DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAI'I
345 KEKŪANAŌ'A STREET, SUITE 20 • HILO, HAWAI'I 96720
TELEPHONE (808) 961-8050 • FAX (808) 961-8657

DEPARTMENT OF WATER SUPPLY
COUNTY OF HAWAI'I
HILO, HAWAI'I

ADDENDUM NO. 1

MATERIAL BID NO. 2025-05

INVITATION FOR BIDS

FURNISHING AND DELIVERING
SPARE PUMP AND MOTOR SETS AND
PAD-MOUNTED TRANSFORMERS

DISTRICTS ISLANDWIDE
County of Hawai'i – State of Hawai'i

The following revisions and changes shall be made a part of the contract bidding documents:

I. Changes to **PROPOSAL**:

A. Page P-2, **REVISE**, Section 1, Item 3, the existing description shall be revised as follows:

"Baker Hughes CEER or equal by approval, #2 AWG, 5 kV non-shielded, armored pump cable, with performance characteristics specified in Special Provisions, Section 304.05, Part B.5. Spool length shall be 1,050—ft. ***BABA certification required.***"

B. Page P-4, **REVISE**, Section 2, Item 5, the existing description shall be revised as follows:

"Baker Hughes CEER or equal by approval, #2 AWG, 5 kV non-shielded, armored pump cable, with performance characteristics specified in Special Provisions, Section 304.06, Part B.7. Spool length shall be 2,240—ft. ***BABA certification required.***"

C. Page P-5, **REVISE**, Section 3, Item 1, the existing description shall be revised as follows:

"Baker Hughes Centurion Series WIJ700A – 13 stage submersible pump or equal by approval, rated 700 GPM @ 1,650—ft. TDH with factory installed column adapter, with performance characteristics specified in Special Provisions, Section 304.06, Part B.3. Contractor shall submit a factory certified witnessed pump curve to the Department for review and approval before the pump will be accepted for delivery. ***BABA certification required.***"

II. Changes to **SPECIAL PROVISIONS**:

A. Page SP-7, **REVISE**, Section 304.05, Part A.5.c.i.a)iii)a))iv)), the existing language shall be revised as follows:

"Insulation material and certification per IEEE 1017.2"

B. Page SP-7, **REVISE**, Section 304.05, Part A.5.c.i.a)iii)a))vi)), the existing language shall be revised as follows:

"Compliance with IEEE 1017.2"

C. Page SP-12, **REVISE**, Section 304.05, Part A.6.c.ii.c), the existing language shall be revised as follows:

"Pump cable shall be shipped on metal spool of sufficient size to contain the complete cable length below the depth of the flanges. Cable spool shall be shipped standing on edges of both flanges, firmly affixed on a metal cradle or pallet without slack. All surfaces of cable spool shall be coated with one (1) primer coat of two-part zinc rich epoxy primer at 5 mils DFT, and one (1) finish coat of two-part epoxy primer at 6 mils DFT. Cable spool shall be clearly marked with weatherproof, embossed non-ferrous metal or plastic nameplates showing information of the pump cable, on both flange ends. Pump cable nameplate shall list cable size, cable length, cable part number, and total weight. The Department will not approve cable spool for delivery until vendor-provided photographic proof that all of the above shipping requirements have been satisfied."

D. Page SP-27, **REVISE**, Section 304.06, Part A.3.h., the existing language shall be revised as follows:

"The Manufacturer shall be certified to the ISO 9001 standard for the design and manufacture of ESP submersible pumps."

