OFFICE OF GROUND WATER AND DRINKING WATER

WASHINGTON, D.C. 20460

SOLICITATION OF PUBLIC COMMENT FOR PROJECT-SPECIFIC BUILD AMERICA, BUY AMERICA NONAVAILABILITY WAIVER PROPOSAL

SUBJECT: UNDER EVALUATION: Project-Specific Nonavailability Waiver of Build America, Buy America Act Requirements to Hawaii Department of Water Supply Holualoa Deepwell Repair for Submersible Pump and Motor Assemblies

Introduction

This solicitation of public comment by the U.S. Environmental Protection Agency (EPA) is to evaluate a BABA waiver request submitted by an assistance recipient based on nonavailability of product(s) for a single project.

This solicitation of public comment does not represent a final agency decision. The purpose of this proposal is to inquire whether potential domestic products may be available that were not identified by the assistance recipient or through the EPA's domestic product research efforts, and whether other factors should be considered in the evaluation of a waiver.

The EPA has completed its market research efforts and was unable to identify domestic products meeting the performance-based project specifications, in sufficient and reasonably available quantities and of a satisfactory quality. The EPA makes every effort to locate domestic products through its waiver review process and the public comment period provides a meaningful opportunity to vet the Agency's interim research. In the EPA's experience, a viable domestic product is identified through public comment in many cases. Through this public comment period, commenters may provide information that indicates a waiver may not be needed. For example, if a specified item is found to be domestically available, EPA would not issue a final waiver.

Public comments are requested for 15 days (specific dates noted on the EPA's website). Please submit comments to BABA-OW@epa.gov. Please include information in the subject of the email identifying it as a public comment on this waiver request, such as "Waiver Comment: Hawaii Department of Water Supply (HDWS) Holualoa Deepwell Repair" or similar.

Background

The Buy America Preference set forth in section 70914 of the BABA included in the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58), requires all iron, steel, manufactured products, and construction materials used for infrastructure projects under Federal financial assistance awards be produced in the US.

Under section 70914(b), the EPA may waive the application of the Buy America Preference, in any case in which it finds that: applying the domestic content procurement preference would be inconsistent with the public interest; types of iron, steel, manufactured products, or construction materials are not produced in the US in sufficient and reasonably available quantities or of a satisfactory quality; or the inclusion of iron, steel, manufactured products, or construction materials produced in the U.S. will increase the cost of the overall project by more than 25 percent. All waivers must have a written explanation for the proposed determination; provide a period of not less than fifteen (15) calendar days for public comment on the proposed waiver; and submit the proposed waiver to the Office of Management and Budget's (OMB) Made in America Office for review to determine if the waiver is consistent with policy.

Summary

Proposed Waiver: The Environmental Protection Agency is soliciting comments regarding whether to issue a project waiver of the requirements of section 70914 of the BABA included in the Infrastructure Investment and Jobs Act (Pub. L. No. 117-58) for Heat-Exchanger submersible pump and motor assemblies, used in an infrastructure project funded through the Drinking Water State Revolving Fund.

Waiver Type: Nonavailability of a compliant product in sufficient and reasonably available quantities or of a satisfactory quality.

Waiver Level and Scope: Project level waiver for a single project. No other project will utilize the waiver.

Proposed Waiver Description: Project specific nonavailability waiver of BABA requirements to the Hawaii Department of Water Supply, for its Holualoa Village Deepwell Repair Project, for a heat-exchanger submersible pump and motor assemblies.

Project Summary: The project will consist of repairing the deep well owned by Hawaii Department of Water Supply (HDWS). This portion of the project will purchase the various components that need replacing, including a submersible pump and motor.

Length of the waiver: From the effective date of the final waiver until the project completion, which is estimated to be December 31st, 2028.

Summary of Items Covered in the Proposed Waiver (including NAICS):
This waiver seeks an exception to BABA requirements for the following items:

Submersible pump assembly

- NAICS: 333996
- PSC: 4320

No domestic products were identified by the assistance recipient, or through the EPA's market research completed in January 2025.

