reviewed to identify changes and location of residual risk and damage reduction benefits.

### **Subtask 5.5 - National Economic Development (NED) Analysis**

**5.5.1** – The NED analysis will be completed in a Microsoft Excel-based model framework using results from the HEC-FDA model as well as updated project cost estimates.

NED costs will be computed using engineering, real estate, and other related costs for each of the alternatives; alternative cost updates based on real estate and life cycle cost (MII) updates performed by others. NED costs will be computed based on current discount rates in USACE Economic Guidance Memorandums.

NED costs will be compared to the NED benefits that would be realized in current dollars. NED benefits will be computed using the HEC-FDA damage analysis of AED. Key metrics of the NED analysis will include benefit-to-cost ratios (BCR) and net benefits.

The findings of the NED analysis will be compared with the previous feasibility study to show how/if economic consequences of the alternative have changed.

Additionally, HDR will compute risk metrics from the FDA model and provide those in the technical documentation of findings.

### **Subtask 5.6 - Presentation of Findings and Documentation**

**5.6.1** – Following completion of the NED analysis, HDR will arrange a meeting with the District and USACE to present the results of NED evaluation and to discuss suggested revisions to the economic framework.

**5.6.2** – Following discussion of the results, HDR will prepare an economics technical memorandum documenting the development of the HEC-FDA model and its findings. HDR will also prepare a draft and final technical memorandum.

Deliverables:

- Draft and Final Technical Memorandum.

Assumptions:

- The analysis demonstrates that the Project is economically justified.
- The Presentation Meeting will be a virtual two-hour meeting
- The Technical Memorandum will be finalized in one review iteration.

## **TASK 6. SITE RECONNAISSANCE**

HDR will conduct site reconnaissance investigations of the project area during the design phases. The intent of the site reconnaissance is to confirm field conditions relative to as-built documents, and to assess site characteristics and constraints affecting the alignment and design of key project features. Photographs of site features will be taken, and pertinent observations of site conditions will be recorded.

Deliverables:

- Site photos (digital copies in .jpg format)

Assumptions:

- Assume three field visits with up to five team members for eight hours per visit.
- Permission to enter the private property, if required, will be provided by the District to HDR.
- Environmental-related site visits are captured under Task 3.

**TASK 7. SUPPLEMENTAL SURVEY AND POTHOLING SURVEY FOR FINAL DESIGN**

RSA+ will perform a supplemental survey to include confirmation survey of utilities crossing the flood wall not previously surveyed, trees along the construction limit in the Lake Park area along the water side of the existing Napa River trail, updated topographical and utility survey of the Napa Oxbow Dry Bypass in proximity to the new floodwall locations and miscellaneous confirmation ground survey requests as further described below. The final deliverable will be an updated topographic survey on the same datum as originally prepared.

RSA+ will also coordinate and arrange potholing to include Underground Service Alert (USA) locate marks, and obtain required encroachment permits from the City of Napa. It is assumed permission for access onto private property will be obtained by the District where required, and no boundary survey work is anticipated within this scope and budget. The budget also anticipates this work can be completed when weather and river conditions permit efficient working conditions. Should expediency require fewer ideal circumstances, additional budget may be required to mitigate risks. Attachment 1 provides the locations of the additional survey being requested under this task.

**Subtask 7.1 - Supplemental Survey and Potholing Survey.**

RSA+ will expand the previously prepared survey to include the following:

*a. At Imperial Way and Jordan Lane.*

RSA+ will locate and dip existing drain manhole and provide structure location and size, connected pipe size(s), invert(s), and direction(s). When feasible, RSA+ will identify the materials of the measured items. RSA+ will attempt to locate the associated drainpipe outfall that crosses the floodwall and discharges into the Napa River. This may require some support from the underground subcontractor included in the additional task (Potholing Services Task). Once found, RSA+ will provide the location and invert of the outfall and provide a minimum of two photos of the outfall. The previously prepared survey will be updated to include visible headwall/structure, revetment or scour protection, and trees in proximity. The survey will extend only down to the water level at the time of the survey.

*b. At North Bay Drive and Wall Street.*

RSA+ will dip existing sewer manholes and storm drain inlets. On the survey, RSA+ will identify connected pipe size(s), invert(s), and direction(s). To the extent feasible, RSA+ will also identify material type(s) for connected pipes. RSA+ will attempt to locate associated drainpipe outfall that crosses the floodwall and discharges into the Napa River. This may require some support from the underground subcontractor included in the additional task (Potholing Services Task). Once found, RSA+ will

- provide the location and invert of the outfall and provide a minimum of two photos of the outfall. The previously prepared survey will be updated to include visible headwall/structure, revetment or scour protection, and trees in proximity. The survey will extend only down to the water level at the time of the survey.
- c. *On the Ace and Vine Property near Wall Street.*  
RSA+ will dip the existing sanitary sewer and storm drainage manholes. On the survey, RSA+ will identify connected pipe size(s), invert(s), and direction(s). To the extent feasible, RSA+ will also identify material type(s) for connected pipes.
  - d. *On Lincoln Avenue near Ace & Vine.*  
RSA+ will dip the existing sanitary sewer and storm drainage manholes. On the survey, RSA+ will identify connected pipe size(s), invert(s), and direction(s). To the extent feasible, RSA+ will also identify material type(s) for connected pipes.
  - e. *Near public trail access station 31+25±.*  
RSA+ will locate and dip existing drain manhole and attempt to locate associated drainpipe outfall that crosses the floodwall and discharges into the Napa River. This may require some support from the underground subcontractor included in the additional task (Potholing Services Task). Once found, RSA+ will provide the location and invert of the outfall and provide a minimum of two photos of the outfall. The previously prepared survey will be updated to include visible headwall/structure, revetment or scour protection, and trees in proximity. The survey will extend only down to the water level at the time of the survey.
  - f. *South of Lincoln Avenue.*  
RSA+ will perform an additional topographical ground survey of the revetment and swale outfall near station 0+55±.
  - g. *North of Lincoln Avenue.*  
RSA+ will perform an additional topographical ground and tree survey for an additional 30-foot swath offset from the edge of the existing Napa River Trail's waterside edge between Station 23+00± to Station 30+50±.
  - h. *In the Napa Oxbow Dry Bypass – North.* RSA+ will perform additional topographical and planimetric surveys for the areas east and west of Soscol Avenue. Pick up visible structures, roadways, sidewalks, curbs, abutments, and revetment. On the survey, RSA+ will identify connected pipe size(s), invert(s), and direction(s). To the extent feasible, RSA+ will also identify material type(s) for connected pipes.
  - i. *Potholing Survey.* RSA+ will also survey the location and tops of pipes and other utilities as physically located under the potholing task.

### **Subtask 7.2 - Potholing Services**

RSA+ will complete potholing core of (13+/-) locations with a 12-inch coring drill. Exact locations to be agreed upon in the field and sites will have USA location services performed prior to

potholing activities. Potholing cores will remove AC plug if needed and Vactron native material. Cores will be backfilled with sand, concrete, and AC per City of Napa standards when indicated or required. Traffic or Pedestrian Control Plans will be developed, submitted, and implemented as required for each potholing core location and encroachment permits will be obtained to perform the work.

### **Subtask 7.3 - Imola Avenue to Hatt Building Topographical Survey**

RSA+ will expand the previously prepared survey to include the Imola Avenue to Hatt Building project area by performing the following:

*a. Project Startup and Property Access Administrative Efforts.*

RSA+ will complete the required research and bring survey control through the project along the entirety of the alignment.

*b. Topographic Survey.*

RSA+ will prepare a topographic survey of the project area as identified as Increment 3 in Figure 1. The topographic mapping will be prepared in AutoCAD format and will have contours at an interval of one foot and will be drawn at a scale of 1"=20'. RSA+ will locate visible features within the topo area including fences, structures, conduits, drain inlets, manholes, limits of surfacing materials, power poles, heights to overhead lines, trees greater than 6" DBH. RSA+ will prepare a sectional survey of the areas of bank erosion. These sections will be prepared at no greater than 50-foot intervals and will extend from toe of bank to the top of bank.

The datum will be NAD 83 state plane coordinate system and NAVD 88 vertical datum. No boundary will be provided.

**Deliverables:**

- Supplemental survey information showing updated topographic, planimetric, utility and tree survey information.

**Assumptions:**

- Surveys will be prepared on NAD83/NAVD88 datums or consistent with the data of the digital files for the 35% Design.
- The District will contact private property owners to facilitate access for surveys.
- Real estate surveys will fall under a separate contract with the District.

## **TASK 8. HYDROLOGY AND HYDRAULICS**

For floodwall design, as well as analyzing the potential impacts of the floodwall project, a suite of model conditions is required:

1. Pre-Project Conditions
2. Current Interim Conditions
3. Post-Floodwall Project Conditions
4. Full Buildout Project Conditions

For floodwall design purposes, a HEC-RAS 1-D model for full buildout project conditions—including as-built, current planned, and future components—will be used because it provides the maximum flood elevations in the Napa River.

The HEC-RAS 2-D model for the study reach will be used for examining flow dynamics in the Napa River, including for streambank stabilization design, as well as estimating the flow leaving the river at the Oxbow and other locations.

### **Subtask 8.1 - Hydraulic Modeling – 65% through 100% Design**

River Focus will update the HEC-RAS 1-D and 2-D hydraulic models and floodwall analysis based on the 65%, 95%, and 100% design level plans. Model results will be reviewed and summarized, including computed flood elevations, flood extents, and flow velocities.

River Focus will perform a field reconnaissance investigation of the project area to confirm current river and overbank conditions, and findings will be incorporated into the 65% design hydraulic models.

A quality control review of the updated models will be performed, and internal review comments will be addressed and backchecked. River Focus will also respond to comments from the District and USACE during the review process of the 65%, 95%, and 100% hydraulic models.

#### Deliverables:

- Revised hydraulic models
- Documentation of internal quality control reviews

#### Assumptions:

- Existing USACE hydrology will be used; no revisions to the hydrology are anticipated.

### **Subtask 8.2 - Confirm Floodwall Elevations – 65% through 100% Design**

Using the updated hydraulic model results, River Focus will compute the required freeboard and confirm the required floodwall elevations for the floodwalls north of the bypass. The proposed floodwall will have appropriate freeboard based on FEMA freeboard requirements [44 CFR 65.10(b)(1)(i)], which require the following:

- Minimum freeboard of 3 feet above the base (100-year) flood elevation.
- Minimum freeboard of 4 feet within 100 feet of either side of structures, e.g., bridges
- Minimum freeboard of 3.5 feet at the upstream end, tapering back to the 3-foot minimum.

