



**BSWM- BIDS AND AWARDS COMMITTEE
 SUPPLEMENTAL BID BULLETIN NO. 3**

**CONTRACT: Procurement of 16 units of Mobile Soil Laboratory for CY
 2024 -07-046**

This Addendum is being issued in accordance with Section 22.5.2 of the IRR of RA 9184, to clarify and modify some provisions of the Bidding Document. **THIS SHALL FORM AN INTEGRAL PART OF THE BID DOCUMENT.**

ORIGINAL	AMENDED
<p>Section II. Instruction to Bidders-Clause 5.3:</p> <p>a. For the procurement of Non-expendable Supplies and Services: The Bidder must have completed a single contract that is similar to this Project, equivalent to at least fifty percent (50%) of the ABC (<i>PhP 86,000,000.00</i>).</p>	<p>Section II. Instruction to Bidders-Clause 5.3:</p> <p>c. For procurement where the Procuring Entity has determined, after the conduct of market research, that imposition of either (a) or (b) will likely result to failure of bidding or monopoly that will defeat the purpose of public bidding: the Bidder should comply with the following requirements:</p> <p>Completed at least two (2) similar contracts, the aggregate amount of which should be equivalent to at least fifty percent (50%) of the ABC per for this Project (<i>PhP 86,000,000.00</i>); and</p> <p>The largest of these similar contracts must be equivalent to at least half of the percentage of the ABC as required above (<i>PhP 43,000,000.00</i>).</p> <p>Note: completed within five years prior to the deadline for the submission and receipt of bids.</p>
<p>Section VII. Technical Specifications:</p> <p>Component I-</p> <ul style="list-style-type: none"> ● Max output: 2,400 rpm ● Engine: 6 Cylinder, In-line, Common-Rail Direct Injection, Blue Power Diesel Engine ● Provision for sample storage cabinet, stainless steel, laminated <p><u>Office and ICT equipment:</u></p> <ul style="list-style-type: none"> ● chairs (4)- leather, ergonomic, with seatbelt, embedded / detachable to mobile vehicle 	<p>Section VII. Technical Specifications:</p> <p>Component I-</p> <ul style="list-style-type: none"> ● Max output: 2,400 rpm ● Engine: 6 Cylinder, In-line, Common-Rail Direct Injection, at least Euro IV Compliant Diesel Emission System ● Provision for sample storage cabinet, stainless steel frame, laminated panels <p><u>Office and ICT equipment:</u></p> <ul style="list-style-type: none"> ● chairs (4)- leather, ergonomic, with seatbelt, embedded / detachable to mobile vehicle



REVISED SECTION VII. TECHNICAL SPECIFICATION

ORIGINAL	AMENDED
<ul style="list-style-type: none"> ● Stool (2) - stainless, leather cushion ● Waste Water Reservoir- 70 L, Either Polytetrafluoroethylene (PTFE) or Polyetheretherketone (PEEK) <p>Component II-</p> <p>No. 4. UV-Vis Spectrophotometer w/ laptop and printer</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer <p>No. 11. Atomic Absorption Spectroscopy with Laptop</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer <p>No. 15. Cross beater mill</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer <p>No. 22. Automated Saturated Hydraulic Conductivity System (2 station) with 1 Laptop</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer <p>No. 23. Particle Size Analysis System</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer <p>No. 28. Carbon Dioxide Respirometer Reader with Laptop and software included</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer or authorization certificate from manufacturer's appointed exclusive distributor in the Philippines. <p>No. 30. Root Image Analyzer</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer or authorization certificate from manufacturer's appointed exclusive distributor in the Philippines. 	<ul style="list-style-type: none"> ● Stool (6) - stainless, bolted to the floor, with leather cushion ● Waste Water Reservoir- 70 L, Either Polytetrafluoroethylene (PTFE), Polyether ether ketone (PEEK) or other chemical resistant material <p>Component II-</p> <p>No. 4. UV-Vis Spectrophotometer w/ laptop and printer</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>No. 11. Atomic Absorption Spectroscopy with Laptop</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>No. 15. Cross beater mill</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>No. 22. Automated Saturated Hydraulic Conductivity System (2 station) with 1 Laptop</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>No. 23. Particle Size Analysis System</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>No. 28. Carbon Dioxide Respirometer Reader with Laptop and software included</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>No. 30. Root Image Analyzer</p> <ul style="list-style-type: none"> ● Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.

REVISED SECTION VII. TECHNICAL SPECIFICATION

ORIGINAL	AMENDED
<p>No. 32. Tabletop Vertical Laminar Flow</p> <ul style="list-style-type: none"> Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer. <p>e) After sales services specifications:</p> <ul style="list-style-type: none"> Submission to include proposed floor plan and layout for the Mobile Soil Laboratory, subject for approval of the BSWM- LSD. The approved final design shall form part of the specifications of the customized vehicle. 	<p>No. 32. Tabletop Vertical Laminar Flow</p> <ul style="list-style-type: none"> Supplier shall submit a certificate of exclusive distributorship from the brand manufacturer <p>e) After sales services specifications:</p> <ul style="list-style-type: none"> Submission to include proposed floor plan and layout for the Mobile Soil Laboratory, subject for approval of the BSWM- LSD. The approved final design shall form part of the specifications of the customized vehicle.
	<p>Please see the attached Revised Section VII. Technical Specification</p>

<u>REMINDERS:</u>
<p>Evaluation of Bids:</p> <p>The BAC shall evaluate the bids per lot basis. However, the bidder’s bid shall not exceed on the ABC per Component (<i>Component I- PhP 13,000,000.00; Component II- PhP 30,000,000.00</i>).</p>
<p>Price Schedule (under Financial Proposal):</p> <p>Bidders <u>SHALL</u> indicate bid proposal for Component I and the Unit Price per Item (per equipment/instrument) under Component II.</p>
<p>Sealing and Marking of Bid:</p> <p>Please be advised that if the bidders wish to join 2 or more lots, they shall submit <u>1 BID PROPOSAL PER LOT.</u></p>

A complete set of Bidding Document may be acquired by interested Bidders until **August 14, 2024 3:00PM** from the address and website.