For additional information on the project and waiver request, see the attached original waiver request from the assistance recipient and technical specifications for the project.

Description of Efforts Made to Avoid the Need for a Waiver
Both, the Hawaii Department of Water Supply and the EPA made every effort to obtain BABA compliant submersible pump assemblies. This is both documented in the waiver request, and in the description of EPA's extensive research efforts listed below.
EPA conducted market research that concluded on January 6th, 2025. The market research process included thorough review of the waiver request submission, examination of domestic manufacturer catalogs and other technical data and marketing materials, personal communication with domestic manufacturers, inquiries of regional project officers, and outreach to contractors and engineers with expertise and familiarity with the project. During market research, EPA contacted (10) manufacturers of heat-exchanger submersible pump and motor assemblies.

EPA identified these manufacturers in their attempt to find all potential domestic manufacturers of the above-mentioned products. When contacted, one (1) manufacturer for submersible pump assemblies indicated potential to meet the specifications of the project while being BABA compliant. When reviewed, the project found that the potential domestic product did not meet the specifications of the project. As no BABA-compliant options for the product was found the waiver is moving forward.

Anticipated Impact if No Waiver is Issued

Without a waiver this project faces a risk of not being completed, leading to a high likelihood of failure and a much more costly emergency repair of the well which supplies drinking water.

Description of Award
Recipient Name and/or Unique Entity Identifier (UEI): Hawaii Department of Water Supply - EPPEQ6N7ZH13
Federal Financial Assistance Identification Number (FAIN): N/A
Federal Financial Assistance Listing Name: 66.468 Drinking Water State Revolving Fund

Federal Financial Assistance Listing Number: 66.468
Federal Financial Assistance Funding amount: Total funding amount, and total estimated project cost, is $279,000.
Total Cost of Infrastructure Expenditures: Product cost is estimated to be $133,000.

JOSH GREEN, M.D.
GOVERNOR OF HAWAI'I
KE KIA'ĀINA O KA MOKU'ĀINA 'O HAWAI'I

KENNETH S. FINK, MD, MGA, MPH
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PEARL CITY, HI 96782-1400

[redacted]

February 10, 2025

US EPA BABA Waiver Office
[via BABA-OW@epa.gov only]

Dear BABA Compliance Waiver Team:

SUBJECT: BUILD AMERICA, BUY AMERICA, (BABA) WAIVER REQUEST
PROJECT-SPECIFIC AVAILABILITY WAIVER OF BABA REQUIREMENTS
TO HAWAII DEPARTMENT OF WATER SUPPLY (HDWS),
HOLUALOA DEEPWELL REPAIR

The Hawaii Department of Health (HDOH), Drinking Water State Revolving Fund (DWSRF) hereby applies for a BABA waiver for a "submersible pump assembly" as part of the Programmatic Finance State Fiscal Year 2025 (HDWS-PF25-EQ) loan. The project will be considered a DWSRF equivalency project and is therefore subject to BABA compliant materials:

- **Waiver Type:** Availability Waiver for a domestic product, which cannot be provided in sufficient and reasonably available quantities or of a satisfactory quality.
- **Waiver Level and Scope:** Project-level waiver for a single product type for a single project within one award.
- **Product:** Submersible pump assembly, which will be "furnished with a coupling and motor bracket providing proper alignment and lateral setting." See **Enclosure 1** for specifications.
- **Estimated cost of products included in the waiver:** Estimated cost per complete pump assembly is [redacted]
- **Project Summary:** Project Number HDWS-PF25-EQ will consist of repairing the deep wells owned by HDWS. This portion of the project will purchase the various components that will need replacing, which include pumps, motors, and column pipes.
- **Recipient's UEI:** EPPEQ6N7ZH13 (Department of Water, County of Hawaii); HDOH's UEI is LFVFLBD6XZB5.
- **Project cost:** [redacted]
- **Project Timeline:** Project will be included in the SRF Programmatic Financing loan. HDOH hopes to complete the executed loan in April 2025 [redacted].