FEMA floodwall and levee regulations are described further in *Guidance for Flood Risk Analysis and Mapping – Levees* (December 2020 or later).

River Focus will also review the floodwall elevations, base flood elevations, and other hydrology/hydraulic related information on the 65%, 95%, and 100% design level plans prepared by HDR.

Deliverables:

- Required freeboard and floodwall elevations

Assumptions:

- Risk & Uncertainty (R&U) analysis will not be used for determining floodwall elevations and is not included in the scope of work.

**Subtask 8.3 - Analyze Floodwall Drainage and Closures – 65% through 100% Design**

River Focus will confirm where drainage facilities should be placed in the bypass floodwall segments and analyze the required closure structures to meet USACE and FEMA requirements. The XP-STORM hydraulic model for interior drainage will be updated, as needed, and used for analyzing the drainage and closure structure locations.

Deliverables:

- None (results will be included in the DDR)

Assumptions:

- Pump station analysis is not included in this scope of work.

**Subtask 8.4 - Flood Impact Analysis – 65% through 100% Design**

To analyze the potential impacts of the floodwall project, the 1-D hydraulic model results under post-floodwall project conditions will be compared to current interim conditions and/or pre-project conditions. These may be considered temporary impacts.

To analyze permanent impacts, the full buildout project conditions (including the floodwall north of the bypass) will be compared to pre-project conditions. River Focus will determine if properties experience a temporary or permanent increase in 100-year water surface elevation that was not addressed in the project CLOMR.

This analysis will be performed at the 65% through 100% design levels.

Deliverables:

- None (results will be included in the DDR)

**Subtask 8.5 - Scour & Erosion Control Coordination – 65% through 100% Design**

River Focus will provide updated 1-D and 2-D hydraulic models to be used in support of scour and erosion control design. River Focus will coordinate with HDR to answer questions regarding the updated hydraulic models and their use in the scour and erosion control design.

Deliverables:

- Revised 1-D and 2-D hydraulic models

**Subtask 8.6 - Hydraulic Analysis for Economic Impacts**

River Focus will prepare an updated index discharge and water surface elevation table and provide water surface elevation grids for use in HEC-FDA. River Focus will coordinate with HDR

regarding questions and provide additional hydraulic model results required for the economic analysis.

Deliverables:

- Updated index discharge/WSEL table and water surface elevation grids for use in HEC-FDA

Assumptions:

- The economic analysis will be performed for a single design level to be specified by HDR.

### **Subtask 8.7 - DQA and ATR Coordination – 65% through 100% Design**

River Focus will coordinate with HDR to provide support during the USACE review of the 35%, 65%, and 100% Drawings, Specs, OPCC, and DDR.

### **Subtask 8.8 - H&H Sections for DDR – 65% through 100% Design**

River Focus will prepare the relevant hydrology/hydraulics sections of the DDR and coordinate with HDR to provide support for hydrology and/or hydraulics-related questions that arise in other sections of the DDR. The report sections will include an examination and discussion of sea level rise and inland climate change, and their potential impact on the floodwall project.

River Focus will respond to hydrology/hydraulics related comments from the District and USACE during the review process of the 65%, 95%, and 100% DDR.

Deliverables:

- Hydrology/Hydraulics sections of the DDR

### **Subtask 8.9 - H&H Support for Project Meetings**

River Focus will attend project coordination meetings with HDR, the District, and/or USACE, as needed and requested by HDR. River Focus will provide HDR with monthly progress reports and monthly invoices / budget updates. River Focus will also provide HDR with support in developing materials for design review meetings and public review meetings.

Assumptions:

- H&H support is assumed to be required for up to 6 project coordination meetings and 3 design review or public review meetings.

### **Subtask 8.10 - H&H Support for Risk Analysis**

River Focus will use the HEC-RAS 2-D hydraulic model for full buildout project conditions to determine the overtopping flow rates. The frequency of these overtopping flows will be estimated by extrapolation using a flood-frequency curve based on the USACE hydrology. Concurrent flows for major tributaries to the Napa River in the study reach will also be estimated, and extreme event flow hydrographs will be developed for the Napa River and tributaries.

River Focus will model the following four different scenarios for the risk analysis based on direction provided by HDR:

- Overtopping without floodwall breach – two model scenarios
- Floodwall breach prior to overtopping – one model scenario
- Floodwall breach with overtopping – one model scenario

River Focus will adjust the hydraulic model domain, if necessary, to accommodate the extreme floods required for the risk analysis. A sensitivity analysis will be performed for the breach location, with two locations modeled for the floodwall breach prior to overtopping model scenario.

A quality control review of the modeling will be performed, and internal review comments will be addressed and backchecked. River Focus will process and provide to HDR the required model results for the risk analysis, including HDF files, model terrain, and flood boundary polygons.

Deliverables:

- HEC-RAS hydraulic models and results for the risk analysis
- Documentation of internal quality control reviews
- HDF files, model terrain, and flood boundary polygons

Assumptions:

- Floodwall overtopping and/or breach modeling will be performed for full buildout project conditions only.
- Hydrologic analysis is limited to extrapolation of existing USACE hydrology.

## **TASK 9. SCOUR AND EROSION PROTECTION**

The scour and erosion protection analyses conducted for the 35% design will be updated as appropriate to support the 65%, 95%, and 100% designs.

### **Subtask 9.1 - Review of Hydraulic Models**

The scour and erosion protection analyses will be based upon the hydraulic models prepared under Task 8 - Hydrology and Hydraulics. HDR will review the 1-D and 2-D hydraulic modeling to identify changes that need to be reflected in the scour and erosion protection analyses and design as the Project design progresses.

Assumptions:

- It is assumed there will be insignificant changes to the hydraulic models after the 35% design and review of the hydraulic models will be minimal.

### **Subtask 9.2 - Update to Lateral Erosion Analysis**

During the 35% design, HDR performed a lateral erosion analysis to assess the potential scour along the bank of the Napa River. The potential scour was used to estimate the minimum lateral distance the floodwall should be offset from the bank of the Napa River to avoid undermining of the structure and to avoid the need for immediate bank protection. The District will monitor erosion along the Project and implement bank stabilization measures when needed as part of their ongoing operation and maintenance plan.

For the 65%, 95%, and 100% designs, HDR will review the updated hydraulic modeling results, such as WSE, shear stresses, and velocity output and available geotechnical information to update the lateral erosion analysis. Potential scour results from the updated lateral erosion analysis will then be used to confirm the minimum lateral distance the floodwall should be offset from the bank of the Napa River.

Assumptions:

- The analysis will be performed based on the geotechnical data presented in the USACE Napa River Geotechnical Basis of Design Report (BODR) dated February 1998 and supplemented with the test boring and laboratory test data collected by HDR in 2022.

Deliverables:

- Updated scour analysis draft report (65% design).
- Scour analysis final report (95% to 100% design).

### **Subtask 9.3 - Lincoln Avenue Bridge Scour Protection Design**

During the 35% design, HDR used HEC-23 to perform a bridge scour analyses for the Lincoln Avenue Bridge. Pier, abutment, and contraction scour was assessed to design a riprap apron at the bridge crossing.

For the remaining design increments, HDR will work with the District and USACE in exploring alternatives to riprap at the Lincoln Avenue Bridge. After the District and USACE agree on potential alternatives, HDR will contact vendors and evaluate potential alternatives. A maximum of three alternatives will be assessed. Upon District and USACE approval of a potential alternative, HDR will work with vendor for design of erosion countermeasures at the Lincoln Avenue Bridge.

Assumptions:

- HDR will assess up to three potential alternatives.

Deliverables:

- Updated scour analysis draft report (65% design), drawings and specifications.
- Scour analysis final report (95% to 100% design), drawings and specifications.

### **Subtask 9.4 - Design of Scour Countermeasures for Existing Drain Penetrations**

For the remaining design increments, HDR will assess up to eight drainpipe penetration locations. HDR will evaluate if scour protection is required to prevent erosion resulting from pipe discharge. If there is existing scour protection at a location, HDR will assess if the existing scour protection is adequate. If scour protection is required or if existing scour protection is deemed inadequate, HDR will coordinate with the District and USACE with options such as riprap apron and/or vegetation design. Upon District and USACE approval of a potential option, HDR will design appropriate scour protection for locations deemed necessary.

The following is a list of the drainpipe penetration locations to be assessed. The list was compiled from the 35% design drawings.

1. Station 0+60 - Alignment South, drawing number CU101.
2. Station 4+97 - Alignment South, drawing number CU102.
3. Station 14+31 - Alignment South, drawing number CU104.
4. Station 22+67 - Alignment South, drawing number CU106.
5. Station 2+75 - Alignment North, drawing number CU107.
6. Station 31+39 - Alignment North, drawing number CU108.
7. Station 36+74 - Alignment North, drawing number CU109.
8. Station 8+00 - Dry Bypass, drawing number CG109.

Deliverables:

- Updated scour analysis draft report (65% design), drawings and specifications.
- Scour analysis final report (95% to 100% design), drawings and specifications.

## **TASK 10. GEOTECHNICAL**

### **Subtask 10.1 - Field Exploration and Laboratory Testing**

Geotechnical analysis and design of the project will be based on the geotechnical data presented in the February 1998 USACE Napa River Geotechnical Basis of Design Report (BODR) and supplemented with the test boring and laboratory test data collected by HDR in 2022 as part of the 35 percent design. However, the currently proposed flood wall in the vicinity of the Ace & Vine building will follow a different alignment and wall design approach than what was presented by USACE in their October 1998 Final Supplemental General Design Memorandum (SGDM), Volumes I and II, and July 2012 Limited Reevaluation Report (LRR). The proposed flood wall alignment and design that is currently being considered will require information on subsurface conditions deeper than the 40 feet that the previous USACE borings in this area.

HDR proposes to perform up to two borings in paved or readily accessible unpaved areas in the vicinity of the Ace & Vine building to depths of about 60 feet. Prior to conducting the field work, HDR will prepare a Field Work Plan and Health and Safety Plan, obtain the applicable encroachment and drilling permits, check site access, and check for the presence of underground utilities by contacting USA. The HDR team will retain and coordinate with appropriate exploration subcontractors to select appropriate exploration equipment to access the desired exploration locations, to the extent that is reasonable and practical.

