# **MEPNN Supplier Scouting Opportunity Synopsis**

## Section 1: General Information

Scouting Number	2025-092
Item to be Scouted	Recirculating (Submersible) Pump
Days to be scouted	21
Response Due By	04/23/2025
Description	Pumps similar in form, fit, and function to the following: Tag numbers: IP20-PUMP-003-01 AND IP20-PUMP-003-02 Seeking submersible, centrifugal non-clog pumps, for pumping raw water. Equipment consists of pump complete with motor, internal backflow check, while re-using existing guide rail, anchoring brackets, base elbow, and pump lifting cable.
Notify Requester Immediately	
State item to be used in	New Mexico

### Section 2: Technical Information

Type of supplier being sought       Manufacturer         Reason       BABA         Describe the manufacturing processes (elaborate or provide as much detail as possible)       Mechanical and Electrical assembly         Provide dimensions / size / tolerances / performance specifications for the item       See attached PDF "Intake Pump Station Forebay CO2 and Circulation Pump 1 and 2 Data Sheet"         List required materials needed to make the product, including materials of product components       See attached PDF "Intake Pump Station Forebay CO2 and Circulation Pump 1 and 2 Data Sheet"         Are there applicable certification requirements?       No         Are there applicable regulations?       Yes         Details       1. American Bearing Manufacturers Association (ABMA): a. 9, Load Ratings and Fatigue Life for Ball Bearings. b. 11, Load Rating and Fatigue Life for Roller Ball Bearings. b. 11, Load Rating and Patigue Life for Roller Ball Bearings. b. 11, Load Rating and Fatigue Life for Goller Ball Bearings. b. 14, Cuad Rating and Fatigue Life for Goller Ball Bearings. b. 14, Load Rating and Specification for Gray Iron Castings. b. At76, Standard Specification (NEMA). 6. National Electric Association (NEMA). 6. National Electric Code. b. 497, Recommended Practice for the Classification of Flammable Liquids, Gases or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas. 7. UL         Are there any other stndards, requirements. cr.?       237110 Water and Sewer Line and Related S		
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NAICS 1 237110 Water and Sewer Line and Related Structures Construction	Are there any other stndards, requirements, etc.?	No
	NAICS 1	237110 Water and Sewer Line and Related Structures Construction

### Section 4: Business Information

Estimated potential business volume	One-time purchase of 2 units
Estimated target price / unit cost information (if unavailable explain)	\$10441 per unit
When is it needed by?	Project dependent, preferably next month
Describe packaging requirements	Individually wrapped
Where will this item be shipped?	Clovis, NM

## Additional Comments

Is there other information you would like to include?	Funding Agency: Interior, U.S. Department of / Reclamation, Bureau of / Albuquerque Area Office
	For all BABA related questions:
	Ken Richard <krichard@usbr.gov></krichard@usbr.gov>

#### SECTION 44 42 56.04 RECIRCULATING (SUBMERSIBLE) PUMPS

#### PART 1 GENERAL

#### 1.01 REFERENCES

- A. The following is a list of standards that may be referenced in this section:
  - 1. American Bearing Manufacturers Association (ABMA):
    - a. 9, Load Ratings and Fatigue Life for Ball Bearings.
    - b. 11, Load Rating and Fatigue Life for Roller Bearings.
  - 2. American Society of Mechanical Engineers (ASME): B16.1, Cast Iron Pipe Flanges & Flanged Fittings, Class 125.
  - 3. ASTM International (ASTM):
    - a. A48, Standard Specification for Gray Iron Castings.
    - b. A576, Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.
  - 4. Hydraulic Institute Standards (HIS).
  - 5. National Electrical Manufacturers Association (NEMA).
  - 6. National Fire Protection Association (NFPA):
    - a. 70, National Electrical Code.
    - b. 497, Recommended Practice for the Classification of Flammable Liquids, Gases or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas.
  - 7. UL.

#### 1.02 DEFINITIONS

A. Terminology pertaining to pumping unit performance and construction shall conform to ratings and nomenclature of Hydraulic Institute Standards.

