

## Exhibit A

### Scope of Work

**A. PROJECT SERVICES.** Consultant agrees to perform professional services for a project known and described as the Avalon Drain #2 Stabilization Improvements (“Project”). The Services are described in the following subtasks:

#### **Task 1. – Data Collection & Utility Coordination**

- a. Research and evaluate existing City, County, and private utility information (e.g. as-builts, quarter section maps, GIS) regarding existing facilities such as roadway, drainage, traffic, and utilities. The City will provide available as-builts and other related existing data including right-of-way tract maps.
- b. Review the previously completed hydrologic analysis completed for Avalon Drain #2. The previously completed hydrologic analysis will be used for this design. Obtain and review recently completed City FLO-2D model
- c. Review the previously completed hydraulic and sedimentation analysis for Avalon Drain #2. The City will provide electronic versions of the previously completed modeling.
- d. Request an Arizona Blue Stake ticket as part of the geotechnical investigation to identify existing utilities within the Project limits and request existing utility information.
- e. Coordination with utility companies for plan review and obtain necessary utility clearances or relocations to include: submittal of plans, comment resolution forms and review of relocation plans for all affected utility owners.

#### **Task 2. – Coordinate Control, Topo Survey, Right-of-Way and Geotechnical**

- a. Prepare a survey request and coordinate topographic survey and right of way services with the City and sub-consultant.
- b. Review and update the CAD files for control and topographic survey data as well as right-of-way information provided.
- c. Verify obtained topographic information at progress meeting.
- d. Coordinate geotechnical investigations for drop structure and any bank protection design.

#### **Task 3. – Hydraulic and Scour Analysis**

- a. Prepare an existing and proposed conditions hydraulic analysis for Avalon Drain #2. No additional hydrology is anticipated. The hydraulic analysis is prepared in HEC-RAS. Cross sections from the previously completed analysis are updated using

Project topography. The hydraulic analysis is for the 10- and 100-year storm event. Hydraulic analysis is compared to the recently completed City FLO-2D model.

- b. Determine the wash stable slope using acceptable methods identified by the United States Bureau of Reclamation. The wash is assumed to be a clear water condition and does not include an upstream sediment supply impacting the stable slope.
- c. Locate and size new drop structures using the calculated stable slope. The drop structures are designed to maintain a 100-year water surface elevation a minimum of one (1) foot below the lowest top of bank elevation.
- d. Size and locate energy dissipation facilities downstream of the drop structures to meet existing hydraulic energy levels before leaving the structure.
- e. Prepare a Drainage Report to document the analysis. A Draft Drainage Report is submitted with the 60% Submittal. The Consultant will respond to one round of comments for the report. A Final Drainage Report is submitted with the 90% Submittal.

#### **Task 4. – Construction Documents**

- a. Submit construction documents at three (3) stages: 60%, 90% and Final.
- b. Establish a wash construction centerline based on existing survey monuments.
- c. Prepare structural design calculations and detail sheets for up to two drop structures based on site specific geotechnical parameters. Design will be performed in accordance with IBC and ACI requirements.
- d. Prepare wash stabilization plans and details. The following sheet list is anticipated for the final construction documents:
  - i. Cover Sheet (1 Sheet)
  - ii. Legend & Notes (1 Sheet)
  - iii. Survey and Geometric Control (1 Sheet)
  - iv. Typical Sections (1 Sheet)
  - v. 1" = 30' Wash Plan & Profile (4 Sheets)
  - vi. Miscellaneous Channel Details (8 Sheets)
  - vii. Structural Details (5 Sheets)
- e. Prepare a 3D proposed surface in AutoCAD Civil 3D and develop cut and fill lines as well as earthwork quantities.

#### **Task 5. – Environmental Permitting**

- a. **Freedom of Information Act (FOIA) Request and Preliminary Jurisdictional Delineation (PJD)**

- i. Prepare a Freedom of Information Act (FOIA) to request existing documents and permits related to the site and submit to the U.S. Army Corps of Engineers (Corps).
  - ii. Review the files applicable to the subject property and adjacent properties at the Corps' local office. This task will reveal known past jurisdictional delineations, permits, compliance documentations, etc. on the property.
  - iii. Identify and establish boundaries for areas considered potential jurisdictional Waters of the U.S. (WOUS) under Section 404 of the Clean Water Act within the Project site utilizing methodology approved by the Corps for establishing the Ordinary High Water Mark (OHWM) for WOUS located within the Project area. The Preliminary Jurisdictional Delineation (PJD) will be submitted to the Corps for concurrence with the proposed jurisdictional boundaries shown on aerial photography and documented in ground photography. The task will include the following:
    - Field reconnaissance to identify and establish boundaries of potential WOUS;
    - Photographic and field note documentation of the establishment of the jurisdictional boundaries;
    - Transfer of jurisdictional boundaries into GIS/CADD and overlay onto the aerial photography;
    - Preparation of a technical memorandum that will document the methodology and results of the evaluation. This memorandum will be submitted to the Corps for concurrence on the PJD.
- b. Biological Evaluation**
- i. Obtain and review an Official Species List for the project area from the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) system to determine if threatened, endangered, proposed, and/or candidate species may occur in the project vicinity. The Arizona Game and Fish Department (AGFD) On-line Environmental Review Tool (OERT) will be accessed to determine special status species are known to occur in the Project vicinity.
  - ii. Assess potential impacts to listed species and make recommendations for future surveys/detailed assessments/mitigation measures (if applicable).
  - iii. Analysis of effects, determination of effects and USFWS/Agency consultation requirements will be documented in the report. State sensitive species, protected native plants, and the Migratory Bird Treaty Act, and required mitigation measures will be discussed (as applicable).
  - iv. Submit the draft Biological Evaluation to the Corps for review and one (1) round of comments as part of the Individual Permit application.
  - v. Finalize the Biological Evaluation based on the Corps' comments.