Drill cuttings and fluids will be generated from the borings, which will be contained in drums. HDR's scope and fee assume that drums can be temporarily stored on site. Following chemical testing of samples of the drummed materials, HDR will arrange to have the materials transported to an appropriate disposal facility. This scope and fee assume that the subsurface materials encountered are free of contaminants.

A laboratory testing subcontractor will be retained to perform geotechnical laboratory tests on selected samples obtained from the borings. Testing will include moisture content, density, Atterberg limits, gradation, consolidation, and shear strength, as appropriate.

## Subtask 10.2 - Geotechnical Engineering Analyses and Recommendations

HDR will perform engineering analyses to develop geotechnical conclusions and recommendations for the design of the proposed project. Stability and seepage analyses for up to six cross sections will be performed as part of this subtask. Cross section locations will be selected during design. At this time, it is anticipated that cross sections will be located at the following locations:

- A representative location between the southern end of the project and the Ace & Vine area
- Ace & Vine area
- At/near Station 6+20 in the RiverPointe Napa Valley Resort area
- At/near Station 15+00 south of the Lake Park area
- At/near Station 32+00 in the Lake Park area
- At/near Station 36+74 in the 72-inch storm drain area

For each cross-section location, it is anticipated that stability and seepage analyses will be performed for one floodwall geometry and one design water surface elevation for the following conditions, as appropriate:

- Stability at the end of floodwall construction
- Stability under rapid flood loading conditions
- Stability under rapid drawdown loading conditions (when floodwaters recede)
- Transient seepage at up to two of the cross-sections in the Lake Park area and steady-state seepage at the other cross-sections (both levee through seepage and underseepage)
- Stability under seismic loading, including estimated magnitudes of liquefaction induced levee and floodwall settlement and lateral deformation

HDR will develop and present geotechnical discussion, conclusions and recommendations for the following, as appropriate:

- Discussion of the potential for seismic hazards including liquefaction
- Recommendations for earthwork, including subgrade preparation, allowable fill materials, placement and compaction of fill, and suitability of onsite soil for use as fill
- Foundation design recommendations for floodwalls, including foundation type, allowable bearing capacities, and lateral load resistance
- Estimates of total and differential foundations settlement
- Discussion of the need for additional elements for lateral resistance such as tiebacks, and geotechnical recommendations for tieback design including limits of bonded and unbonded zones, and minimum capacity and tieback testing requirements

This scope and fee do not include the development and implementation of liquefaction mitigation measures, such as soil improvement. Should such conditions be encountered, the District would need to weigh the cost and benefit of liquefaction mitigation measures versus the risks. This issue would need to be addressed as a separate topic if it arises.

The results of geotechnical engineering analyses, and geotechnical discussion, conclusions and recommendations will be included as part of the DDR.

## **TASK 11. STRUCTURAL**

The structural work shall include the design and/or analysis of floodwalls, inclusive of both concrete T- walls and sheet pile I-walls, transitions, tie-ins to existing structures, and closure gate structures. The structural scope will take the previously developed 30% design through the final design to completion. It is understood that at the 30% level the new floodwalls were designed to using the controlling load cases from EM 1110-2-2502 with wall geometries that have been established. The following activities are anticipated:

- Prepare the stability analysis of the concrete floodwall for the remaining load cases specified in EM 1110-2-2502.
- Analysis of the sheet pile I-walls to determine sheet pile sizes and embedment depths
- Strength design and reinforcement details for the concrete T-walls.
- Analysis and design of the closure gate structures at the Ace and Vine location. The closure gate structures are assumed to be manually operated single leaf steel swing gates. One gate design (opening and height) has been assumed for the design. The one gate design will be utilized for both openings at the Ace and Vine location.
- Special design considerations and detailing for the sheet pile wall above the 72-inch water main
- Tie-in details of the new concrete flood to existing structures
- Details of the sheet pile I-wall to concrete T-wall transitions
- Details of the floodwall to high ground transitions

The floodwall and closure gate structures of the project shall be designed in accordance with the applicable portions of the USACE engineering manuals for structural works construction and applicable portions of industry codes referenced below. Designs shall be based on established engineering practices, incorporating software packages when it has been demonstrated that such software yields efficient designs.

The design documentation report developed as part of the 30% design will be updated to include design changes, calculations, analysis, and analysis assumptions used for developing the floodwall and closure gate structure design. The updated design documentation report will be included with each design submittal (65%, 95%, 100%). The previously submitted technical specification table of content will be used as the basis for the development of technical specifications which will be delivered with each design submittal.

The following USACE engineer manuals, engineer technical letters, and engineer circulars shall be utilized in the structural design (latest versions shall be used).

- EM 1110-2-2000, Standard Practice for Concrete for Civil Works Structures
- EM 1110-2-2007, Structural Design of Concrete Lined Flood Control Channels
- EM 1110-2-2100, Stability Analysis of Concrete Hydraulic Structures
- EM 1110-2-2102, Waterstops and Other Preformed Joint Materials for Civil Works Structures EM 1110-2-2104, Strength Design for Reinforced Concrete Hydraulic Structures
- EM 1110-2-2502, Retaining and Flood Walls
- EM 1110-2-2902, Conduits, Culverts and Pipes, Changes 1-3
- EM 1110-2-2107, Design of Hydraulic Steel Structures
- American Concrete Institute (ACI). Building Code Requirements for Structural Concrete (ACI 318).
- American Institute of Steel Construction (AISC). Specification for Structural Steel Buildings (ANSI/AISC 360)
- American Society of Civil Engineers, Minimum Design Loads and associated criteria for Buildings and Other Structures (ASCE/SEI 7)
- American Welding Society, Structural Welding Code, Steel (AWS-D1.1/D1.1M)  
American Welding Society, Bridge Welding Code (AASHTO/AWS-D1.5/D1.5M)
- Hurricane and Storm Damage Risk Reduction System (HSDRRS) Design Guidelines

The following software will be utilized in the structural design:

- MathCAD
- Microsoft Office
- SAP2000
- CWALSHT
- ProSheet

## **TASK 12. FINAL 35% DESIGN**

### **Subtask 12.1 – Update Draft 35% Designs**

The HDR team developed Draft 35% Designs, which includes Drawings, Opinion of Probable Construction Costs (OPCC), Design Documentation Report (DDR) and an Outline of Technical Specifications (Specs), under an earlier contract with the District. The Draft 35% Designs will be updated to include modifications to the Ace & Vine and Lake Park project areas and Final 35% Designs will be submitted to the District and the USACE for ATR. The Final Designs will be the basis for the design moving forward.

### **Subtask 12.2 – District Quality Assurance (DQA) and Agency Technical Review (ATR) and Coordination**

The HDR team will coordinate with the District and USACE on the Internal Agency Review, DQA, and ATR. The USACE will identify DQA and ATR members and will perform the DQA and

ATR internally. The District will identify the Internal Agency Review members for review of the 35% Drawings, Specs, OPCC, and DDR. The HDR team will support the District in conducting a Technical Review Conference. The purpose of the conference will be to provide the project background and present the key features of the 35% designs. The HDR technical leads will present an overview of the engineering analysis to support the 35% designs. Comments from the Internal Agency Review, DQA, and ATR will be combined and provided to HDR to address. HDR will respond to Internal Agency Review, DQA, and ATR comments and work with the District and USACE to resolve comments.

Deliverables:

- Written response to comments from the Internal Agency Review, DQA, and ATR in DRChecks.

Assumptions:

- HDR will submit to the District the 35% Design Package and the District will submit the 35% Design Package to the USACE and Agencies for Internal Agency Review, DQA and ATR.
- Technical Review Conference among HDR, District, and the USACE will be a four-hour meeting that can be conducted either in-person or virtual.
- The District & USACE will have two weeks to review the 35% Design Package.
- The USACE will perform the DQA and ATR internally and comments will be submitted to the District.
- The DQA and ATR will be conducted by select technical leads (USACE design leads) selected by the USACE.
- The District will perform an Internal Agency Review (i.e., District, City, Utility, Real Estate)
- The Internal Agency Review will be coordinated by the District with the respective Agencies.
- The District will compile Internal Agency Review Comments with DQA and ATR comments and submit to HDR for review and response.
- Assumes responses for up to 100 Internal Agency Review, DQA, and ATR comments

**TASK 13. 65% DESIGN**

This task will build on work completed as a part of the 35% design development. The level of detail provided in the Drawings, Technical Specifications (Specs), Opinion of Probable Construction Costs (OPCC) and Construction Schedule and Design Documentation Report (DDR) will be expanded and refined as the design progresses through 65%, design increment. The submittal will also include written responses to DQA and ATR comments on the 35% design submittal.

HDR will compile and review existing record information and design standards relevant to the design effort for pipelines, utilities, real estate, and other relevant materials to facilitate coordination with the respective agency/owner.

HDR will coordinate with the respective agency/owner for modifications to public/City maintained utilities (water, sewer, and drainage system) impacted by the Project. HDR will prepare designs for the respective utilities in accordance with local and state standards and codes. These designs will be provided to the respective agency for comment and review for each increment of design.

HDR will coordinate with the respective private utility owners (e.g., PG&E, AT&T) impacted by the Project. The design of private utility modifications will be done by the respective owner and HDR will be responsible for providing information and coordination with the private utility owner about the Project features and requirements to resolve conflicts.

HDR will provide continued coordination with the District on Project needs for temporary and permanent real estate.

HDR will coordinate engineering with the environmental team to support the Supplemental EA/EIR. This includes effort to estimate equipment types, their usage duration, and the overall construction duration, as well as quantify impact areas commonly called permanent and temporary construction limits.

### **Subtask 13.1 - 65% Drawings**

HDR will complete 65% Design level drawings. The drawings will be prepared using AutoCAD software. These drawings will further refine and advance the 35% design level drawings and will include general project layouts, updated survey and mapping data, floodwall alignments and profiles, typical sections, utility abandonment and relocations details, revetment details, structural details, landscaping and permanent irrigation, and other necessary information to develop construction drawings.

Deliverables:

- 65% Drawings (11" x 17" PDF)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level Drawings will be submitted for HDR's Internal Review and Final 65% Drawings will be submitted to the District for review.
- USACE drafting standards will be followed for development of Drawings.
- One round of District and USACE Review will be performed for each design increment.
- The drawings will be developed in accordance with ER 1110-2-1150.

### **Subtask 13.2 - 65% Specs**

Specs will be drafted based on the outline of technical specifications developed during the 35% design and will include specifications for design features.