A utility informal market review was completed for many of the products needed for this project:

- **Market Research Findings:** [redacted]
- **Manufacturer Confirmation and Domestic Product Review:** [redacted]
- **Waiver requested:** HDWS asked HDOH to pursue a waiver on February 4, 2025. [redacted]

If there are any questions, please contact Ms. Devin Donaldson at [redacted] and cc [redacted]

Sincerely,

GAUDENCIO C. LOPEZ, P.E., CHIEF
Safe Drinking Water Branch

DD:jc

[redacted]

Proposal

PART "B" (PUMP & MOTOR)

1. **DEEPWELL C**:

[redacted] (1) [redacted] 450 GPM @ 1,150—ft. [redacted] 200 HP, 2,300 volt, 2-Pole (3,600 RPM) heat exchanger type submersible motor [redacted] Deepwell Submersible Pumping Unit. Pump shall be furnished with a coupling and motor bracket providing proper alignment and lateral setting. **Motor bracket shall be separate from the pump intake.** Contractor shall submit an independent certified witnessed pump curve to the Department for review and approval before the pump and motor will be accepted for delivery.

All surface freight and delivery costs shall be included in price.

NOTE: This pump and motor assembly will be used to repair the well.

PUMP COST: $_____

MAKE: _____

MODEL: _____

(a) Delivery Time (Surface freight)
_____ (days)

MOTOR COST: $_____

MAKE: _____

MODEL: _____

(b) Delivery Time (Surface freight)
_____ (days)

TOTAL PART "B" **$_____**

PART "C" (MATERIALS & SERVICES)

Major Material and Service Cost Items (As Needed):

Item No.	Estimated Quantity	Description	Unit Price	Total Price
1.	Lump Sum	Video survey only – entire length of well casing, including perforations underwater, before brushing and bailing. Video to be furnished on USB flash drive, as specified in SPECIAL PROVISIONS, Section 304.05.C.3.e.	$	$
2.	Lump Sum	Video survey – entire length of well casing, including perforations underwater, after well rehabilitation and redevelopment work, suction bailing and surface bailing. Video to be furnished on USB flash drive, as specified in SPECIAL PROVISIONS, Section 304.05.C.3.e. *Contractor shall contain and dispose of all bailed materials at an approved waste disposal facility.*	$	$
3.	Lump Sum	Well cleaning services inclusive of brushing of the complete length of the well casing (1,163.60'); swabbing the complete length of perforated casing (39.6') with a surge block on a pump rig for total removal of drill cuttings from the perforated casing, filter pack and immediate surrounding formation; well bailing; and the containment and disposal of bailed material within a disposable dewatering slurry bag [redacted]) at an approved waste disposal facility.	$	$
4.	3 Ea.	8—inch Sch. 40, ASTM A53 Grade B, hot-dipped galvanized steel Column Pipe, threaded both ends, API 8 round, furnished with galvanized coupling, 20–feet single random lengths, with surface freight included.	$	$
5.	1 Ea.	8—inch Sch. 40, ASTM A53 Grade B, hot-dipped galvanized steel Column Pipe, threaded both ends, API 8 round, furnished with galvanized coupling, length shall be 5—feet, with surface freight included.	$	$

Item No.	Estimated Quantity	Description	Unit Price	Total Price
6.	112 Ea.	1-1/4—inch by 10—feet length, PVC flush joint conforming to ASTM F480, Sch. 80 sounding tube, with surface freight included.	$	$
7.	10 Ea.	1-1/4—inch by 4—feet length, PVC flush joint conforming to ASTM F480, Sch. 80 sounding tube, with surface freight included.	$	$

Special Provisions

PRODUCTS

1. General

   a. Submersible pump assembly and the materials used in their manufacture shall comply with the most recent revision of the following standards:

