



# AMERICAN SAMOA POWER AUTHORITY

## SCOPE OF WORK

### VAITOGI WW COLLECTION SYSTEM- DESIGN

#### I. PROJECT BACKGROUND

The Vaitogi WW Collection System Design will put together a design drawing for wastewater collection for the entire Vaitogi Area. The design drawing will be used for the implementation of wastewater system within Vaitogi. Once design drawing is completed, ASPA will bid out this project for implementation. The Leone/Vaitogi Feasibility Study will be used as a guide on how the for Vaitogi Collection System will be put together to make sure issues with wastewater in this area are addressed accordingly.

#### II. PROJECT DESCRIPTION

The project will provide a design drawing for the Vaitogi Collection System area which will link the area to our existing system at Tafuna Wastewater Treatment Plant. The design will be based on the recommendation on the Leone/Vaitogi Feasibility Study. The detail design will be based on the conceptual study provided by the feasibility study. The project will see the detail design for gravity main, force main, lateral and service connection. The study had identify one lift station which will be part of this design project. It also include low pressure grinder pumps design.

### III. PROJECT LOCATION

The project covers the unserved area in Vaitogi towards Fogagogo.



### IV. PROJECT OBJECTIVES AND GOALS

1. To prepare a detail design for the Vaitogi WW Collection System that ASPA can bid out for construction
2. As part of the design, they shall need to do a hydraulic analysis (modelling) for the Vaitogi WW Collection System for future reference.
3. To prepare a detail cost breakdown and material take off that ASPA can use to bid out this project
4. To prepare detail design in phases so that construction can progress in phases until the Vaitogi WW Collection System is completed.

## **V. SCOPE OF WORK**

### **A. GENERAL (SOW)**

1. ASPA has issued this RFP for A/E services from a professional consultant firm with experience in designing sewage pump/lift stations, sewage force mains, gravity flow, lateral and service connection for wastewater collection systems.
2. The detail design shall include all process control, mechanical, electrical, and structural components and related appurtenances to allow the facilities to be functional and operable according to ASPA maintenance and operation capabilities and requirements. Appurtenances shall include but will not necessarily be limited to access facilities, fencing, lighting, water connections and power supply including emergency power.
3. The detail design shall be in accordance with the Ten State Standards, Wastewater Pollution Control Federation, USEPA or other comparable standards.
4. The proposal shall include all personnel, travel, equipment, supplies, overhead and related costs necessary to complete this SOW. The project will be called Vaitogi WW Collection System Design
5. In general the selected firm shall accomplish and provide design drawings to connect all homes to the existing WW system. The goal is to remove all cesspools and septic tanks from the Vaitogi WW Collection System.
6. The bidder shall closely work with other Government Agencies and private entities for their underground utilities within the Vaitogi WW Collection System so they can give them guidance on location, depth and type of utilities out there.
7. The Leone/Vaitogi Feasibility Study Final Report (attached to this RFP) shall provide the conceptual direction and information on what shall be expected in the detail design. It also provide key information that the bidder can use for in their detail design project.
8. The exact amount and length of the new collection system including: gravity mains, service laterals, homes to connect, pump/lift stations and sewage force mains are based on the feasibility study and any additional length will be based on the rate give in you proposal.
9. The Leone/Vaitogi Feasibility Study will form the basis of detail design and survey work required for the project.
10. The selected firm shall study this feasibility study to know the, length and approved route of the collection system and its facilities, which the firm shall then take this information, and produce the Land Survey and the Construction Design, Plans and Specifications as explained in section C and D.
11. For Bidder to bid a cost to produce the Land Survey (section C), ASPA estimated lengths are shown on the bid forms. Estimated lengths of proposed collection system facilities (mains plus service laterals) and homes/buildings to survey with an offset survey of 20 ft around and on either side of the new collection system facilities and homes/buildings.
12. For Bidder to bid on the Construction Design, Plans and Specifications (section D), ASPA understands that the amount and length of collection system and facilities are based on the Leone/Vaitogi Feasibility Study Report.
13. The Bidder shall also provide unit cost for all the line items to help ASPA decide on any request