#### 1.03 SUBMITTALS

- A. Action Submittals:
  - 1. Make, model, weight, and horsepower of each equipment assembly.
  - 2. Complete catalog information, descriptive literature, specifications, and identification of materials of construction, including cable seal details.
  - 3. Performance data curves showing head, capacity, horsepower demand, and pump efficiency over entire operating range of pump, from shutoff to maximum capacity. Indicate separately head, capacity, horsepower demand, overall efficiency, and minimum submergence required at guarantee point.
  - 4. Power and control wiring diagrams, including terminals and numbers.
  - 5. Motor data.

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- 6. Factory-finish system.
- 7. L-10 bearing life calculations per ABMA.
- B. Informational Submittals:
  - 1. Certificate of compliance with the Build America, Buy America Act. See Section 01 33 00, Submittal Procedures.
  - 2. Certificate of compliance with the American Iron and Steel. See Section 01 33 00, Submittal Procedures.
  - 3. Special shipping, storage and protection, and handling instructions.
  - 4. Manufacturer's printed installation instructions.
  - 5. Factory and Field Performance Test Reports.
  - 6. Manufacturer's Certification of Compliance that factory finish system meets requirements specified herein.
  - 7. Suggested spare parts list to maintain equipment in service for period of 10 years. Include list of special tools required for checking, testing, parts replacement, and maintenance with current price information.
  - 8. List special tools, materials, and supplies furnished with equipment for use prior to and during startup and for future maintenance.
  - 9. Operation and Maintenance Data as specified in Section 01 78 23, Operation and Maintenance Data.
  - 10. Manufacturer's Certificate of Proper Installation, in accordance with Section 01 43 33, Manufacturers' Field Services.

#### 1.04 EXTRA MATERIALS

- A. Furnish for each pump:
  - 1. One set mechanical seals.
  - 2. One complete set of special tools required to dismantle pump.

#### PART 2 PRODUCTS

- 2.01 GENERAL
  - A. Submersible, centrifugal nonclog type, for pumping raw water.
  - B. Designed for continuous operation under submerged or partially submerged conditions, and intermittent operation when totally dry without damage to pump or motor.
  - C. Pump and Electrical Driver: Meet requirements for class, group, and division location in accordance with NFPA 70.

- D. Where adjustable speed drives are required, furnish a coordinated operating system complete with pump, drive, and speed controller.
- E. Pumps furnished under this section to be provided by a single manufacturer.

#### 2.02 SUPPLEMENTS

A. Specific requirements are attached to this section as supplements.

#### 2.03 COMPONENTS

- A. Equipment consists of pump complete with motor, internal backflow check, while re-using existing guide rail, anchoring brackets, base elbow, and pump lifting cable.
- B. Characteristics:
  - 1. Motor and rotating parts shall be removable from motor end of pump.
  - 2. Mating surfaces to be watertight and fitted with nitrile O-rings.
  - 3. Pumps fitted with dynamically balanced nonclog impellers designed to pass course solids and stringy materials.
  - 4. Pumps to be supplied with an integral shroud to route water across the motor and maintain acceptable operating temperatures.
- C. Lifting Arrangement: Reuse existing pump column pipe designed to lift pump and motor. Modify lifting pipe, shorting as needed to account for new longer pump and motor assemble. Additionally, note with the new Pump Building being built the pump column pipe may need to be modified to accommodate the new roof structure above pumps limiting vertical clearance to 20 feet or less.
- D. Pipe:
  - 1. The riser pipe connecting the pump to the surface shall be made of threaded and coupled materials specified as follows:
    - a. API Spec. 5L-GRB.
    - b. Material: 304 SS, Schedule 40.
    - c. Construction: ERW.
    - d. Threads per Inch: 8.
    - e. Couplings: API Short T/C.
    - f. Limited to sections not longer than 20 feet.
  - 2. The string of pipe and fittings shall be sufficient to set the pump intake at the designated elevation as measured from the finished ground surface plus or minus 0.25 feet. As-built dimensions shall be provided in the Operations and Maintenance Manuals.