Deliverables:

- 65% Technical Specifications as individual specifications (Microsoft Word)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR for will be developed in parallel.
- Draft level specs will be submitted for HDR's Internal Review and Final 65% Drawings will be submitted to the District for review.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.
- The technical specifications will be developed in accordance with ER 1110-2-1150.

**Subtask 13.3 - 65% OPCC and Construction Schedule**

The opinion of probable construction costs will be prepared in Microcomputer Aided Cost Estimating System (MCACES) version 4.4.3 or later. Cost data will be based on current equipment rates (Region VII equipment library), local labor libraries (DBA and SCA rates current as of estimate submittal) and material prices (local price quotations or other justifiable assumptions or sources). Costs will be escalated to the midpoint of construction. The MCACES Cost Book will be the 2022 release when used. Reasonable assumptions of construction methodology will be made when developing crews, production rates, and pricing and assumptions will be documented in the project notes.

Appropriate contingencies will be added to the costs consistent with ER 1110-2-1302 if requested by USACE Cost Engineering staff and notable cost risks will be described in the report. A formal cost schedule risk analysis will not be performed. Quantity take-offs will be prepared in AutoCAD, with onscreen software, or in Microsoft Excel. Backup documentation will include quantity takeoffs, key assumptions of construction methods and indirect costs, and sources of cost information. A total project cost summary (TPCS) will not be prepared. Coordination meetings with the USACE and the District will occur to discuss estimate assumptions and project cost constraints.

A construction schedule will be prepared in Gantt chart format displaying major work items with start times, completion times, and durations. The construction schedule will be supported by the construction sequencing, work breakdown structure, and durations detailed in the OPCC. The schedule will be used as the basis for determining construction contract duration and applied to indirect costs in the OPCC as appropriate. The schedule will be prepared in Microsoft Project or equivalent scheduling software.

Deliverables:

- 65% OPCC MCACES Cost Report (PDF) and native file (.mlp)
- Cost estimate backup documentation (takeoffs, production calculations, cost quotations, basis of rates).
- Construction schedule (PDF and native file)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- The OPCC will conform to USACE ER 1110-2-1302, UFC 3-740-05, and the document Cost Estimate Enclosure for AE SOW\_20200304 and will be prepared in detail matching the level of design.

- The 65% OPCC will be a Class 3 estimate (ASTM E 2516-06).
- A total project cost summary will not be submitted.
- A cost schedule risk analysis will not be conducted.

#### **Subtask 13.4 - 65% DDR**

The DDR is intended to be a living document that will be updated at each increment of design and will provide documentation and justification for the assumptions used in analyses, calculations, and designs.

Deliverables:

- 65% DDR (PDF)

Assumptions:

- The DDR will be developed in accordance with ER 1110-2-1150.

#### **Subtask 13.5 – District Quality Assurance and Agency Technical Review Coordination**

The HDR Team will coordinate with the District and USACE on the Internal Agency Review, DQA and ATR. The USACE will identify DQA and ATR members and will perform the DQA and ATR internally. The District will identify the Internal Agency Review members for review of the 65% Design Package. The HDR team will support the District in conducting a Technical Review Conference. The purpose of the conference will be to provide the project background and present the key features of the 65% designs. The HDR technical leads will present an overview of the engineering analysis to support the 65% designs. Comments from the Internal Agency Review, DQA and ATR will be combined and provided to HDR to address. HDR will respond to Internal Agency Review, DQA, and ATR comments and work with the District and USACE to resolve comments.

Deliverables:

- Written response to comments from the Internal Agency Review, DQA, and ATR in DRChecks.

Assumptions:

- HDR will submit to the District the 65% Design Package and the District will submit the 65% Design Package to the USACE and Agencies for Internal Agency Review, DQA, and ATR.
- Technical Review Conference between HDR, District, and the USACE will be a four-hour meeting that can be conducted either in-person or virtual.
- The District & USACE will have two weeks to review the 65% Design Package.
- The USACE will perform the DQA and ATR internally and comments will be submitted to the District.
- The DQA and ATR will be conducted by select technical (USACE design leads) leads selected by the USACE.
- The District will perform an Internal Agency Review (i.e., District, City, Utility, Real Estate)

- The Internal Agency Review will be coordinated by the District with the respective Agencies.
- The District will compile Internal Agency Review Comments with DQA and ATR comments and submit to HDR for review and response.
- Assumes responses for up to 100 Internal Agency Review, DQA and ATR comments

### **Subtask 13.6 – Safety Assurance Review Coordination (SAR)**

The Board Of Senior Consultants (BOSC) will be responsible for providing a safety assurance review for the Project who will make independent findings about conditions which may affect the safety of the Project. The HDR Team will coordinate with the District, USACE and the BOSC with meetings and responses to comments. It is anticipated that the BOSC will participate in two meetings for each design increment. The 65% Design first meeting, HDR will present and walk through the 65% Project with the BOSC. The BOSC will then have 2 weeks to review the Project and present their findings. Their findings will be provided to the District who will submit the findings to HDR and the USACE. HDR will respond in kind and the USACE will provide concurrence with the responses. . A second meeting will be held to discuss the responses or changes to the Project.

Deliverables:

- Written response to comments from the BOSC.

Assumptions:

- Two (4-hour) in-person meetings attended by up to five HDR technical leads
- The District will lead the solicitation of a BOSC.
- The USACE will review and approve the District RFQ for BOSC solicitation.
- The BOSC will consist of persons independent from HDR with national or regional expertise in their respective fields who will perform an independent safety review of the project. The District will submit qualifications for the BOSC members to the USACE for approval.
- The BOSC will be managed by the District.

### **TASK 14. 95% DESIGN**

The 95% design submittal will be an updated set of drawings, technical specifications, OPCC and Construction Schedule, and DDR expanded on the 65% design submittal. The submittal will also include written responses to ATR and SAR comments on the 65% design submittal.

HDR will coordinate with the respective agency/owner for modifications to public/City maintained utilities (water, sewer, and drainage system) impacted by the Project. HDR will prepare designs for the respective utilities in accordance with local and state standards and codes. These designs will be provided to the respective agency for comment and review for each increment of design.

HDR will coordinate with the respective private utility owners (e.g., PG&E, AT&T) impacted by the Project. The design of private utility modifications will be done by the respective owner and

HDR will be responsible for providing information and coordination with the private utility owner about the Project features and requirements to resolve conflicts.

HDR will provide continued coordination with the District on Project needs for temporary and permanent real estate.

HDR will coordinate engineering with the environmental team to support the Supplemental EA/EIR. This includes effort to estimate equipment types, their usage duration, the overall construction duration, and quantify impact areas commonly called permanent and temporary construction limits.

#### **Subtask 14.1 - 95% Drawings**

HDR will complete 95% Design level drawings. The drawings will be prepared using AutoCAD software. These drawings will further refine and advance the 65% design level drawings and will include general project layouts, updated survey and mapping data, floodwall alignments and profiles, typical sections, utility abandonment and relocations details, revetment details, structural details, landscaping and permanent irrigation, and other necessary information to develop construction drawings.

Deliverables:

- 95% Drawings (11" x 17" PDF)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level Drawings will be submitted for HDR's Internal Review and Final 95% Drawings will be submitted to the District for review.
- USACE drafting standards will be followed for development of Drawings.
- One round of District and USACE Review will be performed for each design increment.
- The drawings will be developed in accordance with ER 1110-2-1150.

#### **Subtask 14.2 - 95% Specs**

The 95% Specs will be a further refinement of the 65% specifications and will include specifications for design features.

Deliverables:

- 95% Technical Specifications as individual specifications (Microsoft Word)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level specs will be submitted for HDR's Internal Review and Final 65% Drawings will be submitted to the District for review.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.
- The technical specifications will be developed in accordance with ER 1110-2-1150.

### **Subtask 14.3 - 95% OPCC and Construction Schedule**

The opinion of probable construction costs will be prepared in MCACES version 4.4.3 or later. Cost data will be based on current equipment rates (Region VII equipment library), local labor libraries (DBA and SCA rates current as of estimate submittal) and material prices (local price quotations or other justifiable assumptions or sources). Costs will be escalated to the midpoint of construction. The MCACES Cost Book will be the 2022 release when used. Reasonable assumptions of construction methodology will be made when developing crews, production rates, and pricing and assumptions will be documented in the project notes.

Appropriate contingencies will be added to the costs consistent with ER 1110-2-1302 if requested by USACE Cost Engineering staff and notable cost risks will be described in the report. A formal cost schedule risk analysis will not be performed. Quantity take-offs will be prepared in AutoCAD, with onscreen software, or in Microsoft Excel. Backup documentation will include quantity takeoffs, key assumptions of construction methods and indirect costs, and sources of cost information. A total project cost summary (TPCS) will not be prepared. Coordination meetings with the USACE and the District will occur to discuss estimate assumptions and project cost constraints.

A construction schedule will be prepared in Gantt chart format displaying major work items with start times, completion times, and durations. The construction schedule will be supported by the construction sequencing, work breakdown structure, and durations detailed in the OPCC. The schedule will be used as the basis for determining construction contract duration and applied to indirect costs in the OPCC as appropriate. The schedule will be prepared in Microsoft Project or equivalent scheduling software.

#### **Deliverables:**

- 95% OPCC MCACES Cost Report (PDF) and native file (.mlp)
- Written responses to comments on the 65% OPCC Submittal.
- Cost estimate backup documentation (takeoffs, production calculations, cost quotations, basis of rates).
- Construction schedule (PDF and native file)

#### **Assumptions:**

- The Drawings, Specifications, OPCC, and DDR for will be developed in parallel.
- The OPCC will conform to USACE ER 1110-2-1302, UFC 3-740-05, and the document Cost Estimate Enclosure for AE SOW\_20200304 and will be prepared in detail matching the level of design.
- The 95% OPCC will be a Class 2 estimate (ASTM E 2516-06).
- A total project cost summary will not be submitted.
- A cost schedule risk analysis will not be conducted.

#### **Subtask 14.4 - 95% DDR**

The DDR is intended to be a living document that will be updated at each increment of design and will provide documentation and justification for the assumptions used in analyses, calculations, and designs.

Deliverables:

- 95% DDR (PDF)

Assumptions:

- The DDR will be developed in accordance with ER 1110-2-1150.