DEADLINE/SCHEDULE OF SUBMISSION AND OPENING OF BIDS:

Deadline of submission of bid proposals is on **August 15, 2024, 9:00AM**. Late submission shall not be accepted.

Opening of Bids is on **August 15, 2024, 9:30AM** at BSWM Convention Hall and via videoconferencing

For guidance and information of all concerned.

DENISE A. SOLANO
BAC Chairperson



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SECTION VII. REVISED TECHNICAL SPECIFICATIONS

BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Supply, Delivery, Modification of vehicle and Installation of equipment for Mobile Soils Laboratory			
	Component I. Commissioning and modification of vehicle to house the required instruments, equipment, and other accessories.	1	Unit	
	A) Vehicle Specifications:			
	10-wheeler truck, air-conditioned			
	Max output: 2,400 rpm			
	Fuel Type: Diesel			
	Max Torque: 882 N-m (Newton-meter)			
	Overall Length : minimum 11,900 mm			
	Gross Payload: minimum 18,995 kg, inclusive of trailer			
	Tire: 11R22.5-16PR			
	Engine: 6 Cylinder, In-line, Common-Rail Direct Injection, at least Euro IV Compliant Diesel Emission System			
	Rear Body Length: minimum 9,754 mm			
	Inclusive of spare tires (at least 4 pcs) and early warning device			
	Inclusive of vehicle specification plate, engraved			
	With reverse warning buzzer, auto door lock, air break			
	Inclusive of Tools for repair:			
	Toolbox, crescent wrenches, vehicle jack, combination wrenches, pliers, vice grips, wire cutter and electrical tape, ratcheting screwdriver set, 3-lb sledgehammer, tire air pressure gauge, flashlights, metal dowel rod, truck trip inspection tool, safety glasses, gloves, crowbar, fuses			
	B) Customization specifications:			
	provision and installation of furnitures, fixtures, and other accessories			
	electrical works, inclusive of convenience outlet, lighting			
	Provision for sample storage cabinet, stainless steel frame, laminated panels			
	Office and ICT equipment:			
	Office table (2)- furniture to add anti-vibration mechanisms /foam cushion capable of withstanding vibration during travel			
	chairs (4) leather, ergonomic, with seatbelt, embedded / detachable to mobile vehicle			
	Stool (≥ 6) - stainless, bolted to the floor, with leather cushion			
	Laboratory Housing Specifications:			
	Length: minimum 32.80 ft / 10000 mm			
	Width: minimum 6.56 ft / 2000 mm			
	Height: minimum 6.56 ft / 2000 mm			
	Three (3) main sections each with partition:			



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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	1) Soil and Water Analysis Section			
	2) Soil Physical Analysis Section			
	3) Soil Microbiological Analysis Section			
	Dimensions per room based on final layout			
	Separated door for Soil Micro Area, requires partition			
	Sample Preparation Area Outside the Laboratory with the following inclusions:			
	10 foldable & collapsible chairs			
	removable/retractable awning or canopy, UV-resistant, waterproof fabric			
	customized size to cover the desired presentation area			
	frame: aluminum or steel			
	mounting: attached securely to the mobile laboratory structure			
	legs or pillars: adjustable for varying terrains and stability			
	with side curtains or screens for additional shade			
	list of fixtures and equipment per section and per unit of Mobile Soil Laboratory is listed below			
	Laboratory fixtures:			
	Standard Laboratory Sink, Stainless steel	3		
	Water Tank, 300 - 500 Liters, stainless steel	1		
	Water suction line with water purifier (connection with tap water with pre-filter 3 stages)	1		
	Waste Water Reservoir- 70 L, Either Polytetrafluoroethylene (PTFE), Polyether ether ketone (PEEK) or other chemical resistant material	1		
	(30 L) Hazardous Waste Storage Containers for acidic, alkaline waste, and metal containing waste solutions	3		
	Windows, awning, aluminum frame with glass	3		
	doors	2		
	-side door (1 swing)	2		
	-rear door (2 swing)			
	provision of collapsible stairs and ramp			
	Exhaust fan	3		
	Stainless or Vinyl Flooring, with anti-slippage mechanism			
	Lockable overhead cabinets on either sides, with shelves	6		
	Laboratory tables, chemical resistant tabletop, with drawers and cabinets, anti-vibration mechanisms /foam cushion capable of withstanding vibration during travel	6		
	Aircon (minimum 1 HP up to 2HP) split type	2		
	Aluminum composite 3mm - outside and inside wall, Wall insulation (2") chemical and thermal resistant (lot)	1		
	Provision of Emergency Shower, Eye Wash, Spill Kits and First Aid Kits	1		
	C) Standard inclusions and accessories:			
	truck stabilizer leg (4-legs) with a capacity of at least 2- 4 tonnes per leg - Manual (hydraulic)	1		
	Rear and front Camera with storage memory card (min of 512 GB)	2		
	CCTV Surveillance System	1		
	Monitors entrances, exits, and laboratory area;			