- for change required as part of this design.
14. To cover the costs of additional WW collection system and facilities ASPA can provide a Change Order at that time corresponding to the bid item's unit costs if approved of by EPA and ASPA.
  15. At the beginning of the project, the selected firm shall submit a well thought out timeline/schedule of critical task completion milestones with summary descriptions approved by ASPA.
  16. The selected firm shall familiarize itself with the American Samoa Government (ASG), ASPA, the project area (terrain, the villages) and the public wastewater system, the public water system, other nearby utilities and other elements that may have an impact on this project.
  17. The selected firm shall meet regularly with ASPA and the ASPA Project Engineer, at least once a month to discuss project schedule, progress, proposed design and any issues that may arise.
  18. Bid submission indicates familiarity with and acceptance of existing conditions in American Samoa, the project site and at ASPA. No claim for additional compensation will be allowed which is based upon a misunderstanding or lack of knowledge by the Bidder.
  19. The selected firm will develop, as lead by and recommended by their professional Engineer of Record (EOR) conceptual drawings, detailed designs for construction, specifications, cost estimates, SOWs for the Owner for the purpose of Tendering such as the Materials Request for Quotes (RFQ), and Construction Bidding documents.

## **B. MOBILIZATION AND DEMOBILIZATION**

1. For area under this design project, the work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under this design contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract.
2. Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies and expenses to the site; permits, premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in the contract documents.
3. Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.
4. Measurement for payment shall be made as a lump sum (LS). Payment will be made as the work proceeds, after presentation of paid invoices or documentation of direct costs by the contractor showing specific mobilization and demobilization costs and supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such

payments is less than the lump sum contract price, the balance remaining will be included in the final contract payment. Payment of the lump sum contract price for mobilization and demobilization will constitute full compensation for completion of the work in this section. Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

### **C. LAND SURVEY**

1. For area under this design project, the selected firm will be doing detailed topographic survey, civil 3d database and GIS shape files for the project sites that will affect the generation of the hydraulic calculations and construction designs.
2. This section shall cover the complete costs of providing all labor, equipment and materials required to complete all survey work needed for the design required under this SOW. It shall be the selected firm's responsibility to have a Registered Surveyor and have a lead surveyor who has a business license in American Samoa to coordinate and work with ASPA's Survey Department to make sure all survey output is in conformance to ASPA's survey standards, standard datum and coordinates and compatible with ASPA Survey's software, Traverse PC.
3. Limited Potholing: The selected firm shall perform five (5) exploratory excavations as required to collect schematic map and as-built information to verify the depth, location, alignment, size, and material of existing underground utilities or structures. Locate the existing utility, verify the required information, backfill the excavation, and restore the surfacing equal or better condition, suitable for traffic (if along roadway) as required by DPS/DPW. The firm shall waive ASPA from any liabilities resulting from inaccuracy and poor data gathering required under this section. Any damages to existing utilities during potholing is paid by the firm. The selected firm shall secure the DPW/DPS Permit to perform potholing work in ASG roadway ROW.
4. Other utilities and structures: The survey shall also include but not limited to all existing underground utilities, storm drains, bridge/stream crossings, existing asphalt/concrete

pavement, sidewalk, curb & gutter, gravel driveway, fences, rock wall, plants/grass, trees, power/communication line and pole and all structures that may be affected during installation of WW mains and service lines. Survey includes survey of potholing locations.

5. Database: The survey shall also include raw data in Excel format containing survey descriptions such as but not limited to; Unique ID, X-coordinate, Y-coordinate, Z-coordinate, Description and Size, etc.
6. The firm shall provide a comprehensive land survey to fully describe the physical environment of each business, building, home, septic tank, and cesspool within the proposed collection system.