#### **Subtask 14.5 - District Quality Assurance and Agency Technical Review Coordination**

The HDR Team will coordinate with the District and USACE on the Internal Agency Review, DQA and ATR. The USACE will identify DQA and ATR members and will perform the DQA and ATR internally. The District will identify the Internal Agency Review members for review of the 65% Design Package. The HDR team will support the District in conducting a Technical Review Conference. The purpose of the conference will be to provide the project background and present the key features of the 95% designs. The HDR technical leads will present an overview of the engineering analysis to support the 95% designs. Comments from the Internal Agency Review, DQA and ATR will be combined and provided to HDR to address. HDR will respond to Internal Agency Review, DQA & ATR comments and work with the District and USACE to resolve comments.

Deliverables:

- Written response to comments from the Internal Agency Review, DQA & ATR in DRChecks.

Assumptions:

- HDR will submit to the District the 95% Design Package and the District will submit the 95% Design Package to the USACE and Agencies for Internal Agency Review, DQA and ATR.
- Technical Review Conference between HDR, District, and the USACE will be a four-hour meeting that can be conducted either in-person or virtual.
- The District & USACE will have two weeks to review the 95% Design Package.
- The USACE will perform the DQA and ATR internally and comments will be submitted to the District.
- The DQA and ATR will be conducted by select technical (USACE design leads) leads selected by the USACE.
- The District will perform an Internal Agency Review (i.e., District, City, Utility, Real Estate)
- The Internal Agency Review will be coordinated by the District with the respective Agencies.
- The District will compile Internal Agency Review Comments with DQA and ATR comments and submit to HDR for review and response.
- Assumes responses for up to 75 Internal Agency Review, DQA and ATR comments

### **Subtask 14.6 - Safety Assurance Review Coordination**

The BOSC will be responsible for providing a safety assurance review for the Project who will make independent findings about conditions which may affect the safety of the Project. The HDR Team will coordinate with the District, USACE and the BOSC with meetings and responses to comments. It is anticipated that the BOSC will participate in two meetings for each design increment. The 95% Design first meeting, HDR will present and walk through the 95% Project with the BOSC. The BOSC will then have two weeks to review the Project and present their findings. Their findings will be provided to the District who will submit the findings to HDR and the USACE. HDR will respond in kind and the USACE will provide concurrence with the responses. A second meeting will be held to discuss the responses or changes to the Project.

#### **Deliverables:**

- Written response to comments from the BOSC.

#### **Assumptions:**

- Two (four-hour) in-person meetings attended by up to five HDR technical leads
- The District will lead the solicitation of a BOSC.
- The USACE will review and approve the District RFQ for BOSC solicitation.
- The BOSC will consist of persons independent from HDR with national or regional expertise in their respective fields who will perform an independent safety review of the project. The District will submit qualifications for the BOSC members to the USACE for approval.
- The BOSC will be managed by the District.

### **TASK 15. 100% DESIGN**

The 100% design submittal will be an updated set of drawings, technical specifications, OPCC and DDR expanded on the 95% design submittal. The submittal will also include written responses to ATR and SAR comments on the 95% design submittal.

HDR will coordinate with the respective agency/owner for modifications to public/City maintained utilities (water, sewer, and drainage system) impacted by the Project. HDR will prepare designs for the respective utilities in accordance with local and state standards and codes. These designs will be provided to the respective agency for comment and review for each increment of design.

HDR will coordinate with the respective private utility owners (e.g., PG&E, AT&T) impacted by the Project. The design of private utility modifications will be done by the respective owner and HDR will be responsible for providing information and coordination with the private utility owner about the Project features and requirements to resolve conflicts.

HDR will coordinate with the respective owner/District for modifications to existing ornamental landscape and landscape irrigation systems impacted by the Project. HDR will provide ornamental and native planting restoration design drawings for select areas of the Project to be agreed upon with the District. Where temporary landscape irrigation is not practical for landscape establishment HDR will prepare design drawings for required permanent irrigation.

HDR will provide continued coordination with the District on Project needs for temporary and permanent real estate.

HDR will coordinate engineering with the environmental team to support the Supplemental EA/EIR. This includes effort to estimate equipment types, their usage duration, the overall construction duration, and quantify impact areas commonly called permanent and temporary construction limits.

### **Subtask 15.1 - 100% Drawings**

HDR will complete 100% Design level drawings. The drawings will be prepared using AutoCAD software. These drawings will further refine and advance the 95% design level drawings and will include general project layouts, updated survey and mapping data, floodwall alignments and profiles, typical sections, utility abandonment and relocations details, revetment details, structural details, landscaping and permanent irrigation, and other necessary information to develop construction drawings.

Deliverables:

- 100% Drawings (11" x 17" PDF)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level Drawings will be submitted for HDR's Internal Review and Final 65% Drawings will be submitted to the District for review.
- USACE drafting standards will be followed for development of Drawings.
- One round of District and USACE Review will be performed for each design increment.
- The drawings will be developed in accordance with ER 1110-2-1150.

### **Subtask 15.2 - 100% Specs**

The 100% Specs will be a further refinement of the 95% specifications and will include specifications for design features.

Deliverables:

- 100% Technical Specifications as individual specifications (Microsoft Word)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level specs will be submitted for HDR's Internal Review and Final 65% Drawings will be submitted to the District for review.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.
- The technical specifications will be developed in accordance with ER 1110-2-1150.

### **Subtask 15.3 - 100% OPCC and Construction Schedule**

The opinion of probable construction costs will be prepared in MCACES version 4.4.3 or later. Cost data will be based on current equipment rates (Region VII equipment library), local labor



libraries (DBA and SCA rates current as of estimate submittal) and material prices (local price quotations or other justifiable assumptions or sources). Costs will be escalated to the midpoint of construction. The MCACES Cost Book will be the 2022 release when used. Reasonable assumptions of construction methodology will be made when developing crews, production rates, and pricing and assumptions will be documented in the project notes.

Appropriate contingencies will be added to the costs consistent with ER 1110-2-1302 if requested by USACE Cost Engineering staff and notable cost risks will be described in the report. A formal cost schedule risk analysis will not be performed. Quantity take-offs will be prepared in AutoCAD, with onscreen software, or in Microsoft Excel. Backup documentation will include quantity takeoffs, key assumptions of construction methods and indirect costs, and sources of cost information. A total project cost summary (TPCS) will not be prepared. Coordination meetings with the USACE and the District will occur to discuss estimate assumptions and project cost constraints.

A construction schedule will be prepared in Gantt chart format displaying major work items with start times, completion times, and durations. The construction schedule will be supported by the construction sequencing, work breakdown structure, and durations detailed in the OPCC. The schedule will be used as the basis for determining construction contract duration and applied to indirect costs in the OPCC as appropriate. The schedule will be prepared in Microsoft Project or equivalent scheduling software.

**Deliverables:**

- 100% OPCC MCACES Cost Report (PDF) and native file (.mlp)
- Written responses to comments on the 95% OPCC Submittal.
- Cost estimate backup documentation (takeoffs, production calculations, cost quotations, basis of rates).
- Construction schedule (PDF and native file)

**Assumptions:**

- The Drawings, Specifications, OPCC, and DDR for will be developed in parallel.
- The OPCC will conform to USACE ER 1110-2-1302, UFC 3-740-05, and the document Cost Estimate Enclosure for AE SOW\_20200304 and will be prepared in detail matching the level of design.
- The 100% OPCC will be a Class 1 estimate (ASTM E 2516-06).
- A total project cost summary will not be submitted.
- A cost schedule risk analysis will not be conducted.

**Subtask 15.4 - 100% DDR**

The DDR is intended to be a living document that will be updated at each increment of design and will provide documentation and justification for the assumptions used in analyses, calculations, and designs.

**Deliverables:**

- 100% DDR (PDF)

Assumptions:

- The DDR will be developed in accordance with ER 1110-2-1150.

**Subtask 15.5 - District Quality Assurance and Agency Technical Review Coordination**

The HDR Team will coordinate with the District and USACE on the Internal Agency Review, DQA and ATR. The USACE will identify DQA and ATR members and will perform the DQA and ATR internally. The District will identify the Internal Agency Review members for review of the 100% Design Package. The HDR team will support the District in conducting a Technical Review Conference. The purpose of the conference will be to provide the project background and present the key features of the 100% designs. The HDR technical leads will present an overview of the engineering analysis to support the 100% designs. Comments from the Internal Agency Review, DQA and ATR will be combined and provided to HDR to address. HDR will respond to Internal Agency Review, DQA & ATR comments and work with the District and USACE to resolve comments.

Deliverables:

- Written response to comments from the Internal Agency Review, DQA, and ATR in DRChecks.

Assumptions:

- HDR will submit to the District the 65% Design Package and the District will submit the 100% Design Package to the USACE and Agencies for Internal Agency Review, DQA, and ATR.
- Technical Review Conference between HDR, District, and the USACE will be a four-hour meeting that can be conducted either in-person or virtual.
- The District & USACE will have two weeks to review the 100% Design Package.
- The USACE will perform the DQA and ATR internally and comments will be submitted to the District.
- The DQA and ATR will be conducted by select technical (USACE design leads) leads selected by the USACE.
- The District will perform an Internal Agency Review (i.e., District, City, Utility, Real Estate)
- The Internal Agency Review will be coordinated by the District with the respective Agencies.
- The District will compile Internal Agency Review Comments with DQA and ATR comments and submit to HDR for review and response.
- Assumes responses for up to 25 Internal Agency Review, DQA and ATR comments

**Subtask 15.6 –Safety Assurance Review Coordination**

The BOSC will be responsible for providing a safety assurance review for the Project who will make independent findings about conditions which may affect the safety of the Project. The HDR Team will coordinate with the District, USACE and the BOSC with meetings and responses to comments. It is anticipated that the BOSC will participate in two meetings for each design increment. The 100% Design first meeting, HDR will present and walk through the 100%

Project with the BOSC. The BOSC will then have 2 weeks to review the Project and present their findings. Their findings will be provided to the District who will submit the findings to HDR and the USACE. HDR will respond in kind and the USACE will provide concurrence with the responses. . A second meeting will be held to discuss the responses or changes to the Project.

Deliverables:

- Written response to comments from the BOSC.

Assumptions:

- Two (four-hour) in-person meetings attended by up to five HDR technical leads
- The District will lead the solicitation of a BOSC.
- The USACE will review and approve the District RFQ for BOSC solicitation.
- The BOSC will consist of persons independent from HDR with national or regional expertise in their respective fields who will perform an independent safety review of the project. The District will submit qualifications for the BOSC members to the USACE for approval.
- The BOSC will be managed by the District.