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No.	Item Description	QTY	Unit	Statement of Compliance
	At least 2 units of camera, true IP 66 camera, 1080p or higher resolution, 15 frames per second or greater;			
	Includes centralized recording solution with Video Management Software and Network Video Recorder			
	structured cabling for intranet and internet			
	Scope of work includes installation, testing, and maintenance of CCTV system			
	Implement a real-time GPS monitoring system to track the location of the Mobile Soils Laboratory at all times. The GPS system should provide accurate location data even without internet, geo-fencing capabilities, and capable of generating alerts in case of unauthorized movements, with provision of subscription for GPS System for minimum of 5years.			
	Enhance Personnel Access Control by integrating biometric authentication for staff operating the Mobile Soils Laboratory. The biometric system should support fingerprint or other secure biometric modalities (key card), ensuring only authorized personnel can access the laboratory			
	The system should also include motion sensors, door, window sensors, and central monitoring unit capable of triggering immediate alerts to authorized personnel in the event of security breach			
	Wireless Prepaid Wifi Router	2		
	2.4 & 5.0 Ghz dual band Wifi- Network Type: 3G and 4G LAN port : 4 LAN port			
	With 2 Antenna for stable data transmission No installation, just plug and surf			
	Connect up to 10 devices			
	CO2 Fire extinguisher	3		
	Specification:			
	Classification: C			
	Approximate Weight - 5 lb.			
	Dry Chemical Fire Extinguisher	3		
	Specification:			
	Classification: 40B:C			
	Approximate Weight - 5 lb.			
	Power Source:			
	1. Generator - 6-8 kVA, diesel engine			
	movable, can be pulled-out during operation and isolate from main body to avoid vibration on sensitive equipment			
	Efficiency - ~80% or more			
	2. AC (Alternating Current) Power Source - 220-240V, 60Hz			
	3. Solar Panel (alternative power source) at least 6 - 8 KVA (8 -14Panels, balanced weight distribution), Hybrid System			
	Battery Type: Lithium-ion or Lead-Acid (Deep-Cycle)			
	Battery Inverter/Charger Capacity: 6 - 8 kVA			
	Efficiency: Typically 80% or higher			
	with Battery Management System (BMS)			
	includes circuit breakers or fuses for protection			
	with Battery Disconnect Switch Transfer Switch Electrical Distribution System			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Registration of LTO (to be registered as government vehicle) and insurance (3 years) inclusive of the following:			
	Commercial invoice or original sales invoice from the country of origin			
	Original/Photocopy of the following:			
	Sales invoice of body			
	Appropriate COC (Certificate of Coverage)			
	Certified True Copy of DTI-BIS endorsement			
	CSR for engine and chassis			
	PNP-HPG MV Clearance Certificate			
	MVIR (Motor Vehicle Inspection Report)			
	CCES (Certificate of Compliance to Emission Standard)			
	customization of label, design and finish of the mobile soils laboratory according to the DA Branding/ BSWM- NSHP Branding (to be provided by the End-User during contract implementation)			
	D) After sales services specifications:			
	with minimum (2) years warranty on parts and services of the vehicle			
	with end-users training and handbook on operation and maintenance of the vehicle			
	Component II. Provision of laboratory instruments and technical and scientific equipment	1	Unit	
	Laboratory Equipment List:			
	A) Soil and Water Analysis			
1	pH Meter (Refillable)	2		
	Specifications:			
	pH Range: 0 to 14.00 pH or better			
	No. of calibration points: at least 3			
	Accuracy: + 0.002 pH or better			
	With temperature compensation: ATC / MTC			
	Integral Electrode Holder & 100/240 VAC Adapter			
	Power Requirements: As per manufacturer specifications			
	Has the ff accessories: 5 pcs pH Electrodes (Refillable), ATC probe			
	With (5 pcs, 500 mL each) pH 4,7, 10 NIST Traceable Buffer Standards			
	With 2 pcs pH electrode refill solution (50 mL) and 2 pcs (100 mL) storage solution			
2	Conductivity Meter	2		
	Specifications:			
	Conductivity range:0.00 uS/cm- minimum 200 mS/cm			
	Accuracy: ±1 % full scale or better			
	Resolution: 0.01 uS/cm - 0.1 uS/cm, depending on measuring range			
	Compensation: ATC / MTC			
	Power Requirements: As per manufacturer specifications			
	With NIST Traceable Conductivity Standard Solution, 5 pcs, 147 & 1413 µS/cm, KCl, 125mL			
3	Reciprocating Shaker	1		
	Specifications:			
	Operating Speed: Variable speed 60 – 260 osc / min or RPM			
	Stroke: 1"-1.5" Horizontal			