- 3. Each pipe joint shall be permanently stenciled by the manufacturer with the full specification number.
- 4. Inside pipe diameters for each pumping system shall be nominal 4 inches.
- E. Makeup Torque: All pipe and fittings shall be secured to prevent unthreading during pump start-up. A minimum of 10 ft-lbs per horsepower is recommended; however, this is intended only as a guideline. Pipe torque shall be in accordance with API 5C1.
- F. Pipe Lubricant: Each connection shall be coated with a pipe dope that is approved for use in water systems by the National Sanitation Foundation. Lead based doping compounds are not permissible.
- G. Adapter Fittings: The Contractor shall modify as required the drop pipe and adapter fittings to the pitless adapter or well head surface plate and pump discharge case. These adapters shall be of the compression type, threaded both ends and of steel material equal to or better than the specified riser pipe.
- H. Centralizing Spiders: New replacement drop pipe centralizing spiders shall be installed on the downwell piping. The spiders are to be spaced at average intervals of 30 feet, however, the intervals are to be random and not evenly spaced, i.e., at 25 feet, 40 feet, 60 feet. Spiders shall be the equivalent of "Black Widow", the trade name of Bean Rubber Mfg. Company.
- I. Check Valves:
  - 1. New replacement check valves in the downhole string shall be rated for the depth of set and extreme conditions of operating or line surface pressures. Each valve shall be threaded on both ends with a thread pattern identical to that of the line pipe.
  - 2. The outer diameter shall not be larger than the coupling diameter for the line pipe. The body of the valve shall be machined from carbon steel of tensile strength equal or greater than the line pipe. Valve bodies and poppets shall have a minimum pressure rating of 4,000 psi.
- J. Knockout Valves: New replacement individual knockout valves shall be placed above or be integral with each check valve. The valve bodies shall be constructed of equal or better materials than the line pipe. The drain plug shall be replaceable and made of brass or monel. It shall be capable of withstanding the hydraulic pressure above each check.
- K. Motor nameplate horsepower not to be exceeded at head-capacity point on pump curve.
- L. Pump motor and sensor cables shall be suitable for submersible pump application and cable sizing shall conform to NFPA 70 specifications for

RECIRCULATING SUBMERSIBLE PUMPS 44 42 56.04 - 4 pump motors. Cables shall be of sufficient length to reach junction boxes without strain or splicing.

- M. Cable Entry System:
  - 1. Junction chamber and motor separated by stator lead sealing gland or terminal board that prevents foreign material entering through pump top.
  - 2. Utilize cable with factory-installed sealing gland with nonshrink epoxy seal system.
  - 3. O-ring compression seal between sealing gland and cable entry point shall also be acceptable.

#### 2.04 SUBMERSIBLE PUMP MOTOR

- A. Manufacturers:
  - 1. Grundfos.
  - 2. "Or-equal."
- B. At 100 Percent Load:
  - 1. Guaranteed Minimum Efficiency: 70 Percent.
- C. Insulation System: Manufacturer's standard Class B or Class F.
- D. Motor capable of running dry continuously.
- E. Enclosure: Hermetically sealed, watertight, for continuous submergence up to 100-foot depth.
- F. Bearing and Lubrication:
  - 1. Permanently sealed and lubricated, replaceable antifriction guide and thrust bearings.
  - 2. Minimum 15,000 hours L-10 bearing life.
- G. Inrush kVA horsepower no greater than NEMA MG1 and NFPA 70, Code F.
- H. Connecting Cables:
  - 1. One cable containing power, control, and grounding conductors.
  - 2. Each cable suitable for hard service, submersible duty with watertight seal where cable enters motor.
  - 3. Length: 125 feet minimum.
  - 4. UL 1 listed and sized in accordance with NFPA 70.