## **TASK 16. PUBLIC MEETINGS**

The District will lead the public meeting efforts with support from HDR's technical leads for two public meetings. HDR meeting support will focus on preparation and production of meeting materials.

Deliverables:

- Production of materials for public meetings which may consist of graphic renderings, power point presentations, and informational pamphlets.

Assumptions:

- Meetings will be in person and attended by up to three HDR personnel
- Materials needed for public meetings can be derived from work products associated with the above tasks.
- Two (four-hour) Project-Wide Public Meetings

## **TASK 17. EVALUATE ALIGNMENT ALTERNATIVES FOR THE ACE & VINE AREA**

HDR will work closely with the District and their real estate consultant and stakeholders, as appropriate, to determine a rough magnitude cost for an alternative for the Ace & Vine area that shifts the floodwall alignment along the top of bank of the Napa River.

Feasibility level design (modifying the drawings developed for the PBR) and opinion of costs will be prepared for the alternative. Detailed descriptions of the steps for development of the alternative follow.

### **Subtask 17.1 - Perform Feasibility Level Design**

HDR will develop Feasibility level designs of the key features for the floodwall alternative based on the proposed top of bank floodwall alignment. Design will consist of a plan layout of the area

and will focus on type, size and location (to include alignment) of the flood protection. General assumptions will be made to reflect hydraulic, geotechnical, structural, and civil engineering aspects. The design will be progressed to a Feasibility level, which be used to support assessment of real estate needs and to develop Opinion of Probable Construction Costs (OPCC).

Access and construction considerations, as well as potential impacts to adjacent properties, and need for easements will be considered as part of the Feasibility design. Rough quantities will be calculated for the various key facility types.

Deliverables:

- Draft Feasibility Level Ace & Vine Design Plan
- Final Feasibility Level Ace & Vine Design Plan

Assumptions:

- One iteration of the design drawings will be prepared.

### **Subtask 17.2 - Develop Opinion of Probable Construction, Operation and Maintenance Costs**

The original cost estimate for the PBR floodwall alignment will be broken out for the impacted change and compared to the new costs associate with the alternative for the Ace & Vine area. HDR will prepare updated quantities and an OPCC for the Ace & Vine alternative based on the developed Feasibility level designs and compare these costs with the costs broken out of the section of the PBR floodwall alignment. The estimate will be Class 4 per USACE Engineering Regulation (ER) 1110-2-1302. OPCCs will be prepared in Microsoft Excel, and key assumptions will be documented. Takeoffs will be prepared in AutoCAD, with onscreen software, or calculated in excel. Appropriate contingencies will be added to the costs and notable cost risks will be described in the report. Cost data will be based on local construction market conditions, previous project cost estimates, and reasonable assumptions of construction methodology and associated labor, equipment, and material costs.

Deliverables:

- Draft OPCC Memorandum and Spreadsheet
- Final OPCC Memorandum and Spreadsheet

Assumptions:

- One iteration of the memorandum will be prepared.

### **Subtask 17.3 - Coordination Meetings**

HDR will attend up to two one-hour coordination meetings with the District and Stakeholders to discuss and defined design intent, identify key project constraints and issues and progress the feasibility designs.

Deliverables:

- Meeting agendas and notes
- Written responses to inquiries

Assumptions:

- Two one-hour meetings for three HDR personnel.

### **TASK 18. EXPANSION OF TOPOGRAPHIC SURVEY FOR ACE & VINE AND LINCOLN BRIDGE ANALYSIS**

RSA+ will expand the previously prepared topographic ground survey to include the area as generally outlined in red on the attached exhibit. This will be incorporated into the previously prepared work and a new file will be provided.

Deliverables:

- Consolidated base map (AutoCAD 2018 or newer) Topographic Survey showing updated topographic information at 1-foot contour intervals.

Assumptions:

- Surveys will be prepared on NAD83/NAVD88 datums or consistent with the data previously provided.
- Topographic Survey will be developed with 1-foot contour intervals
- Survey on the banks of the river; sections will be prepared at 50-foot intervals and at visible changes in the slope geometry to capture areas of scour, steepness, undercutting, or protrusions.
- Survey between toes of the river sections will be prepared at 50-foot intervals and at visible changes in the channel's vertical and horizontal geometry
- Survey will capture a minimum of two pairs of points for a total of four points along the low chords of the Lincoln Bridge. One pair taken on the upstream and one pair on downstream sides of the bridge. One point of each pair of points will be taken on the east side of the bridge low chord and the other on the west side of the bridge low chord.

### **TASK 19. RISK ASSESSMENT/RISK INFORMED DESIGN**

The USACE recently published Interim Approach for Risk-Informed Designs for Dam and Levee Projects (ECB 2022-7), which states that risk assessments should help guide and refine design decisions. It further states that that “risk-informed approach will be used for dam and levee designs for new projects, modifications, improvements, rehabilitation or repairs.” USACE acknowledges that “since the formal application of risk-informed design is a new requirement, the risk assessments must be scaled to fit within the constraints of current schedules and budgets.” The guidance clarifies that “reformulation is not the goal when incorporating risk into the design of projects with an approved decision document.

As an example, when evaluating overtopping, options do not have to result in designing taller levees but may result in inclusion of resilient features such as superiority or a splash pad that consider the exceedance event in a cost-effective manner. However, the results of a risk assessment may indicate reformulation is necessary. If that is the case, or the costs exceed the Section 902 limits, the process and procedures in ER 1105-2-100 (Planning Guidance Notebook) will inform the path forward”.

To satisfy the intent of ECB 2022-7, HDR proposes to perform an initial, coarse semi-quantitative risk assessment of the Increment 2 project using the 35% design packages. The purpose of this risk assessment is twofold. First, there may be opportunities to refine the 35% design (upscale or downscale) to confirm the levee will perform adequately over the full range of loading. The second purpose is to understand how much flood risk remains in the leveed area once the project is complete. With any flood risk reduction project, some flood risk remains in the leveed area. Considering life safety during rare flood events that may exceed levee capacity and overtop the structure will help the District build risk awareness and support emergency preparedness efforts.

Quantifying life safety risk requires estimation of three components: the frequency of the flood loading, the probability of levee breach under that loading, and the potential life loss given that failure scenario. The frequency of flood loading is determined by hydrology and river hydraulics. The probability of failure will be assessed by expert elicitation in a risk workshop. The potential life loss is estimated by hydraulic modeling and evacuation modeling.

### **Subtask 19.1 - Estimate Non-breach Flood Risk**

Using hydrology and hydraulics developed by River Focus, the HDR team will develop a LifeSim model to estimate the life loss consequences and direct economic damages of non-breach scenarios. The results will be used to evaluate residual risk with the project in place.

#### Assumptions:

- The LifeSim analysis will be based on a maximum of two overtopping scenarios.
- LifeSim analysis will assume any evacuation started before water reaches the structure is successful (no traffic simulation). This is a reasonable assumption considering the many evacuation avenues out of the flood zone.
- The District will supply their flood emergency action plan for review.
- HDR will establish LifeSim warning and evacuation parameters from the software defaults using information from the EAP, Napa County evacuation procedures, NOAA, NWS, and other publicly available information.
- USACE National Structure Inventory will be used to identify the population at risk.

#### Deliverables:

- Summary of LifeSim output including maps (life loss and economic damages) for the two overtopping scenarios evaluated

### **Subtask 19.2 - PFMA (Potential Failure Mode Analysis) and SQRA (Semi Quantitative Risk Analysis) levee risk assessment to inform design**

The HDR team will conduct a PFMA and a risk assessment workshop to evaluate the Increment 2 levee as designed with traditional (deterministic criteria) standards. HDR will use an SQRA approach and existing, readily available information to estimate levee breach probability and associated incremental life loss consequences, identify key risk drivers and areas of uncertainty, evaluate opportunities for design refinements and to document rationale for design decisions. The workshop is expected to be highly collaborative and include representatives of the District, USACE, the design team and other subject matter experts. The goal of this risk workshop is to

help the designers verify that known potential failure modes are being adequately addressed or identify any risk-driving potential failure modes that were not previously considered for the project. In addition, the risk workshop will discuss potential design refinements related to the following topics:

1. Floodwall geometry and configuration (e.g., wall thickness, embedment depth, and splash pad geometry. For the purposes of the risk assessment, final floodwall alignment is assumed to be selected and not subject to further refinements)
2. Vegetation management and opportunities to incorporate existing riparian zone into the project
3. Scour protection in the river channel and bridge crossings
4. Requirement for an O&M corridor on the land side of the levee
5. Benefits and risks of incorporating the existing levee embankment into the project
6. Geotechnical assumptions and excavation stability criteria (e.g., transient versus steady-state seepage analysis)

The LifeSim model developed in Task 19.1 will be expanded to consider life loss from breach scenarios. HDR will prepare a presentation of the consequences results to share and discuss during the risk workshop. The consequences from PFM's will be estimated from LifeSim results during the workshop and summarized in a report.

#### Assumptions:

- A four-day risk workshop will be held in person at HDR's Folsom or Gateway office.
- HDR will provide a risk facilitator, a note taker and four subject matter experts. USACE and the District will participate in the workshop to provide background information, inform discussions and participate in expert elicitation as appropriate.
- No additional analyses will be performed for the risk workshop. The team will use engineering analyses and information readily available from the 35% design packages. If the need for additional analyses to refine risk estimates is identified during the workshop, HDR will document the findings and present them to the District for consideration and decision.
- LifeSim model development assumptions from the residual risk subtask apply to this task.
- The LifeSim analysis will be based on a maximum of two breach scenarios.
- Consequence analysis will assume all planned flood risk reduction measures have been built.
- HDR will document risk workshop discussions and provide risk assessment results. Decisions related to risk tolerability and associated design refinements including any deviations from the deterministic criteria will be made by the District in consultation with USACE as appropriate and communicated to HDR for the 65% design development.

#### Deliverables

- HDR will prepare a memorandum documenting risk workshop discussions, presenting risk assessment results, summarizing major findings, including opportunities for potential design refinements, and providing recommendations for additional analyses, if necessary.