Subject	Standard Designation
Vertical Turbine Pumps – Line Shaft and Submersible Types	ANSI/AWWA E101
Column Pipe	Galvanized Steel ASTM A53 Gr. B and ASTM A123 (Min. 2.0 oz/ft^2 or 3.35 mils)
Column Pipe Couplings	Galvanized Steel ASTM A53 Grade B and ASTM A123 (Min. 2.0 oz/ft^2 or 3.35 mils)
Discharge Case	Cast Stainless Steel ASTM A744 Gr. CF8M
Discharge Case Bearing	PEEK/PTFE Polymer Alloy (Greene Tweed AR HT)
Upthrust Washer	Stainless Steel ASTM A582 Gr. 316
Intermediate Bowl(s)	Cast Stainless Steel ASTM A744 Gr. CF8M
Intermediate Bowl Bearing(s)	PEEK/PTFE Polymer Alloy (Greene Tweed AR HT)
Impellers	Nickel Aluminum Bronze ASTM B148 Alloy C95500
Taper Lock Collets	Stainless Steel ASTM A582 Gr. 316
Suction Case	Cast Stainless Steel ASTM A744 Gr. CF8M
Suction Case Bearing	PEEK/PTFE Polymer Alloy (Greene Tweed AR HT)
Pump Shaft	Stainless Steel ASTM A564 Gr. 17-4 PH
Discharge Bearing Plug	Stainless Steel ASTM A582 Gr. 316
Suction Screen	Stainless Steel ASTM A240 Gr. 316
Bowl Assembly Hex Bolts	Stainless Steel ASTM A193 Gr. B8S Nitronic 60

1. Conditions of Operation
    a. [redacted]
    b. Design Information:
        i. The pump shall be designed for the conditions of service tabulated as follows and shall operate within the system head curve envelop as defined below. All pumps shall have a continuously rising (from runout toward shutoff) head-flow rate performance for stable pump operations within the allowable operating range.

DWS Furnished and Reused Equipment	
Power Cable	
[redacted]	
Cable Size	#1 AWG, 5kV
Cable Length	1,800—ft.
Serial No.	
Column Pipe	
Size / Threading	8", 8 API Round
Total Column Length (ft.)	1,070.00'
Sounding Tube	
Qty / Size / Matl / Threading	(2) 1-1/4", PVC Sch 80, ASTM F480
Motor Shroud Assembly	
[redacted]	
Size	12"Ø x 25'

Performance Requirements	
Design Flow Capacity (gpm)	450
Design Head, TDH (ft)	1,150.00'
Available Submergence (ft)	18.00'
Minimum Bowl Efficiency (%)	75.40%
Maximum Pump Brake Horsepower (hp)	177.0
Desired Pump Performance Characteristics:	
0 GPM at 1,817.0—ft. head (Shut-Off Head)	
180 GPM at 1,659.0—ft. head (Bowl Efficiency 61.2%)	
270 GPM at 1,549.0—ft. head (Bowl Efficiency 74.1%)	
360 GPM at 1,393.0—ft. head (Bowl Efficiency 78.7%)	

Performance Requirements
450 GPM at 1,158.0—ft. head (Bowl Efficiency 75.5%)
540 GPM at 848.0—ft. head (Bowl Efficiency 66.3%)
[redacted]

1. Column Pipe Assembly
    a. The column pipe size shall be such that the friction loss shall be less than 5 feet of head per 100' of column at design operation, but velocity shall not be less than 3.5 ft/s.
    b. The column pipe shall be furnished in interchangeable sections of a nominal length of 20 feet with a maximum deviation of 0.125 inches.
    c. The column pipe shall be Schedule 40 steel pipe, conforming to ASTM A53 Gr. B, and shall be coated with zinc inside and outside, by the hot-dip process, with minimum thickness of 2.0 oz./ft2 or 3.35 mils per ASTM A123, certified to possess a lead content no greater than 0.05% or NSF 61 approved.
    d. The column pipe shall be machined to face both ends perpendicular to the longitudinal central axis of the column pipe with a tolerance of 0.0001 in/in of face diameter or 0.0005 in/in T.I.R. total, whichever is least.
    e. The column pipe shall be machined on both ends with external lathe cut, API 8 Round Short (NPT where specified) threads with longitudinal central axis of the thread parallel to the longitudinal central axis of the column pipe with a parallelism tolerance of 0.0001 in/in. Threads shall be cut after the galvanization of the column pipe.
    f. The column pipe length shall be 20' – 0" with a tolerance of +0.50"/-0.00".
2. Column Pipe Coupling
    a. The column couplings shall be sleeve type, conforming to ASTM A53 Gr. B, and shall be coated with zinc inside and outside, by the hot-dip process, with minimum thickness of 2.0 oz./ft2 or 3.35 mils per ASTM A123, certified to possess a lead content no greater than 0.05% or NSF 61 approved.
    b. The column couplings shall be machined to face both ends perpendicular to the longitudinal central axis of the column coupling with a tolerance of 0.0001 in/in of face diameter or 0.0005 in/in T.I.R. total, whichever is least.
    c. The column coupling shall be machined with internal lathe cut, API 8 Round Short (NPT where specified) threads with longitudinal central axis of the thread parallel to the longitudinal central axis of the column coupling with a parallelism tolerance of 0.0001 in/in. Threads shall be cut after the galvanization of the column coupling.
    d. The length of the coupling shall ensure adequate thread engagement of the column pipe threads for sufficient strength to contain 1.25 times the maximum pressure developed by the pump and carry 1.25 times the maximum suspended load of the

