STATEMENT OF WORK

High Performance Liquid Chromatograph-Mass Spectrometer (HPLC-MS)
14 April 2026

I. **BACKGROUND:** High-Performance Liquid Chromatograph-Mass Spectrometer (HPLC-MS) is an analytical chemistry technique used to study a wide range of organic chemicals present in water, including chemical warfare agents, gasoline additives, solvents, and many other toxic chemicals. HPLC-MS is an essential part of EMGT 640A (Research Methods), a required Engineering Management course that enrolls 25-30 per class. Additionally, HPLC-MS is frequently used in research sponsored by the Air Force Civil Engineering Center (AFCEC). For example, HPLC-MS is being used to study water collected from the atmosphere as part of a larger effort to support warfighters in austere conditions. HPLC-MC is also being used to study groundwater support of AFCEC/DERA (Defense Environmental Restoration Account) projects.

II. **SCOPE:** High Performance Liquid Chromatograph-Mass Spectrometer

III. **MINIMUM REQUIREMENTS:** The contractor shall provide the following:
1. Installation must be included, and installation must be performed by the original equipment manufacturer (OEM).

2. System components must be from the same manufacturer, but for the printer, monitor, and computer. All components must be serviced by the OEM. This must be a component system. The components of this system must communicate using a controller area network (CAN) and maintain compatibility with the same Agilent software provided.

3. The MS must be a triple quadrupole, a type of MS needed for high-sensitivity, quantitative analysis. The first quadrupole acts as a mass filter, the second serves as a collision cell for fragmenting ions, and the third filters the resulting fragments. The MS must have two modes of operation, Electrospray Ionization (ESI) and Atmospheric Pressure Chemical Ionization (APCI). A multimode source will allow both modes to be used. This mass spectrum analyzer must have a fixed nebulizer, so adjustments are not required for matrices or solvents. This nebulizer must be orthogonal to the ion sources to allow for maximum versatility of mobile phases and flow rates without the use of a flow splitter. The MS must have an autotune feature, operate at 110v, and have a range of at least 2 to 3000 atomic mass units (AMU).

4. The software should be Mass Hunter Software, a powerful, comprehensive software suite designed for data acquisition, qualitative, and quantitative analysis of mass spectrometry data. This software streamlines workflows for unknown identification, compound quantification, and library searching. This software is compatible with existing software currently used in the ENV laboratories. Also, it is necessary that instrument control software and Mass Hunter data analysis software are upgradable in the future.

5. Diode Array Detector with a minimum a 60 mm path length signal to noise less than 0.6µAU/cm and be able to maintain a flat baseline. These cells will be used for routine analysis and to train students on the basics of HPLC, before introducing MS.

6. Autosampler cooled with humidity controlled to minimize sample decomposition.

7. Heated column compartment that will hold at least 6 columns, and heat exchangers for solvent preheating.

8. The system must be upgradable to accommodate the use of supercritical fluids as carrier liquids.

9. This HPLC-MS must come from an established manufacture with a long record of servicing scientific instrumentation, and outstanding reliability. This instrument must be purchased directly from the manufacturer.

10. The system must have a quaternary pump or two binary pumps with a mixer and degasser. This pump must be able to operate these buffers ranging from 1.0pH to 12.5pH. The flow rate of the pump must range from 0.001 ml to 5ml.

11. The system must be made and assembled in the United State of America.

12. Delivery: 6 months from receipt of design acceptance for any system order (else from receipt of order).

13. The HPLC-MS must have an operating pressure of at least 800 bar.

15. If American made components are available, then these components should be used in this instrument.

16. The manufacturer must be willing to service this instrument with parts, software, and computer hardware for a minimum of ten years. The factory warranty must be valid If purchased from a reseller. There are six resellers (Agilent Channel Partners) which can be used to maintain a valid manufacturer's warranty.

IV. **QUALIFYING COUNTRY PRODUCTS:** All products proposed/delivered to satisfy these requirements shall be either domestic or qualifying country end products in accordance with DFARS 252.225-7001. Shall include all shipping fees, import or duty taxes and comply with Buy American and Balance of Payments Program.