E. Page SP-32, **REVISE**, Section 304.06, Part A.5.c.i.a)v)a))iv)), the existing language shall be revised as follows:

"Insulation material and certification per IEEE 1017.2"

F. Page SP-32, **REVISE,** Section 304.06, Part A.5.c.i.a)v)a))vi)), the existing language shall be revised as follows:

"Compliance with IEEE 1017.2"

G. Page SP-33, **REVISE**, Section 304.06, Part A.5.d.i.a), the existing language shall be revised as follows:

"One (1) certified witnessed copy of the performance curve and test data sheets of a factory laboratory running test conducted for the actual bowl assembly to be furnished, witnessed by a factory engineer and accommodations for virtual observation of the testing by Department staff. The Contractor shall verify that the certified witnessed pump efficiency is at least the minimum as specified at the rated conditions. The curve and data sheet must be approved by the Department before the pump is shipped. The running test shall be conducted in accordance with the latest edition of the API RP 11S2 to show that the specified conditions can be met by the bowl assembly furnished. The performance curve shall show the head-capacity at rated speed, efficiency-capacity, and required brake horsepower-capacity curves for the bowl assembly, as well as the guaranteed maximum net positive suction head required (NPSHR), and tabular data for flow (GPM), head (FT), pump bowl efficiency (%), input voltage (V), input current (A), and input power (kW) for all measured capacity points. The pump shall be operated at shut-off condition and at a minimum of five

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"Compliance with IEEE 1017.2"

C. Page SP-12, **REVISE**, Section 304.05, Part A.6.c.ii.c), the existing language shall be revised as follows:

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"Insulation material and certification per IEEE 1017.2"

F. Page SP-32, **REVISE,** Section 304.06, Part A.5.c.i.a)v)a))vi)), the existing language shall be revised as follows:

"Compliance with IEEE 1017.2"

G. Page SP-33, **REVISE**, Section 304.06, Part A.5.d.i.a), the existing language shall be revised as follows:

"One (1) certified witnessed copy of the performance curve and test data sheets of a factory laboratory running test conducted for the actual bowl assembly to be furnished, witnessed by a factory engineer and accommodations for virtual observation of the testing by Department staff. The Contractor shall verify that the certified witnessed pump efficiency is at least the minimum as specified at the rated conditions. The curve and data sheet must be approved by the Department before the pump is shipped. The running test shall be conducted in accordance with the latest edition of the API RP 11S2 to show that the specified conditions can be met by the bowl assembly furnished. The performance curve shall show the head-capacity at rated speed, efficiency-capacity, and required brake horsepower-capacity curves for the bowl assembly, as well as the guaranteed maximum net positive suction head required (NPSHR), and tabular data for flow (GPM), head (FT), pump bowl efficiency (%), input voltage (V), input current (A), and input power (kW) for all measured capacity points. The pump shall be operated at shut-off condition and at a minimum of five

(5) equally spaced capacity points, with the 3rd point at the specified design conditions. The test shall be performed at the maximum speed the factory test facility can accommodate. If the pump TDH exceeds 1,000', the pump may be destaged into no more than two subassemblies. All pump bowls shall be required to be tested. The factory engineer shall be provided by the manufacturer. It shall be the responsibility of the manufacturer's engineer to verify the manufacturer/testing facility is adhering to the following procedure i) – ii):"

H. Page SP-33, **REVISE**, Section 304.06, Part A.5.d.i.a)ii), the existing language shall be revised as follows:

"If the testing facility resides within the following states (Arizona, Arkansas, California, Colorado, Florida, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Mexico, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Utah, West Virginia, Wisconsin, or Wyoming) or known to source water from a hard water source ($\geq$ 6 grains per gallon), the pump shall be flooded, soaked, and cleaned with a NSF-61 approved cleaning agent to remove all hard water from the pump. All components shall be flushed with a CL1 and marine grade glycol mixture. Upon completion of flushing the pump unit, the pump shall then be checked to ensure the pump shaft turns smoothly and that all assembly parameters (lateral, shaft stick-up, etc.) are correct."

I. Page SP-34, **REVISE**, Section 304.06, Part A.5.d.i.a)iii), the existing language shall be revised as follows:

"ESP motor's exterior shall be media blasted, then followed by coating with CRC coating and NSF approved paint."

