EXHIBIT "A" - SCOPE OF WORK

BOOSTER STATION 2A REPLACEMENT DESIGN

1. Project Services. Consultant agrees to provide professional civil, process mechanical and electrical engineering and design services for a project known and described as Booster Station 2A Upgrades ("Project"). The site is at 2938 Havasupai Boulevard.

   The Project includes the following elements:

   A. New booster pump station (BPS) at Site 2A and the following related improvements at the site:
      a. Demolition of existing booster pump station and electrical cabinets.
      b. Three new 150 hp booster pumps. All three pumps will be equipped with soft starts with appurtenances, instrumentation, and controls. One of the pumps is a standby pump. All pumps to be can-type vertical turbines.
      c. Valves, piping and appurtenances required for new pump installation.
      d. Shade canopy for BPS. Shade canopy will include roof hatches to service the pumps.
      e. Replace the existing electrical systems with new systems including a new electrical service entrance section (SES) and main disconnect, emergency generator, automatic transfer switch (ATS), and provisions to hook up a portable emergency generator. Installation of the new SES will be coordinated with the electrical utility company. The new BPS will receive a new Remote Telemetry Unit and utilize 4.9GHz radio communication for integration into the existing SCADA system. A radio path study will be performed to confirm radio communication design and install requirements for the project. A prefabricated, air conditioned enclosure will be provided for the electrical gear.
      f. Surge control will be provided with a surge anticipator valve that drains back to the booster pump suction and a surge tank. The surge tank will be manually filled with air as needed and will not be equipped with any controls.
      g. Pump controls and instruments. Existing tank level transmitters and chlorine analyzer will remain.
      h. Pump station will have 4-inch lines on the suction and discharge side to hook up a portable pump.
      i. Standard gate valves will be used for isolation.
      j. Each pump will be equipped with a flow meter and Valmatic silent check valves.

k. Design shall consider removal of an embankment and regrading to the west of the current booster pump station for the new BPS 2A.

B. Preparation of construction cost estimates.

The Services are described in the following subtasks:

1.1 Provide Professional Engineering and Design Services for the following elements of the Project:

A. Task 1 – Field Investigation/Data Collection

The Consultant will conduct a site visit to Site 2A and meet with the City Project Manager and/or staff, to review the existing facilities at Site 2A, obtain field measurements (location of equipment, piping, etc.), confirm dimensions and layout with as-built plans, and identify space requirements and space availability for the new and replacement facilities. The Consultant will also request as-built drawings, operational data, water quality and any other site-specific information to assist in the evaluation and design of the Project. Existing as-builts and information provided by the City will be used to develop the preliminary layouts and design drawings for the BPS at Site 2A.

B. Task 2 – Basis of Design Report and 30% Design

Per Consultant's initial discussions with the City, a replacement booster pump station is required to deliver water to serve Zone 2A by replacing the existing booster pump station at Site 2A. The Consultant will develop a Basis of Design Report (BODR) describing the basis of design criteria for all components of the booster pump station, surge anticipator valve, and electrical systems, etc. The report will include the estimated construction costs for the proposed facilities and will be discussed with City staff in a workshop to review the recommended upgrades and develop consensus on the recommendations. As part of the report, the Consultant will prepare a preliminary facility schematic and layout depicting the recommended facility and equipment, including interconnects to any existing facilities at the site.

The BODR will be submitted to the City and will be finalized after receipt of City's review comments. The approved BODR will be used for developing final design for the new BPS and other upgrades at the site, as approved by the City. The following key issues will be considered in preparing the BODR:

- Booster pump size and type with variable frequency drives for two pumps.
- Ancillary facilities including piping, valves and flow meters.
- Civil/site elements design and modifications to the station and new interconnections.
- Surge protection with a surge anticipator valve and surge tank.
- Site Layout: The Consultant will prepare and present a preliminary facility schematic and layout depicting the new BPS, electrical building and panels

layout, generator, including interrelationships to existing facilities at the site. The layouts will be finalized based on City review and comment.