V. **Period of Performance:**

1. The vendor shall deliver and complete all requirements of this Statement of Work no later than 3 months after contract award.
2. Contractor shall be responsible for transportation of all new products, loading, unloading, storage and all necessary movement from factory to final onsite set up.
3. The contractor Project Manager shall be responsible for on-site coordination of all deliveries of their product, to include access to and operation of any equipment needed for unloading and movement of materials or products necessary to complete all requirements of this Statement of Work.

4. Free from defects in material and workmanship, under normal and proper use in accordance with equipment user manual, for the period of time equal to two years after receipt.

VI. **Place of Performance (and delivery address):**

Air Force Institute of Technology (AFIT/EN)
ATTN: Dr. Willie F. Harper, Jr.
3060 Ascani Ave.
Building 644, Room L139
Wright-Patterson AFB, OH 45433-7765
Phone number (937) 344-9442
Email: willie.harper@us.af.mil

The Department of Defense Activity Address code (DoDAAC) for the Air Force Institute of Technology (AFIT) is F4F5AL.

VII. **Payment:** 100% payment upon completion of all requirements specified in this Statement of Work. Payment shall be made on a net 30 basis. Invoices shall be submitted and paid through Wide Area Workflow.

(https://wawf.eb.mil)
VIII. **DELIVERY PROCEDURES COMMERCIAL VEHICLES:** All vehicles larger than a large pick-up truck is required to be inspected by the Wright- Patterson Air Force Base Commercial Vehicle Delivery Gate (CVDG) prior to entering the installation.

1.0 Vehicles to be inspected include, but are not limited to, the following:
1.1 Step van/panel truck
1.2 Tractor/trailer, box, and flatbed containing cargo
1.3 Tanker trucks
1.4 Box Trucks
1.5 Tour buses
1.6 Garbage/recycled waste trucks
1.7 Concrete trucks/mixers, dump trucks
1.8 Cranes, recreational vehicles, petroleum tanker
2.This inspection will be conducted at Gate 16A located off State Route 444. The following are exceptions to vehicles utilizing the CVDG:

2.1 If the vehicle has the product inside (concrete and asphalt trucks) and timely delivery is necessary due to product deterioration it does not need to enter the CVDG. To bypass the CVDG, the contractor shall submit a list containing drivers' names, social security numbers and the state in which the driver's license is held for those drivers who will be entering the base. This shall be accomplished 24 hours prior to requested entry time. If entry is requested on Monday, this list must be submitted by Friday at 1630 hours. All lists shall be submitted to the 88th ABW/CE Directorate contract inspector. The only gates that may be used under this exemption shall be 15A, 26A, 38A, and gate 1B. If the driver's name is not on the list, he/she will not be allowed access to the installation through these gates and the base will not assume liability for denied access.
2.2 If a delivery vehicle must exit, and then re-enter the base to complete its route, the vehicle shall be resealed upon exiting the base. After initially passing through the commercial vehicle delivery gate, trucks shall be resealed at Gates 15A, 38A and 22B. The resealing of the trucks will allow them to continue to any other area of the installation (Areas A, B, or Kittyhawk) without reprocessing through the CVDG. To receive resealing assistance, the drivers shall physically stop at one of the three authorized gates and request the installation entry controller to reseal their truck and provide the next location of their delivery. The controller will reseal the truck and give the delivery driver a pre-clearance form. The driver shall present the pre- clearance form to the entry controller at the next point of installation entry. This reentry can be at any base gate.
2.3 Wright Patterson Integrated Defense Plan, paragraph 3.10.12.9.2. All irregular deliveries will be sent to the CVDG for inspection. All visitors, which include contractors and commercial vendors without proper background checks and contractor passes, will not be allowed on WPAFB unless escorted by the receiving agency. This will take place after the individual(s) are issued a pre-clearance form at the CVDG. After successful completion of the vehicle inspection, the receiving agency will escort the individual to and from their destination on WPAFB. An inspector at the CVDG will contact the receiving. agency, informing them to send an escort to the CVDG. Escorts will remain with the vehicle at all times while it is on WPAFB.
2.4 Vehicles may be subject to an inspection at any of installation entry control points during a directed random antiterrorism measure (RAM). Any commercial vehicle, regardless of size, can be directed to the CVDG at the discretion of the installation entry controller