J. Page SP-35, **REVISE**, Section 304.06, Part A.5.d.i.b)iv)a)) & b)), the existing language shall be revised as follows:

"H.O.V.E. #1 Deepwell A: 68.37%

Group #2: 72.62%"

K. Page SP-37, **REVISE**, Section 304.06, Part A.7.c.ii.a), the existing language shall be revised as follows:

"Upon the completion of testing and preparations for shipment, as specified in Section 304.06, Part A.5.d.i.a) – d), the factory engineer shall complete an equipment inspection report, included as Appendix 2 & 3 within these specifications, prior to the equipment being crated."

L. Page SP-37, **REVISE**, Section 304.06, Part A.7.c.ii.b), the existing language shall be revised as follows:

"The ESP pump bowl assembly, ESP seal chamber section, ESP motor and ESP sensor section equipment shall be enclosed in full coverage substantial containers for protection from damages during normal handling and transit. Containers shall be weather/water-tight (by application of UV resistant polypropylene film sheathing tape to joints and openings) and of heavy steel construction. All surfaces of crate shall be coated with one (1) primer coat of two-part zinc rich epoxy primer at 5

mils DFT, and one (1) finish coat of two-part epoxy primer at 6 mils DFT. Hinged joint of metal clam-shell crating and any other openings shall be neatly sealed with UV resistant polypropylene film sheathing (tuck) tape. Crates shall be clearly marked with weatherproof, embossed non-ferrous metal or plastic nameplates showing information of contents within, on the top, front side and upper end of the crate. Where manufacture standard nameplates are intended to be used and are lacking all of the required information, UV & weather resistant labels (Dymo) with the missing information shall be applied to the crate below the affixed nameplate. Nameplate applied to pump crate shall list pump model, capacity, head, serial number, bowl diameter, overall length, and weight. Nameplate applied to seal/protector crate shall list seal model, serial number, diameter, overall length, and weight. Nameplate applied to motor crate shall list motor model, horsepower, voltage, serial number, diameter, overall length, and weight. Nameplate applied to sensor crate shall list sensor model, serial number, diameter, overall length, and weight. Additionally, the crates shall be marked with a red line (3M Model No. 471) on the sides and top, indicating the center of mass (balance point of the crate and the equipment within) of the crate; and a "This End Up/Fragile" label (ULINE Model No. S-604) on two sides of the crate. The Department will not approve any crate for delivery until vendor-provided photographic proof that all of the above crating requirements have been satisfied."

M. Page SP-37, **REVISE**, Section 304.06, Part A.7.c.ii.c), the existing language shall be revised as follows:

"Pump cable shall be shipped on metal spool of sufficient size to contain the complete cable length below the depth of the flanges. Cable spool shall be shipped standing on edges of both flanges, firmly affixed on a metal cradle or pallet without slack. All surfaces of cable spool shall be coated with one (1) primer coat of two-part zinc rich epoxy primer at 5 mils DFT, and one (1) finish coat of two-part epoxy primer at 6 mils DFT. Cable spool shall be clearly marked with weatherproof, embossed non-ferrous metal or plastic nameplates showing information of the pump cable, on both flange ends. Pump cable nameplate shall list cable size, cable length, cable part number, and total weight. The Department will not approve cable spool for delivery until vendor-provided photographic proof that all of the above shipping requirements have been satisfied."

N. Page SP-39, **REVISE**, Section 304.06, Part B.1.a) Table, the existing language and format shall be revised as follows:

Subject	Standard Designation
Electric Submersible Pumps (ESP)	API RP 11S
Pump Housing	Stainless Steel UNS S42000 Gr. 13Cr
Discharge Case	Stainless Steel UNS S42000 Gr. 13Cr or Nickel Aluminum Bronze ASTM B148 Gr. C95500
Upthrust Washer	Stainless Steel ASTM A582 Gr. 316
Intermediate Bowl(s)	Ni-Resist Type I ASTM A439 Grade D2 (Centralloy 167 Ni-Resist Type I) or Nickel Aluminum Bronze ASTM B148 Gr. C95500
Intermediate Bowl Bearing(s)	Tungsten Carbide