column assembly, pump bowl assembly, submersible motor, motor shroud, power cable, sounding tubes and water column.

e. The galvanized coupling shall be fully threaded on the pipe with a lead-free anti-seize lubricant, meeting API and ADC standards and NSF 61 standards for use in potable water wells.

3. Pump Bowl Assembly

   a. Pump Design

      i. The vertical turbine pump shall be a vertical single or multi-stage unit, as required, with enclosed impellers. The vertical turbine pump shall be of the submersible direct coupled to electric drive motor type, furnished as a complete pump bowl assembly, including any accessories required for submerged well service, ready-to-install unit by a single supplier.

      ii. Vertical turbine pump shall be capable of operating at 175% of design head or shutoff head, whichever is greater, for not less than five (5) minutes without excessive vibration, binding, rubbing of rotating parts, or damage to the pump.

      iii. The pump curve for the vertical turbine pump shall be as steep as practicable within the constraints of this section and shall exhibit a continuously rising characteristic to shutoff head, with no points of zero slope or slope reversal.

      iv. Unless otherwise indicated, the required pump shaft horsepower at any point on the performance curve shall not exceed the rated horsepower of the motor or encroach on the service factor.

      v. Pump selection shall be based on providing the highest possible operating efficiency over the entire operating range with the peak efficiency at or near (to the left of) the design point and a model which shall provide consistent, and reliable long-term service.

      vi. **It shall be the pump manufacturer's responsibility to inform the bidders (well contractors) a minimum of 10 calendar days prior to the scheduled bid opening of their guaranteed pump bowl efficiency as determined by their engineering division or inability to meet any other portion of the bid specifications. If the pump manufacturer fails to notify the bidders by the aforementioned deadline, it shall be inherently determined that the pump manufacturer meets all requirements of the bid specifications and shall be obligated to furnish equipment as such or be responsible for the respective energy cost differential charges.**

      vii. These specifications shall serve as a complement to ANSI B58.1 and where contradictions occur, these specifications shall govern.

   b. Pump Construction

      i. The pump bowl assembly shall consist of the discharge case, pump bowls, impellers, shaft, bearings, suction case, and motor bracket. The pump shall be assembled with separate suction case and motor bracket sections. Pump constructions employing integral suction case with motor bracket **shall not** be

accepted.

ii. The pump bowl assembly shall have the tensile capability to support the entire weight of the motor, and motor shroud.

iii. The pump bowl assembly shall contain no more than 0.25% lead content by weighted average. Contractor shall provide certification of 0.25% or less lead content or NSF 372 certification.

iv. The pump discharge case shall be sized for API 8 Round Short thread. Any column adapter piece shall require Department approval for design and provided at no additional cost.

v. Maximum outside diameter of the pump shall be 7.19—inches.