REVISED SECTION VII. TECHNICAL SPECIFICATION

BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Timer: 1 minutes - minimum 6 hrs			
	Type of mounting: Benchtop, Suction cup feet to prevent creeping			
	Payload: min 20 kg			
	Includes: Utility box carrier with anti-slide surface and one (1) rubber coated crossbar is available to hold various combinations of beakers, flasks, etc			
	Power Requirements: 220-240 V, 60Hz			
4	UV-Vis Spectrophotometer w/ laptop and printer	1		
	Specifications:			
	Photometric System – Double beam			
	Monochromator – Double monochromator / Monochromator with imaging grating or equivalent			
	Source – Xe / Halogen (Tungsten) - D2 Lamp			
	Wavelength Range – 190-1100 nm			
	Detectors – Silicon photodiode detectors for simultaneous measurement of different channels			
	Wavelength accuracy (nm) \pm 0.1 - 0.3 nm			
	Wavelength reproducibility/repeatability (nm) < 0.025			
	Limiting Resolution – 0.02 nm - 0.1 nm			
	Spectral bandwidth 0.1 to 5 nm at 0.01 nm			
	Data collection rate 250 data points per second			
	With laptop, Unit with sipper (5 spare tubings), 5 extra quartz cuvettes, 3 extra lamp source (if source is Halogen (Tungsten) - D2 Lamp) printer, UV workstation software compatible with equipment, and complete genuine office and OS			
	Interchangeable between sipper and cuvette type			
	With 5 pcs, 1000 ppm NIST Traceable Phosphorus Standard Solution corresponding (1) 500 mL / bottle &			
	5 pcs Sucrose Standard, NIST Traceable with Certificate of Analysis, 100g/bottle			
	With included laboratory supplies:			
	160 pcs, Borosilicate test tubes 10 ml test tube and corresponding			
	4 pcs 40 placer test tube rack (PET)			
	Power Requirements: 220-240 V, 60Hz			
	Laptop specifications:			
	Laptop			
	-			
	Processor: i7-12th Gen / R7 Zen3+(RDNA2 based) subject to change considering software compatibility			
	Storage: at least 500GB M.2 PCIe NVMe SSD			
	Memory: at least 16GB, DDR4 (upgradable)			
	Camera: at least 720p			
	Screen size: at least 15.6-inch			
	Display Type: IPS			
	Battery Life: at least 50WH			
	Operating System: Windows 10/11 Pro subject to change considering software compatibility			
	MS Office: Microsoft Office 2021 (license)			
	Printer specifications:			
	Can print up to Legal size (8.5 x 14 in), color, black			
	Can copy and scan up to A4 size, color, black			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Has wireless capability			
	Has mobile printing capability			
	Print speed: Black - up to 8 ppm; Color - up to 5 ppm			
	Print quality: Black - up to 1200 x 1200 dpi; Color - up to 4800 x 1200 dpi			
	Copy speed: Black - up to 5 cpm; Color - up to 3 cpm			
	Copy resolution: up to 300 x 300 dpi			
	Scan resolution: up to 1200 dpi			
	Paper handling: Input - up to 60 sheets; Output - up to 25 sheets			
	Connectivity: Hi-speed USB; Built-in WiFi 802.11 b/g/n			
	200 - 240 VAC"			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
5	Single Channel Pipetors Set	1		
	Specifications:			
	Chemically resistant, Fully Autoclavable			
	Volume Adjustable, interchangeable, easy-grip ejector with carousel, 1000 pipette tips per unit			
	Volumes:			
	1000-10,000 µl			
	500-5000 µl			
	100-1000 µl			
	10-100 µl			
6	Bottle Top Dispenser (100 mL)	1		
	Specifications:			
	Capacity: 10-100 mL			
	Subdivision: min of 1.0 mL			
	with container bottle (2.5 L) and adapters			
	with recirculation and discharge valve			
7	Bottle Top Dispenser (50 mL)	2		
	Specifications:			
	Capacity: 5-50 mL			
	Subdivision: min of 1.0 mL			
	with container bottle (2.5 L) and adapters			
	with recirculation and discharge valve			
8	Centrifuge	1		
	Specifications:			
	Timer range: Up to 9 hr 59 min or continuous			
	Electrical Requirements: 100-240V, 50/60Hz, Max 850 W			
	RPM (Revolutions): Can be set to 3000 rpm or higher			
	Max Rcf, :minimum 3260 x g			
	Tube Sizes (Rotors Offered): 100 mL			
	Rotor / Adaptor capacity: (4-8) x 100 mL tubes & 8-16 x 50 mL tubes			
	Horizontal Rotors / Adaptors Available: 2 (for 50 and 100 mL)			
	With centrifuge tube: 100 mL (30 pcs) & 50 mL (30 pcs)			
	Program Storage: minimum 6 programs			
	Display: Large, brightly lit LED/ LCD display			
	Safety Features: Lid lock, steel armored ring, view port for speed calibration, lid			
	emergency release or its equivalent			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
9	Block Digester with Scrubber	1		
	Sample positions: 8-24 pcs (100 mL)			
	Maximum Temperature (in °C): 400-450			
	Digestion vessel size (in ml): 100			
	Maximum Power consumption (in W): maximum 2300			
	Non-corrosive casing			
	With digestion programs (minimum 25) with auto lift feature			
	Timer range: Up to 999 min			
	Heater Indication and Warning: LED or LCD Display			
	Accessories:			
	Round bottom digestion vessel, 100 ml for micro- Kjeldahl, 40 pcs;			
	Kjeldahl Neutralizer (extraction system/scrubber)			
	1000 pcs Kjeldahl Catalyst Tablets - per tablets contains CuSO ₄ , K ₂ SO ₄ , Na ₂ SO ₄ , Hg and Se Free or Equivalent			
10	Nitrogen Distillation Unit	1		
	Specifications:			
	Measuring range: 0.1-200 to 250 mg nitrogen			
	Recovery is greater than 99.5% at Nitrogen (N) levels between 1 and 250mg			
	Reproducibility: 1% RSD (with the digestion step)			
	Distillation time: 3-4 min at 30mg N (6.5 min at 200mg N)			
	Distillation capacity: minimum of 30mL/min			
	Self-adjusting cooling water control			
	Waste, Water, and Alkali Reservoir			
	With Voltage Regulator			
	Power Requirements: 200-240 V, 50-60Hz			
	With included laboratory supplies:			
	40 pcs (100 mL) digestion and distillation vessel			
	40 pcs 125-250 mL, Borosilicate type Erlenmeyer Flask			
	2 pcs 10 ml volumetric pipette			
	2 pcs Tris(hydroxymethyl)aminomethane (THAM), NIST Traceable with Certificate of Analysis, ≥99% Powder, 100g/bottle			
	2 pcs L-lysine Monohydrochloride, NIST Traceable with Certificate of Analysis AR, 100g/bottle			
11	Atomic Absorption Spectroscopy with Laptop			
	Wavelength range: 185.0 to 900.0 nm			
	Monochromator: Aberration-corrected Czerny-Turner mounting, Number of grating grooves: 1600-1800 lines / mm, Focal length: Less than or equal to 390 mm			
	Detector: Photomultiplier tube / Solid State Detector			
	Optics: Optical double-beam			
	Background correction method: BGC-D2 (D2 Hollow Cathode lamp method) (185.0 to 430.0 nm)			
	Number of turret: at least 8			
	Lamp mode: EMISSION, NON-BGC, BGC-D2			
	Measurement mode: Flame continuous method, flame emission method, flame absorption method			
	Simultaneous or sequential determination on multiple wavelengths			
	Standard Accessories:			