## **TASK 20. IMOLA AVENUE TO HATT BUILDING PRE-DESIGN AND SCOUR ANALYSIS**

### **Subtask 20.1 - Alternative Alignment Pre-Design**

Working with the District and in coordination with the public outreach process, HDR will provide pre-design input to the District to assess potential alternative floodwall alignments and types for the Project reach extending from Hatt to Imola. The effort will be conducted at a reconnaissance level, and will include considerations to traffic impacts, obtaining additional river bank surveys, conducting preliminary scour and lateral bank erosion analyses, identifying potential erosion mitigation and counter measures, estimating the theoretical stable bank slopes, completing conceptual level designs, and developing rough estimates of potential construction costs for comparison purposes. HDR will support the District in meeting with stakeholders and describing the potential flood protection features and their associated pros and cons.

HDR will prepare a draft memorandum documenting the analyses and describing the potential floodwall and erosion mitigation measures. The draft will be provided to the District for review and comment. A final memorandum will be prepared along with written responses to comments.

#### Deliverables:

- Draft Alternative Alignment Pre-Design Memorandum
- Final Alternative Alignment Pre-Design Memorandum

#### Assumptions:

- Identification of potential alternatives will be based on reconnaissance level of assessment.
- One iteration of the memorandum will be prepared.

### **Subtask 20.2 - Scour Pre-Design**

#### ***Data Collection***

HDR will perform data collection to obtain the best available data, such as geotechnical and hydraulic data inputs.

#### Assumptions:

- 1-D and 2-D hydraulic models developed by River Focus will be used to perform the analysis. The models represent the 35% design floodwall alignment.
- The analysis will be performed based on the geotechnical data presented in the USACE Napa River Geotechnical Basis of Design Report (BODR) dated February 1998.

#### ***Pre-Design Level - Lateral Erosion Analysis***

HDR will perform a preliminary lateral erosion analysis from Imola Avenue to approximately intersection of Division Street and Brown Street. Model results such as WSE, shear stresses, and velocity output for the 10-, 25-, 50- and 100-year events as well as the latest readily available geotechnical information will be used to perform the analysis. The lateral erosion analysis will be performed to estimate the minimum lateral distance the floodwall should be offset from the bank of the Napa River to avoid undermining of the floodwall structure.

A quality control review of the potential lateral erosion analysis will be performed, and one round of comments will be addressed and backchecked.

Assumptions:

- 1-D and 2-D hydraulic models developed by River Focus will be used to perform the analysis. The models represent the 35% design floodwall alignment.
- Four flow scenarios will be analyzed to determine the greatest scour potential (10-, 25-, 50- and 100-year events).
- The analysis will be performed based on the geotechnical data presented in the USACE Napa River Geotechnical Basis of Design Report (BODR) dated February 1998.

***Pre-Design Level - Scour Analyses***

HDR will perform scour analyses to evaluate magnitude of scour using hydraulic model results and available geotechnical information mentioned above. General, bend and contraction scour will be evaluated to determine the scour potential. Figure 1 outlines the areas where the scour can be analyzed. A scour analysis is warranted where hydraulic conditions change, geotechnical properties vary and significant geometry of river bank changes. Four flow conditions will be analyzed to determine the greatest scour potential.

A quality control review of the potential lateral erosion analysis will be performed, and one round of comments will be addressed and backchecked.

Assumptions:

- HDR will evaluate general, bend and contraction scour at four locations. See figure below for locations.
- Four flow conditions will be analyzed to determine the greatest scour potential (10-, 25-, 50- and 100-year events).
- Up to six scour locations will be analyzed.
- The analysis will be performed based on the geotechnical data presented in the USACE Napa River Geotechnical Basis of Design Report (BODR) dated February 1998.

***Evaluation of Scour Mitigation Options***

After assessing the magnitude of scour along the Project reach, HDR will identify possible scour mitigations and scour countermeasure options (Figure 2).

Assumptions:

- HDR will perform high level assessment of possible scour mitigation and scour countermeasures options.
- It is assumed that HDR will only identify scour mitigation options during this effort. Design of scour countermeasures will be performed during design phase.

**Development of TM**

HDR will develop a TM to summarize scour analyses methods and results completed in the tasks above. HDR will also summarize viable options to mitigate potential scour.

A quality control review of the potential lateral erosion analysis will be performed, and one round of comments will be addressed and backchecked.

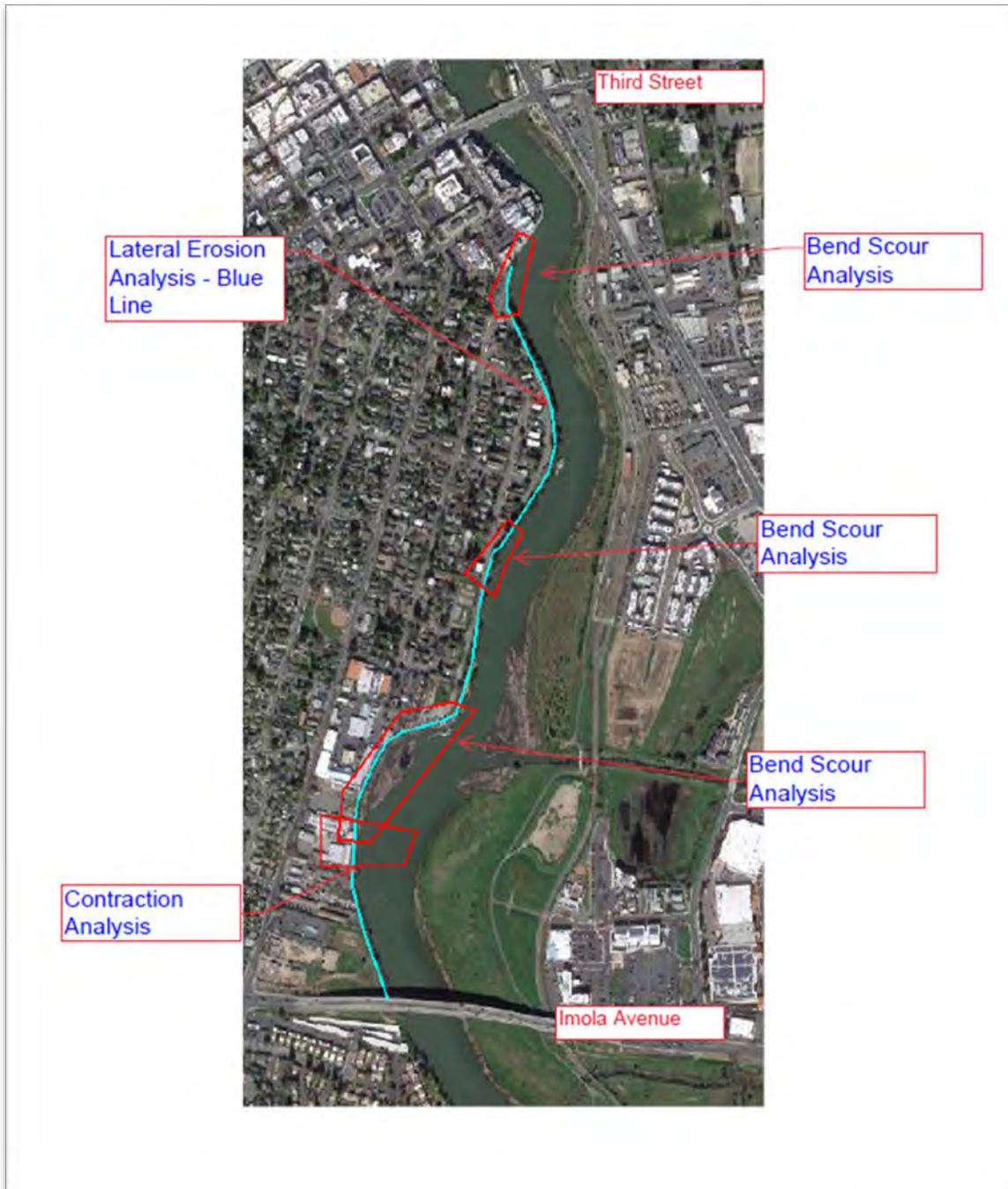
Assumptions:

- District to review TM and provide comments.

Deliverables:

- Draft Pre-Design TM
- Final Pre-Design TM

**Figure 2 - Initial Scour Analyses Locations**



## **TASK 21. LANDSCAPING PLANS AND SPECIFICATIONS**

HDR will coordinate with the respective owner/District for modifications to existing ornamental landscape and landscape irrigation systems impacted by the Project. HDR will provide ornamental and native planting restoration design drawings for select areas of the Project to be agreed upon with the District. Where temporary landscape irrigation is not practical for landscape establishment HDR will prepare design drawings for required permanent irrigation.

### **Subtask 21.1 - 65% Drawings & Specifications**

HDR will complete 65% Design level landscaping and permanent irrigation drawings. Specs will be drafted based on the outline of technical specifications developed during the 35% design and will include specifications for design features.

Deliverables:

- 65% Drawings (11" x 17" PDF)
- 65% Technical Specifications as individual specifications (Word)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level Drawings and specs will be submitted for HDR's Internal Review and Final 65% Drawings will be submitted to the District for review.
- USACE drafting standards will be followed for development of Drawings.
- One round of District and USACE Review will be performed for each design increment.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.
- The drawings and technical specifications will be developed in accordance with ER 1110-2-1150.
- Landscape Architect will attend up to six of the bi-weekly two-hour coordination meetings.
- Sr. Landscape Architect and Landscape Architect will perform one site visit

### **Subtask 21.2 - 95% Drawings & Specifications**

HDR will complete 95% Design level drawings and specifications. The drawings will be prepared using AutoCAD software. These drawings will further refine and advance the 65% design level drawings and will include updated landscaping and permanent irrigation plans. Specs will be drafted based on the outline of technical specifications developed during the 65% design and will include specifications for design features.

Deliverables:

- 95% Drawings (11" x 17" PDF)
- 95% Technical Specifications as individual specifications (Word)

Assumptions:

- The Drawings, Specifications, OPCC, and DDR will be developed in parallel.
- Draft level Drawings and specs will be submitted for HDR's Internal Review and Final 95% Drawings will be submitted to the District for review.
- USACE drafting standards will be followed for development of Drawings.
- One round of District and USACE Review will be performed for each design increment.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.
- The drawings and technical specifications will be developed in accordance with ER 1110-2-1150.
- Landscape Architect will attend up to six of the bi-weekly coordination two-hour meetings.

**Subtask 21.3 - 100% Drawings & Specifications**

HDR will complete 100% Design level drawings and specifications. The drawings will be prepared using AutoCAD software. These drawings will further refine and advance the 95% design level drawings and will include updated landscaping and permanent irrigation plans. Specs will be drafted based on the outline of technical specifications developed during the 95% design and will include specifications for design features.