- c. **Prepare and Process Section 404 Individual Permit Application**
  - i. Prepare ENG Form 4345
  - ii. Prepare Alternatives Analysis (including no action alternative, preferred alternative (LEDPA) to evaluate for environmental impacts);
  - iii. Preliminary Jurisdictional Delineation (from previous task);
  - iv. Biological Evaluation (from previous task);
  - v. Perform cultural resources survey;
  - vi. A discussion on avoidance and minimization of impacts to WOUS;
  - vii. A mitigation proposal (assumed in-lieu fee);
  - viii. Prepare required figures: Vicinity Map, USGS Quadrangle Map, Impacts to Waters of the U.S., and Cross Sections: Impacts to Waters of the U.S.
  - ix. Prepare responses to two (2) Requests for Additional Information (RFIs).
- d. **Prepare and Process Section 401 Water Quality Certification Application**
  - i. Prepare and process a Section 401 Water Quality Certification application through the Arizona Department of Environmental Quality (ADEQ).
  - ii. Prepare responses to two (2) reasonable Requests for Additional Information (RFIs).

**Task 6. – Project Estimate and Specifications**

- a. A list of anticipated quantities is prepared submitted at each design stage.
  - i. Present quantities on the plan sheets and in a separate quantities spreadsheet using custom bid items based on City item descriptions.
  - ii. An Opinion of Probable Cost (OPC) is provided for these quantities.
- b. Technical special provisions are prepared for the 60%, 90%, and Final submittals. The specifications utilize the City format.

**Task 7. – Project Management/Pre-Bid Services**

- a. Project management includes contract management, invoicing, Project schedule development, internal meetings with staff, Quality Control/Quality Assurance, and CADD maintenance.
- b. Pre-Bid Services include contractor questions, bid tabulation review/recommendation and issuance of addendums as necessary.

**Task 8. - Meetings**

- a. Attendance at the following meetings as a part of this Project:
  - i. Kickoff Design Meeting
  - ii. Plan Review Meetings (3 meetings)
- b. Design progress meetings are assumed to be attended by the Project Manager in the City's office and any technical support will participate by teleconference.

- c. Responsible for preparing meeting agendas, exhibits, and notes.
- d. Field reviews are assumed to be conducted on the same days as meetings described above.
- e. Any meetings beyond those listed above will be considered additional services.
- f. Prepare a summary of comments received following each submittal. The summary includes a response and how it was addressed.

## **OUTSIDE SERVICES**

### **Task 9. – Topo Survey & Right-of-Way**

- a. Provide topographic survey and right of way throughout the Project limits. This includes:
  - i. Project Control
  - ii. Right of Way Survey and Mapping
  - iii. Aerial Mapping (one foot contours at 1"=40')
  - iv. Orthophotography
  - v. Mapping will be provided via Autocad
- a. Prepare legal descriptions and exhibits for up to ten (10) temporary construction easements.

### **Task 10. – Geotechnical Services**

- b. Test Pits (maximum five (5) feet deep) are performed to determine subsurface conditions and obtain representative samples for laboratory analysis. Approximately ten (10) locations are proposed in the wash. Test borings will be blue-staked prior to field services.
- c. Laboratory Analysis includes:
  - a. Compression
  - b. Swell
  - c. Minus No. 200 Sieve and Plasticity
  - d. Moisture Content/Dry Density Ring Samples
- d. Field and Laboratory Data is used for the engineering evaluation to formulate geotechnical recommendations
- e. A Final Geotechnical Report is provided detailing the results of the field/laboratory testing and recommendations provided for site grading, preparation procedures and thicknesses of pavement and concrete surfaces.

## **Task 11. – Cultural Resources Survey**

### **a. Compliance with Section 106 of the National Historic Preservation Act.**

- i. Prepare Class I literature review for Project area with one-mile research radius using AZSITE database, historic-age General Land Office and USGS topographic maps, and the National Register Information System database to assess previous surveys and previously recorded cultural resources. The literature review included in the survey report.
- ii. Conduct Class III cultural resources survey of the 5-acre Project area following Arizona State Museum (ASM) and State Historic Preservation Office (SHPO) guidelines. Survey transects will be no more than 20 m apart. All cultural resources are mapped and recorded. A Registered Professional Archaeologist (RPA) who meets the National Secretary of the Interior's professional standards leads the fieldwork. Cultural resources are evaluated for eligibility for listing on the National Register of Historic Places (NRHP).
- iii. Prepare survey report that meets ASM and SHPO standards. The report includes a description of the Project's environmental setting, results of the literature review, a description of field methods, a record of isolated occurrences, a detailed description of each identified cultural site, an evaluation of each site's NRHP eligibility, management recommendations for each site, and a recommendation of Project effect. The report will be completed within 3 weeks of Notice to Proceed. Comments received from the Corps, SHPO, and other consulting parties will be addressed in a final survey report.

## **B. EXCLUSIONS**

The following items/services are not included in this scope of work and fee proposal. If these items/services are determined to be required, a separate agreement by contract amendment or new contract shall be coordinated between Lake Havasu City and the Consultant.

- Hydrology
- Private utility relocation design
- Construction phase services
- Street light design
- Environmental Assessment and Statement of Findings (assumed to be prepared by Corps based on Havasu Wash #3 permitting process)
- Other environmental services
- Land acquisition documents
- Public involvement
- Permit or plan review fees