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No.	Item Description	QTY	Unit	Statement of Compliance
	Autosampler - at least 50 samples w/ Sampling Kit and protective cover			
	Oil Less Compressor - Silent Type (if applicable)			
	Nebulizer setup			
	Fume Hood / Canopy Hood			
	Laptop			
	Instrument Grade with Acetylene Gas with tank (3) with Gas Cage			
	Deuterium Lamp - 3 pcs			
	Hallow Cathode Lamp (2 per element) : Na, Ca, Mg, K, Fe, Cu, Mn, Zn			
	AAS Standard Solution corresponding to HCL : 500 mL / bottle			
	With included laboratory supplies:			
	160 pcs, Borosilicate test tubes 10 ml test tube and corresponding			
	4 pcs 40 placer test tube rack (PET)			
	3 pcs each, 50 mL, 100 ml, and 250 mL Borosilicate Beaker			
	5000 mL, PET beaker with handle			
	50 pcs 50 mL, Borosilicate type volumetric flask			
	10 pcs 50 mL, Borosilicate type volumetric flask			
	50 pcs PET Funnel (Dia: 80 mm, Stem Dia: 8 mm, Stem Length 140 mm)			
	5 pcs Filter Paper #42 or equivalent, 125mm dia, ashless 100circles/box			
	With End-User training (No. of pax: At least 2 pax) using the same brand and model of the offered equipment conducted by Authorized Representative/s of the Manufacturer, with venue local or abroad			
	Power Requirements: 220-240 V, 60Hz			
	Laptop specifications:			
	Laptop			
	-			
	Processor: i7-12th Gen / R7 Zen3+(RDNA2 based) subject to change considering software compatibility			
	Storage: at least 500GB M.2 PCIe NVMe SSD			
	Memory: at least 16GB, DDR4 (upgradable)			
	Camera: at least 720p			
	Screen size: at least 15.6-inch			
	Display Type: IPS			
	Battery Life: at least 50WH			
	Operating System: Windows 10/11 Pro subject to change considering software compatibility			
	MS Office: Microsoft Office 2021 (license)			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
	Ultrapure water generator	1		
	Produces ASTM Type 1 (0.055 uS/cm)			
	Water Purification System, to be attached to Water Tank (300 - 500 L) and Reservoir tank (30 L)			
	RO Flow Rate: (At least 16L/hr)			
	Standard Accessories:			
	main system unit / production station			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Minimum 50 L reservoir with recirculation pump, CO2 vent filter and sterile overflow or equivalent			
	table or wall mounting brackets or braces to restrain movement (not floor standing).			
	Pretreatment system with cartridge			
	RO / pretreatment cartridge			
	reverse osmosis cartridge			
	polishing DI cartridge / Ion-exchange cartridge			
	inline ultrafilter			
	Additional Accessories (either as standalone or combined):			
	2 pcs 0.2 um (or smaller) polysulfone filter or equivalent terms			
	2 pcs - 1 um prefilter or equivalent terms			
	2 pcs - hardness stabilizer or equivalent terms			
	At least 2pcs carbon cartridge or equivalent terms			
	sterile 0.2um (or smaller) filter for system or equivalent terms			
	2 pcs - RO cartridge or equivalent terms			
	2 pcs - Ultrapure cartridge or equivalent terms			
	2 pcs - CO2 Vent filter or equivalent terms			
	Automatic RO rinsing to reduce risk of contamination			
	UV lamp with minimum lifetime of 2 years			
	With built in indicators for water quality through color coded LED icons or digital display, physical buttons or actual EC readings"			
	Ultrapure water generated compliant with global standards (ASTM)			
13	Digital Titrator	2		
	Specifications:			
	Nominal Volume: 50 mL			
	Accuracy in % (\pm): 0.2%			
	Coefficient of variation (%): 0.1 %			
	Accessories:			
	telescoping filling tube			
	recirculation tube			
	Minimum 2 batteries			
	3 PP bottle adapters (GL 45/32, GL 45/S 40, GL 32/NS 29/32)			
	2.5 L amber bottle			
	Power Requirements: Battery Operated			
14	Fume Hood, Ducted	1		
	Specifications:			
	Maximum of 1250 mm in width (Overall Size); Work Surface Height: 730 mm - 1000 mm			
	Air Velocity: 0.3~0.8m/s			
	1 unit with LED Lamp			
	Blower: Built-in centrifugal blower or equivalent, speed adjustable			
	Front Window: Acrylic window / toughened glass ; Manual / Motorized ; height adjustable or equivalent			
	With monitoring display for flow rate			
	Power Requirements: 220-240 V, 60Hz			
15	Cross beater mill	1		
	Specifications:			
	Materials of the grinding tools: hardened steel			

