

## **PRELIMINARY SCOPE OF WORK**

The EXHIBIT “A” will define tasks and subtasks and is intended to provide firms with direction as to the goals of this project. Interested consulting firms will need to respond to all tasks as defined in EXHIBIT “A”. Consultants shall follow the 4 Tasks and each subtask described in this Request For Proposals and shall expand the required work if needed within the 4 Tasks and each subtask. The Consultants’ resources provided shall be based on these 4 Tasks and each subtask. The County may ask the Consultant to prioritize certain watershed studies before beginning the Project. The Proposal needs to be detailed and defined in order to accomplish each task successfully.

### **Project Background and Objective**

The San Joaquin County Department of Public Works (SJCDPW) will be requesting proposals from engineering consulting firms to provide engineering services to carry out studies, remap historic flooding areas, and delineate the 100-year local floodplain in the San Joaquin area (Project) based on new Hydrologic and Hydraulic (H&H) models. SJCDPW currently uses historic flood boundaries mapped from floods that occurred in 1955 and 1958. Since this mapping, flood risk reduction measures, water storage, reservoirs and dams, agricultural lands, canals, flow diversions, infrastructure improvements, and land development constructed upstream of the watershed has altered these historic flooding areas. The Project also intends to remedy deficiencies of existing drainage facilities to reduce the flood risks and plan for opportunities for future improvements. The Project will be carried out in two phases; Phase 1 will focus on remapping historical flood areas in the North San Joaquin area (approximately the area north of the Calaveras River) with an estimated duration of 18 months and Phase 2 will focus on remapping in the South San Joaquin area (approximately the area south of the Calaveras River) with an estimated duration of 18 months. The boundaries of Phase 1 and Phase 2 will be determined during the Phase 1 study due to possible comingling of watersheds. The tasks outlined below are pertinent to both phases. The County may opt to add Phase 2 to the initial scope of work upon completion of Phase 1.

### **Task 1 – Planning**

#### **SUBTASK 1.1 – SCOPING MEETING**

An initial scoping meeting will be held to determine the schedule, budget, and whether the proposed scope of work meets the Project objective. The subject areas, watersheds, and historic flood boundaries will also be determined in this meeting.

#### **SUBTASK 1.2 – COLLECT, REVIEW, AND RESEARCH**

The Consultant will gather all existing information of the subject watershed areas, including, but not limited to: mapping, H&H reports, and as-built drawings of drainage facilities. The County will provide all available information including H&H data, maps, and as-built drawings for the Consultant to complete their review. In addition, the Consultant shall also research and gather all other information needed for this project from other agencies and third parties. Consultant shall meet with County staff including Channel and Road Maintenance staff to obtain their inputs.

**SUBTASK 1.3 – INITIAL PROBLEM ASSESSMENT**

Based on the resources gathered in Subtask 1.2, the Consultant will assess the extent of flooding in the subject areas and watersheds. The Consultant shall visit the areas as needed to verify the existing recent topographic maps to confirm the drainage patterns. In this task, the Consultant shall delineate the sub-area and watershed boundaries to be used for the Hydrologic model. The Consultant shall coordinate with the County about the delineated area and possible comingling of areas that ought to be studied. The findings of this task shall be summarized as a report as required in Subtask 1.7.

**SUBTASK 1.4 – MAPPING AND GIS PLANNING**

The Consultant shall contact and coordinate with County GIS staff about existing GIS layers for Hydrology areas and sub-areas, future layers, and data to be included or modified in the County's GIS system.

**SUBTASK 1.5 – PROGRESS MEETINGS**

The Consultant shall coordinate a series of meetings to review project status, make decisions, and discuss issues that have the potential of affecting the budget or schedule. The Consultant shall prepare and distribute all meeting notes, agendas, and minutes. For Task 1, two (2) meetings will be held with an optional third meeting.

**SUBTASK 1.6 –PUBLIC OUTREACH #1**

The Consultant shall attend at least one (1) public meeting for presentations of concepts and features of this Project to the public. The preparation of exhibits and materials by the Consultant shall also be required as necessary. At these meetings, the Consultant may be required to address questions and concerns the public may have.

**SUBTASK 1.7 – DELIVERABLES**

The Consultant shall prepare a letter report that summarizes the results of the previous tasks and will deliver it to the County. After reviewing the report, the County may elect to prioritize certain watersheds to begin the H&H study and remapping.

**Task 2 – Hydrology and Hydraulics (H&H)****SUBTASK 2.1 – SOFTWARE SELECTION**

Based on the results of Task 1 and the Project objectives, the Consultant will compare all open-source H&H software and provide recommendations. The analyses shall be performed on an "event-based model" for 100-year rainfall return frequencies. The preferred model of 1-D or 2-D analysis for each area or watershed shall be identified. The preferred model and software shall be consistent with the Federal Emergency Management Agency's (FEMA) and the United States Army Corps of Engineers' (USACE) methodology.

**SUBTASK 2.2 – MEETING**

For Task 2, two (2) meetings will be held to report and discuss the status of the H&H studies.

**SUBTASK 2.3 – H&H STUDY**

After all pertinent information related to the subject areas and watersheds is obtained and reviewed and the selected software is approved, the Consultant shall carry out 10, 25, and 100 year rainfall return frequency H&H studies of the subject areas and watersheds using existing conditions with all infrastructure based on the topography identified in Task 1. The H&H studies shall be consistent with FEMA and/or USACE current methodology.