vi. **The pump bowl assembly shall be statically and dynamically balanced per ISO 1940/1 to a balance quality grade of G 6.3 (6.3 mm/s) or better.**

c. Pump Bowls

i. Pump bowls shall be precision close grained Type 316 stainless steel, and free of blow holes, sand holes and other defects. The bowls shall conform to minimum strength according to ASTM A744 Gr. CF8M, or better as required, with a minimum tensile strength of 70,000 pounds per square inch and shall be higher strength materials as needed for the upper pump bowl units.

ii. Bowl internal surfaces shall be polished to a surface roughness of ≤ 32 µin (Ra) / ≤ 35.2 µin (RMS) by abrasive flow machining to achieve the highest efficiency at the performance design point.

iii. The bowls shall be capable of withstanding a hydrostatic pressure equal to 150% the pressure at rated capacity or the pressure at shut-off head, whichever is greater. The pump manufacturer to provide the Project Engineer with pressure ratings of bowls at shut-off conditions as well as full load and associated calculations and pump material specifications.

iv. Each bowl shall be accurately machined and fitted to close dimensions and fitted with heavy-duty, sleeve-type, PEEK/PTFE polymer alloy [redacted] bearings on each side of the impellers. Only Nitronic 60 bolts shall be used if bowls are fastened to one another by bolts. Bolts shall be affixed with thread locking compound suitable for potable water application, with a minimum breakaway torque of 100 in-lbf, [redacted]

v. The suction case shall have anti-vortex vanes to suppress vortex formation. The bottom bearing housing in the suction case shall be cast as an integral part of the suction case.

vi. The suction case shall be fitted with a 316 stainless steel sand collar to prevent dirt, sand or other foreign particles from entering the shaft bearings. Sand collar shall be securely locked to the pump shaft by a set screw affixed with thread locking compound suitable for potable water application, with a minimum breakaway torque of 100 in-lbf, [redacted].

vii. The intermediate bowls and suction case shall be fitted with replaceable

PEEK/PTFE polymer alloy [redacted] stationary wear rings having the minimum practical clearances to the rotating impeller surface.

viii. The discharge case shall be machined with lathe cut standard API 8 Round Short threads to match column pipe, accurately machined to the axis of the pump, to ensure an accurate assembly and alignment. Any column adapter piece shall require Department approval for design and provided at no additional cost.

d. Impeller

i. The impellers shall be the fully enclosed type and shall be of nickel aluminum bronze ASTM B148, GR C95500, of new ingot material of heavy construction and free from blow holes, porosity and other defects.

ii. The impeller shall be finished all over, accurately fitted and balanced, both statically and dynamically, (hydraulic "balanced thrust" impellers shall not be permitted). **The impellers shall be balanced per ISO 1940/1 to a balance quality grade G 6.3 (6.3 mm/s) or better.** They shall be locked securely to the impeller shaft with a 316 stainless steel tapered collet lock bushing.

iii. The bowls and impellers shall be designed and accurately machined with vanes carefully finished to ensure open and smooth passages with efficient operation and to prevent air locking or sand locking.

iv. The impellers shall be so designed as to permit axial adjustment to compensate for wear. The outer tips of the impeller blades shall not be feathered and shall be of sufficient thickness to withstand considerable wear before affecting performance of the pump.

e. Impeller Shaft

i. The impeller shaft shall support the impellers and shall be of ground and polished, pump shaft quality 17-4PH stainless steel condition H900, conforming to ASTM A-276 and A479, or higher strength material.

ii. The impeller shaft shall possess a surface roughness not exceeding 20.0 µin (RA) / 22.0 µin (RMS).

iii. The shaft shall be supported by suitable non-corrosive bearings on both sides of each impeller with positive means for water lubricating each bearing.

iv. The intermediate bowl and case bearings shall be heavy-duty, PEEK/PTFE polymer alloy [redacted] bearings or other non-corrosive material by approval.

v. The shaft shall be provided with a means to accurately locate the shaft with respect to the bowls during assembly of the bowl unit.

vi. The size of the shaft, to be determined by the pump manufacturer, shall be capable of transmitting the total thrust and torque loads of the unit in either direction.

vii. The shaft shall be continuous in construction. No threaded and coupled, or bolted joints shall be accepted.

viii. The pump design and construction shall permit the operation of the pump in reverse rotation, or sudden shut down of pump due to a power failure event without causing damage to the pump.

f. Suction Case and Screen

i. The pump suction case shall be fitted with a stainless steel suction screen having a total open area at least three times the cross-sectional area of the column pipe, while still rejecting objects of 0.25"Ø or larger from entering the pump.