REVISED SECTION VII. TECHNICAL SPECIFICATION

BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Sample quantity: 40 - 50 ml			
	Max. throughput: approx. 80 L/h			
	Rotor speed: minimum 4,000 rpm			
	Electrical Details: 200-240 V/1~, 50/60 Hz, 1500 Watt			
	Prevents cross contamination, with sieve inlets for >/ = 2mm samples & 0.5 mm samples			
	Standard Accessories:			
	"Bottom sieves made of stainless steel 316L			
	0.5 mm trapezoidal perforation"			
	2 mm trapezoidal perforation			
	universal support stand			
	silent type vacuum cleaner with complete tubings for easy clean up of the unit			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
	With End-User training (No. of pax: At least 2 pax) using the same brand and model of the offered equipment conducted by Authorized Representative/s of the Manufacturer, with venue local or abroad			
16	Dehumidifier	2		
	Specifications:			
	Extract approx. 20-25L of water per day to maintain humidity below 50%			
	Water Tank Volume: minimum 10L			
	Power Requirements: 220-240 V, 60Hz			
	With calibrated thermohygrometer			
17	Laboratory Refrigerator (General Use)	1		
	Specifications:			
	Temperature Range: 2-9°C			
	Capacity: Maximum 200 L			
	Refrigerant: CFC free (e.g. R744 / R290 / R134a / R600a or equivalent)			
	No frost/Frost-free/ Auto defrost (does not require manual defrosting)			
	Power: max of 135 W; Power Supply: 220V, 50/60Hz			
18	Magnetic Stirrer/Hot Plate (Dual)	1		
	Specifications:			
	Temperature setting range: Ambient - minimum of 350°C			
	Heat and stirring control: Turning knob			
	Power Requirements: 220-240 V, 60Hz			
19	Top Loading Balance	1		
	Specifications:			
	Capacity: Minimum 610g			
	Readability : 0.01g			
	Repeatability: Maximum 0.02 g			
	Linearity: Maximum 0.03 g			
	Power Requirements: 220-240 V, 60Hz			
20	Vortex Mixer	2		
	Specifications:			
	Construction material: zinc alloy and technopolymer or equivalent			
	Support system: 4 anti-sliding feet or equivalent			
	Orbital diameter: Maximum 4.5 mm			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Speed: up to 3000 rpm			
	Operating modes: touch, continuous			
	Power Requirements: 100-240V; 50/60hz.			
21	Analytical Balance	1		
	Specifications:			
	Capacity: 220 g			
	Readability: 0.0001g			
	Repeatability: 0.0001 g			
	Linearity: 0.0002g			
	Power Requirements: 220-240 V, 60Hz			
	With internal calibration function			
	Electrical requirement: 230V, 60 Hz			
	With the following laboratory supplies inclusions:			
	10 packs weighing boat, 100 pcs / pack			
	Weighing Boat			
	10 pcs Laboratory spoon/spatula			
	B) Soil Physical			
22	Automated Saturated Hydraulic Conductivity System (2 station) with 1 Laptop	1		
	Specifications:			
	Applicable methods: Constant Head and Falling Head			
	Sample Ring Volume: 98.2-100 mL			
	Sample Ring Inside Cross-Sectional Area: 19-21 cm²			
	Reservoir Volume: 930-1000 mL			
	Pressure Transducer Range: -100 kPa to +100 kPa			
	Pressure Precision Transducer comes w/ Micro USB cable, Analog Ribbon Connector Cable, Software Flash Drive, Instruction Manual			
	Software Application: can control up to 20 independent units simultaneously.			
	provision for main water reservoir (min capacity: 10L) with accessories			
	Inclusive of Laptop computer			
	Laptop			
	-			
	Processor: i7-12th Gen / R7 Zen3+(RDNA2 based) subject to change considering software compatibility			
	Storage: at least 500GB M.2 PCIe NVMe SSD			
	Memory: at least 16GB, DDR4 (upgradable)			
	Camera: at least 720p			
	Screen size: at least 15.6-inch			
	Display Type: IPS			
	Battery Life: at least 50WH			
	Operating System: Windows 10/11 Pro subject to change considering software compatibility			
	MS Office: Microsoft Office 2021 (license)			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
	With international end-user training of at least two pax using the same brand and model of the offered equipment conducted by Authorized Representative/s of the Manufacturer			
23	Particle Size Analysis System	1		
	Includes:			
	5pcs Sedimentation Glass Cylinder, 1L			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	2 pcs Sodium Hexametaphosphate, AR Grade, 500g			
	5 pcs Plastic Pestle			
	1 pc Portable Blender			
	1pc folding jug; minimum capacity 2.5 Gal.			
	Stokes Kit:			
	Sieve Set with shaker kit			
	Sieve Set :10, 20, 40, 60, 120 and 200			
	Sieve Diameter: 3-4 inches			
	inclusions: 5 pcs Beaker, yorker spout, drying pans, spatula, timer, spoon and gloves			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
24	Soil Sampler Set with Sampling tube	1		
	Specifications:			
	Soil Sampler - 2 sets for the following:			
	Soil Sample Shoe			
	Handle with beating head			
	Hammer with nylon			
	Brush and knife set			
	Case (plastic)			
	17 sets Sampling tube (100ml)			
	Dimensions: I.D.diam.50 x 51mm			
	Material: Stainless steel 304			
	Quantity: 6 pcs. with 2 lids in a cloth case per set			
	2 pcs Shovel			
	Tip: Round Shape			
	Material: Stainless steel			
	weight: ≤220 grams			
	Accessories: Waist band leather case			
25	Munsell Soil Color Chart	2		
	Specifications:			
	10R, 10YR, 2.5Y, 2.5YR, 5Y, 5YR, 7.5YR			
	10Y-5GY Colors - Olive green			
	Gley 1 and 2 (2 separate charts)			
	5R individual soil chart			
	7.5R individual soil chart			
	"New" White page , 7.5R, 10YR, and 2.5Y			
	10Y and 5GY soil chart for glauconitic soils			
	5R soil chart for Australia and Southeast Asia			
	7.5R soil chart for tropical and semi-tropical soils			
	- Laminated Hard Cover, Glossy, Ring Binded Cover & Sheets			
	With openings in between chips to allow easy visual comparison with soil samples.			
	Color ships are mounted on neutral gray.			
	-Water-resistant sheets/pages			
	Latest Edition or equivalent			
26	Motorized ASTM Liquid Limit Machine	1		
	with liquid, plastic and shrinkage accessories			
	Specifications:			
	with grooving tool, rough brass, with central smooth band 100mm wide			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Power supply: 210-230V			
	Complete Plastic Limit accessories are Supplied in plastic case			