Subject	Standard Designation
Impellers	Ni-Resist Type I ASTM A439 Grade D2 (Centralloy 167 Ni-Resist Type I) or Nickel Aluminum Bronze ASTM B148 Alloy C95500
Impeller Keys and Set Screws	Monel K-500 ASTM B856 QQ-N-286 E
Suction Case	Stainless Steel UNS S42000 G r. 13Cr o r Nickel Aluminum Bronze ASTM B148 Gr. C95500
Suction Case Bearing	Tungsten Carbide
Pump Shaft	Monel K-500 ASTM B856 QQ-N-286 E or Inconel 718 ASTM B637
Suction Screen	Stainless Steel ASTM A240 Gr. 316
Seal & Motor Couplings	Stainless Steel ASTM A276 & A479 Gr. 316L
Bowl Assembly Hex Bolts	Monel K-500 ASTM B856 QQ-N-286 E

O. Page SP-42, **REVISE,** Section 304.06, Part B.3.b.i., the existing language shall be revised as follows:

"The ESP pump bowl assembly shall consist of the bolt-on discharge, pump housing, diffusers, impellers, shaft, bearings, and pump intake. The ESP pump shall bolt directly to the seal section."

P. Page SP-42, **REVISE**, Section 304.06, Part B.3.b.iv., the existing language shall be revised as follows:

"The pump discharge case shall be sized for 4—inch (H.O.V.E.) or 8—inch (Group #2), respectively, API 8 Round Long thread (LTC). Column adapter piece shall not be used unless specified or approved by Department project engineer and if approved, shall be provided at no additional cost. If column adapter is approved of use, all components of the adapter shall be 300 Series stainless steel with threads phenolic coated."

Q. Page SP-42, **REVISE,** Section 304.06, Part B.3.b.v.a), the existing language shall be revised as follows:

"Hawaiian Ocean View Estates (H.O.V.E.) #1 Deepwell A: 5.380—inches"

R. Page SP-43, **REVISE,** Section 304.06, Part B.3.c., the existing language shall be revised as follows:

c. Pump Housing, Diffusers and Pump Bowls

i. ESP pump housing shall be manufactured from corrosion-resistant martensitic stainless steel conforming to UNS S42000 (13Cr), meeting the chemical composition requirements of ASTM A276 for wrought products or ASTM A743 for cast components. The material shall be fully heat treated to a hardened condition through austenitizing, quenching, and tempering to achieve a hardness between HRC 35 and 45. The tempering process must avoid sensitization and maintain corrosion resistance suitable for exposure to potable or mildly brackish water with chloride concentrations up to 400 ppm. All housings shall be passivated

in accordance with ASTM A967 or ASTM A380 to improve corrosion performance and surface stability.

ii. The pump housing shall be fabricated as a precision casting or fully machined forging. Weldments are not permitted unless specifically approved by the Department and supported by qualified welding procedures in accordance with ASME Section IX. Where welding is approved, post-weld heat treatment (PWHT) shall be performed to restore mechanical and corrosion properties. Internal fluid-contact surfaces shall have a surface finish of Ra $\leq$ 3.2 µm (125 µin), and all machined sealing surfaces shall meet a finish of Ra $\leq$ 0.8 µm (32 µin).

iii. Dimensional tolerances for pump housing shall conform to ISO 2768-mK or tighter, and the shall ensure shaft alignment within 0.005 in/in over its entire length. Each housing shall undergo 100% visual and dimensional inspection. A hydrostatic pressure test at 1.5 times the rated working pressure shall be performed on each unit to verify pressure integrity.

iv. Diffusers shall be precision, close grained Ni-Resist Type I ASTM A439 Grade D2 (Centralloy 167 Ni-Resist Type I) for Hawaiian Ocean View Estates (H.O.V.E.) #1 Deepwell A, of new ingot material, heavy construction, and free of excessive gas porosity (pinholes, blowholes, sand holes, scars, and blisters in conformance with Grade B, SAE AMS-STD-2175 latest edition), scabs, core shift, mold shift, drops, metal penetration, rat tails, buckles, washes, hot tears, swells, and other defects. The diffusers shall conform to minimum strength according to UNS S42000 Gr. 13Cr, or better as required, with minimum tensile strength of 45,000 pounds per square inch for H.O.V.E. #1 Deepwell A.