- Electrical Supply: The Consultant will review electrical service requirements for the existing and upgraded facilities and provide recommendations for the site instrumentation, site lighting, and convenience power for the facility.
- Booster station/RTU/SCADA interface.
- Process & Instrumentation Diagram and Single-Line Drawing
- The design will also consider site planning for future expansion of the booster station and any storage tank modifications. City to inform NCS of any accommodations necessary for future expansion.
- Preliminary cost estimates for construction of the BPS and associated upgrades at the site.

After finalization of the preliminary layout and site modifications necessary, the Consultant will conduct field meetings and walk-throughs with City staff to finalize the BODR and concepts.

C. Task 3 – Design Drawings

The Consultant will prepare design drawings for the Project based on recommendations from Task 3 and prepare drawings for various engineering disciplines including General, Civil, Mechanical, Structural, Electrical and Instrumentation. Review sets will be submitted at 90% and 100% Project levels along with an updated construction cost estimate at the 90% design level.

The Consultant will prepare the following construction drawings:

Design Drawings - Sheet Count

- General Sheets (3 sheets) – Cover/Sheet Index and Abbreviations, Symbols and General Notes.
- Civil Sheets (6 sheets) – Demolition (2), Grading Plans, New Facilities (2), and Yard Piping Plan.
- Mechanical Sheets (4 sheets) – BPS Plan and Sections, Surge Tank, Typical Mechanical Details.
- Structural Sheets (4 sheet) – BPS, Electrical Enclosure, and Structural Details
- Electrical Sheets (13 sheets) - Notes, Symbols and Legend (1); Single Line and Load Calculations (2); Electrical Schedules (1); Power, Lighting and Grounding Plan (1); Schematic and Connection Diagrams (4); RTU Power Distribution Schematic and Network Communication Diagram (1); Conduit Block Diagram (1); Electrical Details (2).
- Instrumentation Sheets (2 sheets) - P&ID Symbols and Legend (1); P&ID (1).

D. Task 4 – Project Specifications

The Consultant will prepare complete Project specifications including technical and administrative divisions. The specifications will consider construction schedules, coordination of shutdowns, material and installation specifications, and the use of regional and industry standards for the design performed under Task 3. As applicable, the Consultant will utilize the City's standard document templates to develop the plans and specifications. Copies of the Project specifications will be submitted along with plan drawings at the appropriate interim milestones.

E. Task 5 – Coordinate Permitting and Regulatory Approvals

The Consultant will coordinate with the City and the Arizona Department of Environmental Quality to obtain Approval to Construct (ATC) permit, and the City's planning and development department (if building permits are needed) to obtain design and construction approvals. This task will include preparing forms, transmitting design information and drawings, and preparing correspondence.

F. Task 6 – Project Management and Meetings

Consultant will provide four Project coordination and design phase meetings with City staff will be needed to complete this Project (2 in person and 2 remote or web-based). Meeting support and documentation will be provided by the Consultant as needed for these meetings. The Consultant will also prepare meeting minutes of the progress meetings, including action items, and distribute by electronic mail to the team members and appropriate City staff.

1.2 Engineering and Design Service Deliverables.

A. Basis of Design Report and 30% Design Drawings.

B. 90% Design and Final Design Drawings and Specifications.

<u>Assumptions</u>

- City will provide the Consultant with two years of operational data (flows, pressures, system demands in Zone 2A, etc.).
- City will provide as-builts for Site 2A.
- Landscape design and any off-site design is not anticipated at Site 2A.
- Design assumes that the existing electrical utility service transformer is adequately rated to support final site electrical load. Coordination with the electrical utility company to upgrade their transformer is not included in this scope.

1.3 Schedule**.** The Services will commence upon receipt of an executed Agreement and will take 270 calendar days to complete.