Deliverables:

- 100% Drawings (11" x17" PDF)
- 100% Technical Specifications as individual specifications (Word)

Assumptions:

- The Drawings, Specifications, OPCC & DDR will be developed in parallel.
- Draft level Drawings and specs will be submitted for HDR's Internal Review and Final 100% Drawings will be submitted to the District for review.
- USACE drafting standards will be followed for development of Drawings.
- One round of District and USACE Review will be performed for each design increment.
- General Specification, Bid Forms, Standard Forms, and similar (non-technical specifications) are done by others.
- The drawings and technical specifications will be developed in accordance with ER 1110-2-1150.
- Landscape Architect will attend up to six of the bi-weekly two-hour coordination meetings.



## PROJECT DELIVERY TEAM

Key members of the HDR project delivery team have been involved in the VEIA and the 35% design effort for Increment 2. The HDR project delivery team members and their disciplines are presented in the following table.

**Table 1 - Delivery Team**

Discipline	Role	Name	Agency/ Company	Phone/Email
<b>Project Management</b>				
<b>Project Management</b>	Principal-in-Charge	Tom Chapman	HDR	(916) 679-8825 Tom.Chapman@hdrinc.com
	Project Manager	Lee Frederiksen	HDR	(916) 213-0569 Lee.Frederiksen@hdrinc.com
	Deputy Project Manager	Vinson Russo	HDR	(916) 817-4771 Vinson.Russo@hdrinc.com
	Project Accountant	Megan Rogers	HDR	(916) 817-4794 Megan.Rogers@hdrinc.com
	Project Coordinator & QA/QC Manager	Stella Gardenour	HDR	(916) 817-4951 Stella.Gardenour@hdrinc.com
<b>Delivery Team / Quality Control (QC) Reviewers</b>				
<b>USACE Liaison</b>	Discipline Lead	Tom Chapman	HDR	(916) 679-8825 tom.chapman@hdrinc.com
<b>Economics</b>	Discipline Lead	Jeremy Cook	HDR	(402) 399-1237 jeremy.cook@hdrinc.com
	Delivery Team	Taylor Hackbart	HDR	(402) 399-4909 taylor.hackbart@hdrinc.com
<b>Geotechnical</b>	Discipline Lead	Mark Stanley	HDR	(916) 817-4952 Mark.Stanley@hdrinc.com
	Delivery Team	Edwin Woo	HDR	(916) 285-1131 Edwin.Woo@hdrinc.com
	Delivery Team	Vic Crosariol	HDR	((916) 817-4721 Victor.Crosariol@hdrinc.com
	Delivery Team	Sagar Satyal	HDR	(279) 321-6357 Sagarraj.Satyal@hdrinc.com
	Delivery Team	Jimmy Wong	HDR	(925) 974-2583 Jimmy.Wong@hdrinc.com
	QC Reviewer	Scott Marr	HDR	(832) 372-9961 Scott.Marr@hdrinc.com
<b>Structural</b>	Discipline Lead	Kenny Dosanjh	HDR	(916) 679-8727 Kenwarjit.Dosanjh@hdrinc.com
	Delivery Team	Dara Male	HDR	(916) 679-8742 Dara.Male@hdrinc.com
	Delivery Team	Brianna Murphy	HDR	(916) 817-4876 Brianna.Murphy@hdrinc.com
	QC Reviewer	Wes Jacobs	HDR	(225) 465-6361 Wesley.Jacobs@hdrinc.com



Discipline	Role	Name	Agency/ Company	Phone/Email
<b>Scour</b>	Discipline Lead	Renato Espinoza Torres	HDR	(916) 679-8835 Renato.EspinozaTorres@hdrinc.com
	Delivery Team	Omar Sencion	HDR	(916) 817-4992 Omar.Sencion@hdrinc.com
	QC Reviewer	Dragoslav Stefanovic	HDR	(858) 712-8318 dragoslav.stefanovic@hdrinc.com
<b>Civil</b>	Discipline Lead	Vinson Russo	HDR	(916) 817-4771 Vinson.Russo@hdrinc.com
	Delivery Team	Seth Overby	HDR	Seth.Overby@hdrinc.com
	Discipline Lead (Utilities)	Lock Kwan	HDR	(925) 465-2806 Lock.kwan@hdrinc.com
	Delivery Team (Utilities)	Thomas Hoffman	HDR	(916) 817-4781 thomas.hoffman@hdrinc.com
	QC Reviewer	Mark Salmon	HDR	(916) 337-8473 Mark.Salmon@hdrinc.com
	QC Reviewer	Daniel Jabbour	HDR	(916) 817-4943 Daniel.Jabbour@hdrinc.com
<b>Environmental</b>	Discipline Lead	Linda Fisher	HDR	(916) 817-4962 Linda.Fisher@hdrinc.com
	Delivery Team	Hillary Rolf	HDR	(916) 817-4780 Hillary.Rolf@hdrinc.com
	Delivery Team	Leslie Parker	HDR	(916) 679-8745 Leslie.Parker@hdrinc.com
	Delivery Team	John Lloyd	HDR	(916) 679-8715 John.Lloyd@hdrinc.com
	QC Reviewer	Dawn Edwards	HDR	(916) 817-4840 Dawn.Edwards@hdrinc.com
<b>Cost Estimating</b>	Discipline Lead	Nick Gooding	HDR	(916) 539-3388 Nicholas.Gooding@hdrinc.com
	QC Reviewer	Stephen Young	HDR	Stephen.Young@hdrinc.com
<b>CADD</b>	Discipline Lead	Anilea Bennett	HDR	(916) 817-4839 Anilea.Bennett@hdrinc.com
	Delivery Team	Briana Aguilar	HDR	(916) 817-4775 Briana.Aguilar@hdrinc.com
	QC Reviewer	Alicia Jackson	HDR	(916) 817-4949 Alicia.Jackson@hdrinc.com
<b>Hazardous</b>	Discipline Lead	Charlie O'Neill	HDR	(916) 817-4764 charles.oneill@hdrinc.com



Discipline	Role	Name	Agency/ Company	Phone/Email
<b>H&amp;H</b>	Discipline Lead	Jake Gusman	River Focus	(619) 212-7939 jgusman@riverfocus.com
	Delivery Team	Darren Bertrand	River Focus	(619) 694-8543 dbertrand@riverfocus.com
	Delivery Team	Evie Croft	River Focus	(720) 862-7408 ecroft@riverfocus.com
	QC Reviewer	Jon Viducich	River Focus	(503) 619-9610 ecroft@riverfocus.com
	QC Reviewer	Joanna Leu	HDR	(279) 399-7039 Joanna.leu@hdrinc.com
<b>Survey</b>	Discipline Lead	Christopher Tibbits	RSA+	(707) 252-3301 CTibbits@rsacivil.com
	Delivery Team	Anthony Patrick	RSA+	(707) 252-3301 APatrick@rsacivil.com
	Delivery Team	David Hinman	RSA+	(707) 252-3301 DHinman@rsacivil.com
	Delivery Team	Sarah Brown	RSA+	(707) 252-3301 SBrown@rsacivil.com
	QC Reviewer	Forrest Beresini	RSA+	(707) 252-3301 FBeresini@rsacivil.com
<b>Consequences and Risk Assessment</b>	Discipline Lead	Elena Sossenkina	HDR	(303) 318-6282 elena.sossenkina@hdrinc.com
	Delivery Team	Paul Risher	HDR	(916) 679-8894 paul.risher@hdrinc.com
	Delivery Team	Daniel Teak	HDR	(916) 679-8842 daniel.teak@hdrinc.com
	Delivery Team	Kevin Gerst	HDR	(916) 817-4948 kevin.gerst@hdrinc.com
<b>Project Controls Specialist</b>	Discipline Lead	Cathy Westcot	HDR	(916) 679-8743 cathy.westcot@hdrinc.com
	Delivery Team	Dalton Bradley	HDR	dalton.bradley@hdrinc.com
<b>Landscaping</b>	Discipline Lead	Adrian Suzuki	HDR	(213) 239-5852 adrian.suzuki@hdrinc.com
	Delivery Team	Matt Gurrad	HDR	(206)-826-4723 matthew.gurrad@hdrinc.com
	Delivery Team	Caitlin Smith	HDR	caitlin.smith@hdrinc.com
	QC Reviewer	April Cottini	HDR	(813)-262-2729 april.cottini@hdrinc.com



## **PROJECT SCHEDULE**

It is anticipated that the final design of Increment 2 could be completed within 13 months. A detailed schedule for the associated tasks is presented in Figure 3. The schedule will be significantly affected by the time required to complete the DQA, ATR and SAR reviews and documentation.





## PROJECT COST

HDR's 2023 rate schedule is presented in Table 2. On the following page is the HDR Team's level of effort to complete this project based on our understanding of the proposed scope of services and the estimated project schedule. The total estimated fee for the base case, which reflects only providing engineering support for the environmental consultant, is \$3,719,192. The total estimated fee reflecting Option 1, which reflects providing services for the environmental documentation and permitting, is \$4,289,501.

Task Number	Task Name	Amount Budgeted
1	Project Management	\$174,326.00
2	Project Coordination Meetings	\$202,719.00
3	Engineering Support for Environmental Documentation and Permitting	\$22,508.00
Option 1	Environmental Documentation and Permitting Support - Supplemental EA/EIR	\$592,816.00
4	Hazardous and Toxic Materials Phase I Support	\$2,191.00
5	Economics	\$82,019.00
6	Site Reconnaissance	\$21,189.00
7	Survey, Mapping, and Other Geospatial Requirements (RSA+)	\$221,440.00
8	Hydrology and Hydraulics (River Focus)	\$162,268.00
9	Scour and Erosion Protection	\$185,368.00
10	Geotechnical	\$215,127.00
11	Structural	\$340,149.00
12	35% Design	\$51,924.00
13	65% Design	\$666,393.00
14	95% Design	\$497,124.00
15	100% Design	\$327,169.00
16	Public Meetings	\$24,218.00
17	Evaluate Alignment Alternatives for Ace and Vine Area	\$26,237.00
18	Expansion of Topographic Survey for Ave and Vine and Lincoln Bridge	\$23,625.00
19	Risk Assessment/Risk Informed Design	\$187,054.00
20	Imola to Hatt Pre Design and Scour Analysis	\$128,331.00
21	Landscaping Design	\$157,812.00
<b>Total</b>		<b>\$4,289,501.00</b>