v. Pump bowls shall be precision, close grained nickel aluminum bronze ASTM B148 Gr. C95500 for Group #2, of new ingot material, heavy construction, and free of excessive gas porosity (pinholes, blowholes, sand holes, scars, and blisters in conformance with Grade B, SAE AMS-STD-2175 latest edition), scabs, core shift, mold shift, drops, metal penetration, rat tails, buckles, washes, hot tears, swells, and other defects. The bowls shall conform to minimum strength according to ASTM B148 Gr. C95500, or better as required, with a minimum tensile strength of 90,000 pounds per square inch for Group #2, and shall be higher strength materials as needed for the upper pump bowl units.

vi. Diffuser and bowl internal surfaces shall have a surface roughness of $\leq$ 113.7 µin (RA) / $\leq$ 125 µin (RMS) for cast faces.

vii. The bowls shall be capable of withstanding a hydrostatic pressure equal to 1,200 psi or the pressure at shut-off head, whichever is greater, for not less than five (5) minutes without excessive vibration, binding, rubbing of rotating parts, or damage to the pump. 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.

viii. Each diffuser or bowl, respectively, shall be accurately machined and fitted to close dimensions and fitted with Tungsten Carbide sleeve-type bearings on each side of the impellers. Only Monel K-500 bolts shall be used where pump assembly assembled by bolts.

ix. The discharge case shall be machined with lathe cut standard API 8 Round Long threads (LTC), 4—inch (H.O.V.E.) or 8—inch (Group #2), respectively, and if column adapter is

approved for use, all components of the adapter shall be 300 Series stainless steel with threads phenolic coated, accurately machined to the axis of the pump, to ensure an accurate assembly and alignment. The column adapter shall require Department approval for design and provided at no additional cost.

S. Page SP-44, **REVISE**, Section 304.06, Part B.3.e., the existing language shall be revised as follows:

e. Impeller Shaft

i. The impeller shaft shall support the impellers and shall be of ground and polished, pump shaft quality (PSQ) Monel K-500 ASTM Alloy B856 QQ-N-286 PH or Inconel 718 ASTM B637 for H.O.V.E. #1 Deepwell A and Group #2, or higher strength material.

ii. The impeller shaft shall possess a surface roughness not exceeding 32.0 µin (RA) / 35.5 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 Tungsten Carbide or other wear and corrosion resistant material by approval.

v. 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.

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

vii. The pump design and construction shall permit the operation of the pump in reverse rotation (limited to 10 minute duration), or sudden shut down of pump due to a power failure event without causing damage to the pump.

T. Page SP-44, **REVISE**, Section 304.06, Part B.3.f., the existing language shall be revised as follows:

"The pump intake shall be fitted with a corrosion-resistant stainless steel intake screen with a minimum open flow area of at least 1.5 times the cross-sectional area of the intake pipe or column, and shall be designed to exclude solids larger than 0.25–0.5 inches (6–13 mm) in diameter from entering the pump. The screen shall be capable of withstanding differential pressures from debris loading without deformation and shall have minimum 40% open area."

U. Page SP-45, **REVISE**, Section 304.06, Part B.4.a.i., the existing language shall be revised as follows:

"The ESP seal chamber section shall be single type; use a bag and double labyrinth or double bag and labyrinth configuration, respectively, and include high load thrust bearings."

V. Page SP-45, **REVISE**, Section 304.06, Part B.4.a.iii.a), the existing language shall be revised as follows:

"Housing: For connection between the ESP pump and ESP motor. Shall contain a single cylindrical sleeve extending from the lower adapter to the upper adapter. Shall be of stainless steel UNS S42000 Gr. 13Cr."