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#### 2.05 CONTROL PANEL

- A. NEMA 4X enclosure.
- B. Provide integrated panel for duplex configuration.
- C. Free standing, post mounted.
- D. Features:
  - 1. Main circuit breaker disconnect interlocked with panel door.
  - 2. Combination circuit breaker type, NEMA rated motor starters.
  - 3. Fused control power transformer, 120V ac.
  - 4. Alternator and pump lead-lag controls.
  - 5. ON/OFF/AUTO switches (HS-105-1; HS-105-2).
  - 6. Pump Running lights (YL-105-1; YL-105-2).
  - 7. Normally closed, dry, 5 amps at 120V ac contacts for remote indication of:
    - a. Pump Failure Alarm: Current Sensor switch (ISL-105-1; ISL-105-2) to be generated with relay logic to be active whenever either pump is running.
  - 8. Terminal strip for interfacing with external wiring.
  - 9. Lightning protection.
  - 10. Intrinsically safe relays as required for UL validation.
  - 11. Document pocket located inside panel with pump and panel operation and maintenance manual, and separate laminated pump curve.
  - 12. 110-volt, duplex GFI outlet, weather-protected, and accessible from outside of panel.
  - 13. Run hour meter.
  - 14. 100 watts minimum, condensation heater with thermostat.
  - 15. UL listing mark.
- E. All Control Panel components shall be in accordance with Specification Section 40 99 90, Package Control Systems.
- F. Prewired and factory tested.
- G. Mount control switches, indicating lights, and switches on hinged front panel.
- H. Single Feed: 240 volts, single phase.

#### 2.06 ACCESSORIES

- A. Equipment Identification Plate: 16-gauge stainless steel with 1/4-inch diestamped equipment tag number securely mounted in readily visible location.
- B. Anchor Bolts: Type 316 stainless steel, sized by equipment manufacturer, and as specified in Section 05 50 00, Metal Fabrications. Coat in accordance with Section 09 90 00, Painting and Coating.

#### 2.07 FACTORY FINISHING

- A. Prepare, prime, and finish coat in accordance with Section 09 90 00, Painting and Coating.
- B. Where not stainless steel manufacturer's standard epoxy system for continuous submergence in corrosive water.

#### 2.08 SOURCE QUALITY CONTROL

- A. Control Panel:
  - 1. Factory Inspections: Inspect control panels for required construction, electrical connection, and intended function.
  - 2. Factory Tests and Adjustments: Test control panel furnished.

#### B. Pump:

- 1. Factory Performance Test:
  - a. In accordance with HIS 11.6, Level A for submersible pump tests.
  - b. Include test data sheets, curve test results, and performance test logs.
- C. Submersible Motor:
  - 1. Factory Test:
    - a. In accordance with IEEE 112 for polyphase motors and IEEE for single phase motors.
    - b. Routine (production) tests on all motors in accordance with NEMA MG1.
    - c. Functional Test: In accordance with HIS 11.6.

#### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. Install in accordance with manufacturer's printed instructions.
- B. Reuse existing the discharge elbow mounted to the floor of the pump forebay shaft floor with stainless steel bolts.
- C. Connect piping without imposing strain to flanges.
- D. No portion of pump shall bear directly on floor of sump.

#### 3.02 FIELD FINISHING

A. Equipment as specified in Section 09 90 00, Painting and Coating.

#### 3.03 COMMISSIONING AND FACILITY STARTUP

- A. Commissioning and Facility Startup shall be in accordance with the requirements of Section 01 91 14, Equipment Testing and Facility Startup.
- B. Facility startup specifies the order of and prerequisites for the following tests of the equipment:
  - 1. Component testing.
  - 2. Functional testing.
  - 3. Software operational testing.
  - 4. Performance testing.
  - 5. Demonstration testing.
- C. Commissioning and facility startup shall be performed using a qualified representative provided by the Manufacturer as specified in Section 01 91 14, Equipment Testing and Facility Startup, Section 01 43 33, Manufacturers' Field Services, and as elaborated upon in this section.