[redacted]

4. Submersible Motor

a. General

i. Submersible motor shall be induction type, water-filled suitable for use with the Department's existing soft starter and VFD equipment.

ii. Motor shall be capable of continuously delivering the necessary brake horsepower (BHP) along the complete pump curve.

iii. The motor rating shall be such that at design it will not be loaded beyond nameplate rating and at no place on the pump curve shall the loading exceed the service factor.

iv. Motor shall be NSF-61 or NSF-372 approved wherever applicable.

v. **The motor assembly shall be statically and dynamically balanced per ISO 1940/1 to a balance quality grade of G 2.5 (2.5 mm/s) or better and per NEMA Standard MG1, Part 7, to a maximum peak velocity of 0.08 (IPS-Peak).**

vi. The maximum outer diameter of the motor housing shall be 9.125 inches.

b. Motor Details

Motor Details	
Horsepower (HP)	200 HP
Voltage (V)	2,300 V
Phase (Ø)	3
Full Load Amps (A)	49
Nominal Speed (RPM)	3,540
Service Factor	1.15
Minimum Efficiency @ Full Load (%)	91.8 %
Minimum Power Factor @ Full Load (PF)	84.0 %
Maximum Motor O.D. (in)	9.125"

Motor Details	
Motor Lead Extension Length (ft)	40’

c. Ratings

i. The water-filled submersible motor shall be of a construction suitable for continuous under-water operation in 25.0ºC (77.0ºF) well fluid with a flow velocity past the motor of 0.50—ft./sec. The motor shall be rated to produce the specified horsepower with specified volts, 60 Hz frequency, 3 phase alternating current power with a minimum service factor of 1.10 (60 Hz). The motor shall be inverter duty rated. All insulating materials will be rated for Class F or better. Minimum efficiency at full load shall be as specified with a minimum power factor of 84.0%. Motor shall be specifically designed for high temperature applications.

ii. Fill Solution

a) The motor shall be of the water filled “water tight” type. The motor shall be filled with a mixture of water, antifreeze, and antithrust mixture good to -30°C (-22°F). Shall conform to ANSI/NSF 60 Drinking Water Treatment Chemicals and registered as 3H and H1 lubricant for direct or incidental contact by NSF.

iii. Shaft Seal System

a) The motor shall be equipped with a [redacted] mechanical seal. Seal shall be a single spring type mechanical seal, located at the top of the motor where motor shaft extends through the upper motor housing.

b) The mechanical seal material shall consist of silicon carbide faces for both the rotating seal as well as the stationary seal. Metal components of the seal shall be of 316 SS.

iv. Stator Area Fluid System

a) The motor is to be internally balanced in such a manner as to prevent the entrance of well fluids into the motors and thus contaminating the oil and lowering its dielectric strength.

v. Bearings

a) Replaceable radial bearings made of carbon graphite, with grooved profile over the graphite surface, water lubricated, with large surface area and length to give extra side support and prevent whipping. Bronze, ball bearing or babbitt lined bearings shall not be accepted.

b) The motor shall be equipped with a [redacted] pivotal shoe type thrust bearing, capable of carrying the weight of all rotating elements plus the hydraulic thrust of the pump at shutoff head. Each pivot shoe shall be capable of individually self-aligning to the thrust driver. The main rotating disc of the axial thrust assembly is made from stainless steel backing with a carbon disc face.

vi. Motor Construction

a) The motor housing and frame shall be of ASTM A744 Gr. CF8M 316L stainless steel or ASTM A814 Gr. 316L stainless steel.

b) Rotor shaft shall be of ASTM A276 Gr. 17-4 PH PSQ stainless steel with ends in the bearing area, polished to a surface roughness not exceeding 20.0 µin (RA) / 22.0 µin (RMS).