W. Page SP-47, **REVISE,** Section 304.06, Part B.5.f. Tables, the existing language shall be revised as follows:

Motor Details – H.O.V.E. #1 Deepwell A	
Horsepower (HP)	150
Voltage (V)	2,300
Phase (Ø)	3
Full Load Amps (A)	41
Nominal Speed (RPM)	3,462
Service Factor	1.10
Minimum Efficiency @ Full Load (%)	86.0%
Minimum Power Factor @ Full Load (%)	79.5%
Maximum Motor O.D. (in)	5.625"
Motor Lead Extension Length (ft)	55.0'

Motor Details – Group #2	
Horsepower (HP)	400
Voltage (V)	2,300
Phase (Ø)	3
Full Load Amps (A)	108
Nominal Speed (RPM)	3,485
Service Factor	1.10
Minimum Efficiency @ Full Load (%)	87.5%
Minimum Power Factor @ Full Load (%)	83.0%
Maximum Motor O.D. (in)	7.25"
Motor Lead Extension Length (ft)	55.0'

X. Page SP-48, **REVISE**, Section 304.06, Part B.5.g.v.a), the existing language shall be revised as follows:

"The ESP motor housing and frame shall be of stainless steel UNS S42000 Gr. 13Cr."

Y. Page SP-50, **REVISE**, Section 304.06, Part B.5.g.vi.b), the existing language shall be revised as follows:

"The motor lead plug in connector shall be pressure tested prior to installation and delivery, inclusive of Face (Decay) – Cable (Leak-Up) Leak Test @ 5 PSI for 5 minutes; Face (Decay) – Cable (Leak-

Up) Leak Test @ 25 PSI for 5 minutes; Face (Decay) – Cable (Leak-Up) Leak Test @ 50 PSI for 5 minutes; Hydro Leak Test @ 50 PSI for 5 minutes; Test: AC @13 kV for 2 minute each phase; Test: DC @ 25 kV for 1 minute each phase; and Max DC Leakage: 1 µA."

Z. Page SP-51, **REVISE**, Section 304.06, Part B.6.a.i.g), the existing language shall be revised as follows:

"Current Leakage: 0 – 20 mA"

AA. Page SP-52, **REVISE,** Section 304.06, Part B.6.a.i.g), the existing language shall be revised as follows:

"Conductor insulation shall be premium grade ethylene propylene diene monomer (EPDM) in conformance with IEEE 1017.2 (latest edition). The cable insulation shall be 100% non-conductive."

III. **CLARIFICATIONS**:

A. UNS S41600 shall be considered unacceptable for use as bowl bearings or upthrust washer.

B. For Section 2 – H.O.V.E. #1 Deepwell A, the performance point for the ESP pump assembly shall be 100 GPM @ 2,215'TDH @ 60.0 Hz.

C. For Section 3 – Group #2, the performance point for the ESP pump assembly shall be coordinated to be optimally located among the current performance points of the various wells in the grouping: 700 GPM @ 1674'TDH @ 60.0 Hz, 700 GPM @ 1,653' TDH @ 60.0 Hz, 700 GPM @ 1.67'TDH @ 60.0 Hz, and 650 GPM @ 1.680' TDH @ 60.0 Hz. Shall produce the maximum flow rate without exceeding these design points.

BY AUTHORITY OF THE DEPARTMENT OF
WATER SUPPLY COUNTY OF HAWAI'I

Date: July 24, 2025

By: _____
Keith K. Okamoto-Manager-Chief Engineer

Receipt of a copy of **ADDENDUM NO. 1** for MATERIAL BID NO. 2025-05, INVITATION FOR BIDS FURNISHING AND DELIVERING SPARE PUMP AND MOTOR SETS AND PAD-MOUNTED TRANSFORMERS, Districts Islandwide, County of Hawai'i, State of Hawai'i, is hereby acknowledged.

_____
NAME OF BIDDER

Date: _____

By: _____