#### **E. CONSTRUCTION DESIGN, PLANS AND SPECIFICATIONS**

1. For area under this design project, based on the thorough land survey and using ancillary data available for water use patterns and quantities, a water use and wastewater flow estimate shall be developed in collaboration with Leone/Vaitogi Feasibility Study and JUB Engineers who are currently preparing the WW Utility Plan. The current and future water use and wastewater flow estimate shall be projected out to 20 years in the future.
2. Construction Design and Plans: Detailed design engineering/architectural drawings for construction will be prepared for all facilities under this RFP. All drawings shall be prepared in accordance with Standard US Industry Practices for civil, building, structural, electrical, electronic, mechanical, highway, and environmental engineering design. The drawings shall include but not necessarily be limited to plan and profile sheets, site layouts, engineering data, material takeoff lists, observed geotechnical findings, hydraulic and energy profiles, hydraulic model, schematics, process diagrams and descriptions, standard details, and electrical schematics and one-line diagrams. Design drawing shall include connection to existing mains, tie-in scheme, relevant specific details and the tie-in steps/methods. Design Drawing shall also include design for SCDA System to synchronize with existing system, standby generator set for lift stations. Lift Station design has to be compatible or better than the ESV WW Collection System design.
3. Specifications: Technical Specifications shall be prepared for all items to be designed and/or included in the Invitation for Bid for construction for the facilities and/or infrastructures. The construction specifications shall be prepared according to the most recent Construction Standards Institute (CSI) format. In addition, any special conditions that must be addressed or followed in order to construct the facilities shall be identified in the specifications.
4. Construction Bid Form/Schedule: Once the Construction Design Plan is substantially completed, a draft Construction Bid Form/Schedule shall be prepared that includes all pertinent items included in the construction plans and specifications. The Construction

Bid Form/Schedule shall be prepared for a unit cost, firm fixed-price contract and allow ASPA to utilize it as the basis for a construction contract for the facilities designed under this RFP.

5. Schedule: Design work activities/tasks, as provided by the A&E Firm in their proposal, shall be appropriately highlighted in the schedule.
6. Erosion Control and Drainage: Erosion control and drainage measures and facilities shall be included in the design including drainage structures, retaining walls, pipe dams, stream bed protection and other elements that will ensure erosion control and drainage is accomplished according to best management practices applied for similar projects or infrastructure.
7. General Surface Observational and Historical Geotechnical Analysis: The selected Firm shall conduct a general surface observational and historical geotechnical analysis of selected areas along the proposed collection system (along with service lines) route to allow general determination of soil conditions, including presence of rock, and the impact of findings on design, construction and maintenance, presence of groundwater. Based on the findings, the analysis will briefly explain in two pages, and firm shall incorporate the general geotechnical considerations into the construction cost estimate.
8. Restoration and Repair: The design shall include all necessary restoration and/or repair for existing paved roads, utilities, driveways, curbs, sidewalks, walls, fences and other infrastructure that may need to be removed and/or replaced and conduct the work as set forth in the project scope of work. Lawns, gardens and other items that may pose an obstruction will be included in restoration. For reference on specifications, test protocols, and guidelines, refer to the latest and most current edition of the American Association of State Highway and Transportation Officials (AASHTO) Manual– A Policy on Geometric Designs of Highway and Streets – also known as the “Green Book”.
9. Engineer’s Cost Estimates: Once the Design Plan is substantially completed, a detailed engineer’s cost estimates shall be prepared in accordance with the items included in the draft construction bid form/schedule that conforms to applicable industry standards such as RS Means Estimating Manuals and Guidelines. Appropriate indexes that account for inflation and other factors that are pertinent to American Samoa including special logistical constraints are to be included. A&E firm shall also provide a Material List of all materials required to complete construction to allow ASPA to utilize it for a Request for Quotes (RFQ). Cost estimates shall include capital costs, annual O&M costs, and annual O&M costs per 1000 gallons WW.
10. Value Engineering: In accordance with USEPA Federal Funding Requirements, a Value Engineering Analysis (VEA) shall be completed for the facilities to be designed and upgraded. The VEA will strive to ensure the design results in maximum cost efficiency for operation and maintenance of the facilities.