	Complete Shrinkage Limit accessories are Supplied in plastic case			
27	Drying Oven	1		
	Specifications:			
	Type: Air or Gravity Convection			
	Chamber capacity: min of 30L			
	Controller: microprocessor with external LCD graphic display or equivalent (LED, vacuum fluorescent, etc.)			
	Temperature range: up to 200°C or higher			
	Door type: solid/door viewing window			
	Interior: acid-proof and corrosion proof stainless steel			
	Housing: powder coated sheet or equivalent			
	Power Requirements: 220-240 V, 60Hz			
	c) Soil Microbiological			
28	Carbon Dioxide Respirometer Reader with Laptop and software included	3		
	Specifications:			
	CO2 Concentration: 0 to minimum of 20,000 ppm			
	Operation: standalone assay unit or attached to a compatible laptop unit			
	Operating temprature, relative humidity and pressure must be applicable to Philippine field set up			
	With internal battery or connected to a power source (powerbank/laptop)			
	Battery life: atleast 8 hours			
	Standard inclusions: Soil respiration chamber, durable case or container for easy transport of equipment and chamber and environmental sensors or portable probe for soil temperature and humidity monitoring			
	Optional inclusions: 1-2 extra compatible batteries			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
	With End-User training (No. of pax: At least 2 pax) using the same brand and model of the offered equipment conducted by Authorized Representative/s of the Manufacturer, with venue local or abroad			
29	Digital hand held microscope	1		
	Specifications:			
	Flexible Led Control (FLC)			
	Automatic Magnification Reading (AMR)			
	Magnification: 10X-220X			
	Resolution (2560x1920)			
	Connection type (USB 3.0)			
	Inclusions: Platform stand/holder, Lens cleaner, Cable, Software			
30	Root Image Analyzer	1		
	Non-destructive			
	Image resolution: 1200 DPI or higher			
	System: Microsoft Windows 7, 8, 10			
	Scan Head Dimensions: 30-40 cm long × 4-7 cm diameter			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Requirements: Tablet with installed software and atleast 1GB Memory/RAM 1GHZ + Processor			
	Inclusions:			
	- at least 5 root tubes			
	Root Tube Dimensions:			
	Inner Diameter: atleast 5 cm (5cm min)			
	Outer Diameter: atleast 5 cm (5cm min)			
	Wall Thickness: atleast 3 mm			
	Length: atleast 100 cm			
	- Soil Auger			
	compatible for the root tubes included			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
	With End-User training (No. of pax: At least 2 pax) using the same brand and model of the offered equipment conducted by Authorized Representative/s of the Manufacturer, with venue local or abroad			
31	Incubator	1		
	Specifications:			
	Temperature: minimum 5-10°C and maximum 70-80 °C)			
	Temperature Uniformity(Maximum): ±1.2°C			
	Temperature Stability or fluctuation: ±0.2°C			
	Shelves: 2-3 layers			
	Electrical: 100-240 V, 50-60 Hz			
32	Tabletop Vertical Laminar Flow	1		
	Specifications:			
	UV lamp radiation type : UV ($\lambda = 250-280\text{nm}$), ozone-free			
	Digital time setting of direct UV exposure: timer can be set 1 hr or longer (increment 1 min)			
	UV protection: $\geq 99.90\%$, UV Resistant sides and front cover or equivalent			
	Working surface material: Steel with chemicals resistant powder coating			
	Nominal operating voltage: 100-240 V, 50/60Hz			
	Supplier shall submit a certificate of exclusive or authorized distributorship from the brand manufacturer.			
33	Laboratory Refrigerator (General Use)	1		
	Specifications:			
	Temperature Range: 2~9°C			
	Capacity: Maximum 200 L			
	Refrigerant: CFC free (e.g. R744 / R290 / R134a / R600a or equivalent)			
	No frost/Frost-free/ Auto defrost (does not require manual defrosting)			
	Power: max of 135 W; Power Supply: 220V, 50/60Hz			
34	Tabletop Autoclave	1		
	Specifications:			
	Capacity: maximum 24L			
	Door: Manual, Automatic			
	Designed Pressure: atleast 15psi			
	Water Tank Volume: maximum 3.5L			
	Working Temp: 121-134°C			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	Vacuum system: High efficiency vacuum pump			
	Atmospheric Pressure: 76~106 kpa			
	Ambient Temp.: 5~40°C			
	Standard Accessories: USB/Printer			
	Power supply: 220V			
	Consumption: 3kVA			
	Maximum weight: 65 kg			
35	Single Channel Pipetors	1		
	Specifications:			
	Chemically resistant, Fully Autoclavable			
	Volume Adjustable, interchangeable, easy-grip ejector with carousel, 1000 pipette tips per unit			
	Volumes:			
	1000-10,000 µl			
	500-5000 µl			
	100-1000 µl			
	10-100 µl			
	d) Standard inclusions:			
	inclusive of UPS for various sensitive equipment:			
	AAS			
	UV-Vis			
	Nitrogen Distillation Unit			
	Cross Beater Mill			
	Carbon Dioxide Respirometer Reader			
	Automated Saturated Hydraulic Conductivity System (2 station)			
	Motorized ASTM Liquid Limit Machine			
	To include the following: 5 pcs each of certified reference material (CRM) and History Proficiency Test Material / quality reference material (QRM)			
	Certified Reference Material for Agricultural Environment, Soil, 175g/bottle, Sandy Soil, Attach Certificate of Analysis (Must have NIST Traceability)			
	Soil parameters are the following but not limited to:			
	-Phosphorus (Olsen and Bray 1 Method)			
	-Exchangeable Bases Ammonium Acetate Extraction Method for Potassium, Sodium, Calcium and Magnesium			
	-Trace Elements DTPA Extraction Method for Zinc, Manganese, Copper and Iron			
	- Soil pH (1:1 Ratio)			
	- Soil Electrical Conductivity (1:1 Ratio)			
	- Organic Matter (Walkley-Black Method)			
	- Total Nitrogen (Kjeldahl Method)			
	History Proficiency Test Samples (Quality Reference Material) for Soil Chemistry and Physical Parameters; 4 samples per set, 1kg/bottle, with analysis report			
	Soil Parameters are the following but not limited to:			
	- Soil Electrical Conductivity (1:1 Soil-to-Water Ratio)			
	- Soil pH (1:1 Soil-to-Water Ratio)			
	- Available Phosphorus (Olsen and Bray Method)			
	- Exchangeable Bases Ammonium Acetate Extraction Method for Potassium, Sodium, Magnesium and Calcium			