**SUBTASK 2.4 – RESULTS INTERPRETATION**

The Consultant shall interpret and ground truth the model results by visiting the sites of study. Deficiencies in existing infrastructure shall also be identified and a conditional inspection of these facilities shall be conducted as needed. The Consultant shall prepare an initial draft of the flood boundaries mapping, overlaying the results of the study with the existing historic flooding areas.

**SUBTASK 2.5 – MODEL RESULTS REPORT**

A report that presents the results of the H&H study and the findings of the field verifications and inspections performed in Subtask 2.4 shall be prepared by the Consultant for review by the County. This report should contain the input and output files for the H&H study.

**SUBTASK 2.6 – PUBLIC OUTREACH #2**

Public outreach shall be conducted to present the results of the H&H study and the initial draft of the new floodplain boundaries mapping.

**SUBTASK 2.7 – MEETING**

Two (2) meetings will be held with the County for this Task 2.

**SUBTASK 2.8 – DELIVERABLES**

Deliverables of Task 2 shall include the aforementioned report, the H&H model input and output files, GIS shape files of surface feature characterization and 100-year local floodplain delineation, and GIS raster files for any 2-D hydraulic models, including ground surface elevation, water depth, water surface elevation, and velocity.

**TASK 3: MAPPING****SUBTASK 3.1 – FLOODPLAIN MAPPING OF THE NEW STUDY**

After receiving comments and feedback from the public outreach meetings, the newly developed floodplain boundaries will be mapped. This map will identify the new local

floodplain delineation from this Project which will be distinguishable from the existing historic flood areas. A comparison of the new local floodplain delineation and historic area shall be made with the number of parcels affected.

### **SUBTASK 3.2 – MAP THE DEFICIENT FACILITIES**

Deficiencies shall be categorized based on the flood risk and the capacity of the existing facilities. Categories should include short-term/immediate, intermediate, and long-term solutions based on the physical conditions and flood risk of the existing facilities. The deficiencies in facilities that were identified in Subtask 2.4 shall also be created as a layer to be mapped into the County GIS.

### **SUBTASK 3.3 – GIS INCORPORATION**

The Consultant shall collaborate with County GIS staff to create all layers associated with this Project, including H&H study layers, existing facilities' deficiencies, priorities, and incorporate the new floodplain boundaries into the County's GIS.

### **SUBTASK 3.4 – MEETING**

A progress meeting shall be held with County staff to review the results of the mapping efforts and GIS data.

### **SUBTASK 3.5 – PUBLIC OUTREACH #3**

The Consultant shall conduct public outreach and present the final new layers that were incorporated into the County Flood Zone viewer map. The public shall be made aware that this information will be accessible via the County website.

## **OPTIONAL TASKS UNDER THIS CONTRACT**

These optional tasks will require separate approval from the County before beginning the tasks.

### **TASK #4**

#### **SUBTASK 4.1**

Consultant shall perform additional multi-frequency analyses for 5, 10, 25, 50, 100, 200, and 500-year events including analysis performed in earlier subtask 2.3.

#### **SUBTASK 4.2**

One meeting shall be required to discuss the procedures and results of the additional multi-frequency analyses.

## **FUTURE OPTIONAL TASKS**

These future optional tasks descriptions may change after the study results from Tasks 1 through 4. The future tasks as described below are for guidance only. The Consultant will be asked to submit a separate proposal after refinement of future tasks.

**TASK X: FACILITY IMPROVEMENT AND ASSET MANAGEMENT****SUBTASK X.1 – HIGH PRIORITY REPAIR OF FACILITIES**

The facilities identified in Subtask 2.4 will be reviewed and assigned a priority level based on their state of insufficiency. A higher priority will be placed on facilities where repairs were deemed to show the largest improvements to drainage of the areas.

**SUBTASK X.2 – HIGH PRIORITY REMOVE AND REPLACE**

Facilities will also be identified where repair is insufficient and Removal and Replacement is the optimal method to improve the drainage of the area.

**SUBTASK X.3 – FUTURE IMPROVEMENTS**

Recommendations for other future improvements shall also be made. The Consultant shall suggest potential locations for future drainage facilities that will reduce the flood risk of the subject areas.

**SUBTASK X.4 – COST ESTIMATE WITH PHASES**

The Consultant shall prepare Cost Estimates of such repairs, Removal and Replacement, and Future Improvements of the facilities identified in the preceding subtasks. An approximate time required for completion of these items should also be prepared.

**SUBTASK X.5 – DELIVERABLES**

A report summarizing the findings of the previous subtasks shall be prepared and reviewed by the County.

**SUBTASK X.6 – MEETING**

Progress meetings will be held to discuss the report developed in Task X.

**SUBTASK X.7 – PUBLIC OUTREACH**

Further public outreach should be conducted to present the report of Task X for public comment. A final draft of this report shall be created following County review and public opinion.

**TASK Y: FUTURE SUBDIVISION DEVELOPMENTS****Subtask Y.1 – FACILITIES IMPROVEMENT BASED ON THE GENERAL PLAN****Subtask Y.2 – COST ESTIMATION FOR FUTURE IMPROVEMENTS****Subtask Y.3 – DELIVERABLES****Subtask Y.4 – MEETING****Subtask Y.5 – PUBLIC OUTREACH**