11. Design Calculations: Provide engineering analysis (structural, geotechnical, hydrological and hydraulic (H&H), etc.) and design calculations for all and every infrastructure necessary to complete the requirement of this scope of work such as but not limited to: concrete encasement, reinforce concrete jacket, pavement design, thrust block, pipe support/hangers, box culvert, concrete vault, gratings, pipe bedding, pipe buoyancy protection and as requested by ASPA.
12. Design Presentations: Selected firm shall provide four presentations, one of the 30% preliminarily design, the second on the 60% draft detail design, the fourth on the 90% final draft design. After each presentation firm shall incorporate review comments from ASPA into the next updated design draft. Each presentation should last approximately one hour, in person or virtually.
13. Septic Tank and Cesspool Decommissioning: Design shall include a detail showing septic tank and cesspool decommissioning.
14. Bidder shall provide one Post Design presentation of the final ASPA approved Design.
  - i. The presentation is for the ASPA Executive Director, and engineering staff for up to 15 people. The presentation includes a 3 to 5 page summary explanation of the design with schematics.
  - ii. The presentation shall last up to 2 hours, first half to provide a clear explanation of the design and its highlights and the second half to include a question and answer period. Presentation/workshop can be “in person” or by video conference including an agenda.
  - iii. Presentation shall be conducted by the Firm’s main contributors to the design as well as the professional licensed staff who approved the report. The goal is for the audience to thoroughly understand the design, the design’s analysis of the ASPA WW System, recommended routes and its facilities and associated implementation impacts and related topics.

**F. MINIMUM DELIVERABLES:**

- i. Note, the selected firm shall keep design, project documents, and report sections sized 25MB or less to make emailing sections of the report easier.
- ii. Detailed Architectural and Engineering Construction Plans on 24” x 36” Bond Paper stamped by a U.S. Registered Professional Engineer (EOR) or Registered Architect (RA) for all pertinent items within the SOW as required.
- iii. A 3 to 5 page summary of Design with schematics.



required.

- v. A Bid Schedule for finite components of the system and facility upgrades, and significant tasks within the SOW.
- vi. A detailed cost estimate for all items in the Bid Schedule including direct cost, overhead, contingencies, profit, bonding and shipping;
- vii. A schedule for provision of the deliverables by the Consultant to ASPA in Gantt and PERT Chart formats.
- viii. Conceptual drawings, engineered and EOR stamped documents related to the design such as hydraulic modeling report, value-engineering analysis, calculations, technical specifications and standards.
- ix. Detailed technical specifications, stamped by a registered US Registered Professional Engineer as mentioned above.
- x. An Operations Plan outlining methods and means by which the facilities will be operated and maintained within the resources and/or capabilities of ASPA.
- xi. Operation and Maintenance manuals addressing all mechanical, process and control components for the pump/lift stations.
- xii. Milestone schedule and timeline to completion with summary descriptions. Updated at least every couple months.
- xiii. Post report presentation on PowerPoint slides, summary and agenda.
- xiv. Three (3) hard bound copies and electronic copies (i.e. AutoCAD, pdf, Excel spreadsheet, ArcGIS) of report, summary, maps, tables, figures and all deliverables.
- xv. Other items as necessary/required.

16. The design shall be submitted in logical increments similar to the following:

- i. Milestone schedule and timeline
- ii. 30% submittal - Construction Design and Survey
- iii. 60% submittal - Construction Design and Survey
- iv. 90% submittal – Construction Design and Survey
- v. Final draft submittal for Construction Design and Survey. Final report is complete once ASPA and USEPA approves of and signs Final submittal.
- vi. Each submittal will be followed by an ASPA review with comments within 20 calendar days. These comments shall be addressed and incorporated into the next submittal if recommended. Also, an ASPA comment and selected firm response list shall be maintained and shared with ASPA.