[redacted]

d) The motor laser cut or stamped stator and rotor laminations shall be of silicon steel.

e) Rotor laminations shall be keyed to rotor shaft.

f) Windings shall be of oxygen-free high conductivity copper (OFHC) grade CU-OF magnet wire with suitable insulation for compatibility with use of a variable frequency drive.

vii. Motor Leads

a) The motor shall be equipped with a detachable, plug-in type lead assembly with one (1) set of three separate, continuous leads. The plug assembly shall be a hot-injection molded plug at the terminal end. The lead assembly plug termination shall form a water-tight seal between the leads and the motor terminal.

b) The motor lead plug in connector shall be pressure tested prior to installation and delivery. The plug in shall be insulation resistance tested after subjected to a minimum of 50 psi for one hour.

c) The plug-in motor flat extension (MLE) assembly shall have a minimum length of 40 feet. Contractor shall furnish 2-piece 316 stainless steel cable guards for full length of the MLE.

viii. Motor Coupling

a) The motor manufacturer shall furnish an ASTM A564 Gr. 17-4PH Condition H1150 stainless steel, two-piece, flexible (jaw) coupling, or internal spline couplings of sufficient size and strength to withstand the torque of the motor and the resistance of the pump.

b) Each side of the motor coupling shall be compatible with the seal and motor shaft, respectively, and shall provide for proper assembly alignment and lateral setting.

ix. Mounting Dimensions

a) The motor manufacturer shall disclose all pump end mounting dimensions (flange register dimension, flange bolt pattern and hole size, shaft stick-down height and shaft keyway configuration) to the pump manufacturer at the time of submittals.

[redacted]

5. PVC Sounding Tube
    a. The PVC sounding tubes shall be ASTM D1785 polyvinyl chloride, Schedule 80.
    b. The sounding tube shall be furnished in 10’ – 1-5/8” interchangeable sections (shall measure 10’ – 1/8” as measured from shoulder of male threaded end to female threaded end), unless otherwise specified.
    c. The sounding tube shall be flush joint threaded in conformance with ASTM F480-14, Figure A2.1 and Table A2.2 (Nominal 2TPI). Overall thread length shall be 1-1/2” on both ends.
        i. Flush joint threading shall match threading on stainless steel sounding tube.
        ii. Male flush joint threads shall be lightly machine polished with wool pad and plastic buffing compound.
        iii. The use of couplings to join the PVC sounding tube sections shall be prohibited.
6. Stainless Steel Sounding Tube
    a. General
        i. The stainless steel sounding tube shall be Type 304 stainless steel Schedule 80 pipe, ASTM A312, or ASTM A269.
        ii. The sounding tube shall be furnished in 10’ – 1-5/8” interchangeable sections (shall measure 10’ – 1/8” as measured from shoulder of male threaded end to female threaded end), unless otherwise specified.
        iii. The sounding tube shall be flush joint threaded in conformance with ASTM F480-14, Figure A2.1 and Table A2.2 (Nominal 2TPI). Overall thread length shall be 1-1/2” on both ends.
            a) Flush joint threading shall match threading on PVC sounding tube.
            b) Both male and female flush joint threads shall be electropolished in conformance with ASTM B912, A967 and A380, to a surface roughness not exceeding 20.0 µin (RA) / 22.0 µin (RMS).
            c) The use of couplings to join the stainless steel sounding tube to PVC sounding tube shall be prohibited.
            d) No weld joints permitted.
        iv. The first 10’ section shall be enclosed with an ASTM A312 Gr. 304 stainless steel end cap.
            a) End cap shall include four (4) 3/8” holes equally spaced radially at the maximum circumscribed diameter to fit the bottom of the end cap.
            b) Sounding tube shall be drilled with eight (8) holes per interval, 3/8” in diameter, spaced (radially) 45° apart, and spaced (axially) 3” apart. Intervals shall be offset by 22.5° from the previous interval. The holes shall be drilled beginning 2-1/2” from the capped end and shall proceed over the complete 10’ – 2-1/8” length.