#### 3.04 FIELD QUALITY CONTROL

- A. Conduct tests on each pumping system.
- B. Component Testing:
  - 1. Perform Component Testing in accordance with Section 01 91 14, Equipment Testing and Facility Startup.
  - 2. Component testing shall consist of basic equipment inspection and testing completed under both "dry" and "wet" conditions to establish proper connectivity, functionality, and operability, with a goal of confirming readiness to move to Functional Testing in "wet" conditions.

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- C. Functional Testing:
  - 1. Perform Functional Testing in accordance with Section 01 91 14, Equipment Testing and Facility Startup.
  - 2. Functional testing shall demonstrate that the Work is complete and ready for energized testing and operation under "wet" conditions.
  - 3. Prior to Software Operational Testing, conduct on each pumping system to verify correct rotation, proper alignment and connection, quiet operation, and specified performance.
    - a. Include testing of all control functionality:
      - 1) LOCAL/MANUAL.
      - 2) All equipment controls, hard-wired interlocks.
      - 3) All External Interfaces:
        - a) All equipment status and monitoring points to/from the equipment.
        - b) All alarms to/from the equipment.
        - c) All setpoints to/from other systems.
    - b. SCADA testing shall be conducted with all network connections to equipment completed, fully terminated, and successfully communicating to other systems, unless otherwise approved by the Engineer.
  - 4. Alignment: Test complete assemblies for correct rotation, proper alignment and connection, and quiet operation.
  - 5. Flow Output: Measured by plant instrumentation and storage volumes.
  - 6. Operating Temperatures: Monitor bearing areas on pump and motor for abnormally high temperatures.
  - 7. Test for continuous 3-hour period.
  - 8. Test Report Requirements: In accordance with Hydraulic Institute Standards for submersible pump tests HIS 1.6 and 11.6.
  - 9. Vibration Test:
    - a. Test with units installed and in normal operation and discharging to connected piping systems at rates between low discharge head and high discharge head conditions specified, shall not develop vibration exceeding limits specified in HIS 11.6.
    - b. If units exhibit vibration in excess of limits specified, adjust and modify as necessary. Units that cannot be adjusted or modified to conform as specified shall be replaced.
  - 10. Develop and complete all required documentation, as specified.
- D. Software Operational Testing:
  - 1. Perform Software Operational Testing in accordance with Section 01 91 14, Equipment Testing and Facility Startup.
  - 2. During systems testing, individual process units and systems shall be independently tested and evaluated in a wet environment (i.e., in an

PW\JA\ENMRW\D3299318\4\42 DECEMBER 2024 ©COPYRIGHT 2024 JACOBS environment similar to normal operating conditions) to confirm basic functionality and that the controls are performing as designed.

- 3. Includes testing of all control functionality:
  - All control, monitoring, alarm, and network functions:
    - 1) All interlocks.
    - 2) All status, monitoring, alarms, and control functions.
    - 3) All status and control functions via network connections.
  - b. Remote Controls:
    - 1) Remote Manual.
    - 2) Remote Automatic.
- E. Performance Test:

a.

- 1. Perform Performance Testing in accordance with Section 01 91 14, Equipment Testing and Facility Startup.
- 2. Performance testing shall demonstrate and document that the installed equipment meets all the performance criteria specified herein.
- 3. Perform under actual or approved simulated operating conditions.
- 4. Test for a continuous 3-hour period without malfunction.
- F. Demonstration Test: Perform Demonstration Testing in accordance with Section 01 91 14, Equipment Testing and Facility Startup.

#### 3.05 MANUFACTURER'S SERVICES

- A. Manufacturer's Representative: Present at Site or classroom designated by Owner, as needed to perform the following:
  - 1. For installation assistance inspection.
  - 2. For functional and performance testing and completion of Manufacturer's Certificate of Proper Installation.
  - 3. For prestartup classroom or Site training.
- B. Section 01 43 33, Manufacturers' Field Services.

#### 3.06 SUPPLEMENTS

- A. The supplements listed below, following "End of Section," are a part of this specification:
  - 1. Intake Pump Station Forebay CO2 and Circulation Pump 1 and 2 Data Sheet.