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BSWM-2024-02-027 ANNEX A: Compliance to Technical Specifications of 1 Unit of Mobile Soil Laboratory				
No.	Item Description	QTY	Unit	Statement of Compliance
	- Trace Elements DTPA Extraction Method (Iron, Copper, Zinc and Manganese)			
	- Soil Total Nitrogen (Kjeldahl)			
	- Soil Organic Matter (Walkley-Black)			
	- Cation Exchange Capacity			
	- Particle Size Analysis (Sand, Silt and Clay)			
	includes provisions to ensure storage and safety of equipment during transport (e.g. fixtures, dampening pads, antivibration pad, equipment brace, plexi glass.)			
	with Calibration Certificate from Competent Calibration Laboratory (PAB Accredited Calibration Laboratory or with Statement of Metrology) and/or Instrument Verification or as necessary pH meter EC Meter Shaker UV-Vis Pipettor Bottle Top Dispenser Centrifuge Digester Distilling Unit AAS Digital Titrator Fume Hood Top Loading Balance Analytical Balance Automated Saturated Hydraulic Conductivity System Particle Size Analysis System Carbon Dioxide Respirometer Reader Digital hand held microscope Root Image Analyzer Drying oven Incubator Tabletop Laminar Flow Laboratory Refrigerator (General Use) Tabletop Autoclave Single Chanel Pipetors			
	e) After sales services specifications:			
	Inclusive: Commissioning and installation of all required instruments, equipment, and other accessories.			
	With end-users training and handbook on operation and maintenance of all instruments			
	Providing technical back-up (monitoring and trouble shooting) and after-sales services and guidance for improving the efficiency of the lab			
	Calibration, standardization & operation of all instruments			
	with standard two (2) years warranty on parts and services (calibration and preventive maintenance) for basic equipment			
	with three (3) years extended warranty on parts and services (calibration and preventive maintenance) for the following:			
	AAS			
	UV-Vis			
	Nitrogen Distillation Unit			
	Cross Beater Mill			
	Carbon Dioxide Respirometer Reader			
	Automated Saturated Hydraulic Conductivity System			
	Motorized ASTM Liquid Limit Machine			
	Submission to include proposed floor plan and layout for the Mobile Soil Laboratory, subject for approval of the BSWM- LSD. The approved final design shall form part of the specifications of the customized vehicle.			
	Must adhere to the statutory and regulatory requirements			