#### **END OF SECTION**

RECIRCULATING SUBMERSIBLE PUMPS 44 42 56.04 - 10

# INTAKE PUMP STATION FOREBAY CO2 AND CIRCULATION PUMP 1 AND 2 DATA SHEET

Tag Numbers: IP20-PUMP-003-01 AND IP20-PUMP-003-02
Pump Name: Intake Pump Station Forebay CO2 and Circulation Pump 1 and 2
Manufacturers and Product: (1) <u>Grundfos 150S150-8 (8-stage submersible)</u>
(2) or Equal
SERVICE CONDITIONS
Liquid Pumped (Material and Percent): Raw Lake water for potable use
Pumping Temperature (Fahrenheit): Normal <u>60 Max 75 Min 33</u>
Specific Gravity at 60 Degrees F: <u>1</u> Viscosity Range: <u>1 cP</u> pH: <u>6-9</u>
Abrasive (Y/N): <u>N</u> Caused by:
Possible Scale Buildup (Y/N): Y Caused by: <u>See Corrosive below for details.</u>
Corrosive (Y/N): YCaused by: Chlorides up to 150 ppm, sulfates up to 400 ppm, TDS up to 1300 ppm. Dilute dosage of 1 ppm to 3 ppm of copper sulfate upstream of pump, assumed mixed.
Total suspended solids (mg/L) 7 ppm, 99% of solids are under 5 micron size.
Min. NPSH Available (outside basket, Ft. Absolute): <u>41.65 feet, NPSH varies with</u> lake water level, normal NPSH will be 64.65 feet.
Altitude (Feet above Mean Sea Level): <u>3,735</u>
Area Classification: Submersed
Ambient Temperature (degrees F.): 50-85
Location: Indoor (Y/N): <u>Y</u> Outdoor (Y/N): <u>N</u>
PERFORMANCE REQUIREMENTS
Capacity (US gpm): Rated: <u>157</u> Secondary: <u>157</u>
Total Dynamic Head (Ft): Rated: 235 Secondary: 260
BHP at Rated Point: <u>12.9 HP</u> Secondary: <u>14.0 HP</u>
PW\JA\ENMRW\D3299318\4\42 RECIRCULATING SUBMERSIBLE PUMPS

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Minimum Pump Hydraulic Efficiency (%): Rated: <u>72</u> Secondary: <u>73</u>		
Maximum Shutoff/Deadhead Pressure (Ft): 458		
Min. NPSH Required at Rated and Secondary Capacity (Ft. Absolute): <u>19.7</u>		
Max. Pump Speed at Rated Capacity (rpm): 3,352 rpm		
Constant (Y/N): <u>N</u>		
Adjustable (Y/N): Y		
DESIGN AND MATERIALS		
Pump Type: <u>Submersible</u> Bowl: <u>Stainless Steel AISI 304</u>		
Bowl Bearings: <u>Stainless Steel AISI 304</u> Column: <u>Stainless Steel AISI 304</u>		
Number of Stages:    8    Impeller Material:    Stainless Steel AISI 304		
Head Shaft Material: AISI 304SS    Shaft Sleeve Material: AISI 304SS		
Shaft Sealing: <u>Manufacture Cartage</u> Seal Lubrication: <u>Pumped Fluid (Water)</u>		
Discharge Size (inches): <u>4</u> Discharge Connection: <u>NPT(F)</u>		
Suction Can/Inlet Screen (Y/N): Y Can Nominal Diameter (Inches): <u>5.71</u>		
DRIVE MOTOR (See Section 26 19 00, Medium-Voltage AC Induction Motors.)		
Horsepower:         15         Voltage:         460-480         Phase:         3		
Synchronous Speed (rpm): <u>3,450</u>		
Service Factor: 1.15		
Motor nameplate horsepower shall not be exceeded at any head-capacity point on pump curve.		
Enclosure: IP68 Thermal Protection: External		
REMARKS		

These 150S150-8 stage pumps are replacing existing 150S50-2 stage pumps, re-use existing submersible pump hardware, and modifying for the longer new replacement pumps.