SWORN STATEMENT

For use of this form, see AR 190-45; the proponent agency is PMG.

PRIVACY ACT STATEMENT

AUTHORITY:	Title 10, USC Section 301; Title 5, USC Section 2951; E.O. 9397 Social Security Number (SSN).
PRINCIPAL PURPOSE:	To document potential criminal activity involving the U.S. Army, and to allow Army officials to maintain discipline, law and order through investigation of complaints and incidents.
ROUTINE USES:	Information provided may be further disclosed to federal, state, local, and foreign government law enforcement agencies, prosecutors, courts, child protective services, victims, witnesses, the Department of Veterans Affairs, and the Office of Personnel Management. Information provided may be used for determinations regarding judicial or non-judicial punishment, other administrative disciplinary actions, security clearances, recruitment, retention, placement, and other personnel actions.
DISCLOSURE:	Disclosure of your SSN and other information is voluntary.

1. LOCATION	2. DATE *(YYYYMMDD)*	3. TIME	4. FILE NUMBER
Microsoft Teams (Panama City, Florida)	20240529	1620	

5. LAST NAME, FIRST NAME, MIDDLE NAME	6. SSN	7. GRADE/STATUS
[redacted]		[redacted]

8. ORGANIZATION OR ADDRESS
US Army Corps Of Engineers - Mobile District

9. I, [redacted], WANT TO MAKE THE FOLLOWING STATEMENT UNDER OATH:

[redacted]

10. EXHIBIT	11. INITIALS OF PERSON MAKING STATEMENT	Page 1 of 3
	[redacted]	

ADDITIONAL PAGES MUST CONTAIN THE HEADING "STATEMENT OF_____ TAKEN AT _____ DATED _____

THE BOTTOM OF EACH ADDITIONAL PAGE MUST BEAR THE INITIALS OF THE PERSON MAKING THE STATEMENT, AND PAGE NUMBER MUST BE INDICATED.

USE THIS PAGE IF NEEDED. IF THIS PAGE IS NOT NEEDED, PLEASE PROCEED TO FINAL PAGE OF THIS FORM.

STATEMENT OF [redacted] TAKEN AT Microsoft Teams (Panama City, Florida) DATED 20240529

9. STATEMENT *(Continued)*

INITIALS OF PERSON MAKING STATEMENT [redacted]

STATEMENT OF [redacted] TAKEN AT Microsoft Teams (Panama City, Florida) DATED 20240529

AFFIDAVIT

I, [redacted], HAVE READ OR HAVE HAD READ TO ME THIS STATEMENT WHICH BEGINS ON PAGE 1, AND ENDS ON PAGE 3 . I FULLY UNDERSTAND THE CONTENTS OF THE ENTIRE STATEMENT MADE BY ME. THE STATEMENT IS TRUE. I HAVE INITIALED ALL CORRECTIONS AND HAVE INITIALED THE BOTTOM OF EACH PAGE CONTAINING THE STATEMENT. I HAVE MADE THIS STATEMENT FREELY WITHOUT HOPE OF BENEFIT OR REWARD, WITHOUT THREAT OF PUNISHMENT, AND WITHOUT COERCION, UNLAWFUL INFLUENCE, OR UNLAWFUL INDUCEMENT.

[redacted]

(Signature of Person Making Statement)

WITNESSES:

ORGANIZATION OR ADDRESS

ORGANIZATION OR ADDRESS

Subscribed and sworn to before me, a person authorized by law to administer oaths, this 29 day of May , 2024 at Microsoft Teams (Panama City, Florida) .

[redacted]

(Signature of Person Administering Oath)

[redacted]

(Typed Name of Person Administering Oath)

5 USC 303

(Authority To Administer Oaths)

STATEMENT OF WORK

Per- and PolyFluoroalkyl Substances (PFAS)
Phase I Remedial Investigation (RI)

For

Homestead ARB, Florida
Tyndall AFB, Florida

US Army Corps of Engineers (USACE) - Mobile District
Contract: TBD
Task Order: TBD

31 August 2020

[redacted]

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I. GENERAL REQUIREMENTS

1.0 SCOPE AND PURPOSE

The goals and purpose of this Contract are to accomplish two (2) separate RIs at two (2) different AF installations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that characterizes environmental conditions and defines the nature and extent of per- and PolyFluoroalkyl substances (PFAS) contaminants.

The U.S. Army Corps of Engineers (USACE), Mobile District has been designated as the service center to conduct Phase I RI's at Homestead ARB, FL (HARB) and Tyndall AFB, FL (TAFB) for the Air Force Civil Engineering Center (AFCEC). This Statement of Work (SOW) defines requirements for services in support of the AFCEC environmental program area to conduct a Phase I RI at the aforementioned Air Force (AF) installations. The PFAS Phase I Remdial Investigations are being conducted as the subsequent investigative task following the previously completed Site Investigations (SI), which were completed under a similarly grouped contract.

The Phase I RI will consist of site characterization efforts to include lateral and vertical extent of PFAS contamination in all impacted media resulting from past aqueous film-forming foam (AFFF) releases and the update or development of a Conceptual Site Model (CSM). Based on the CSM resulting from Phase I, subsequent RI efforts will consist of any additional tasks such as but not limited to quantifying human health and ecological risks, preparing the corresponding baseline risk assessment reports, and evaluating remedial alternatives. The Phase I RI shall be designed to minimize future work in subsequent phases.

This SOW includes base work to delineate nature and extent, and options for additional tasks that might be required to complete full lateral and vertical delineation. The baseline Human Health and Ecological Risk Assessments components of the RI's will be performed under a separate contract, however, under this contract the AE is responsible for collecting data appropriate for use in future risk assessments. To the extent practicable, data collected to delineate nature and extent for this Phase I RI should also be usable for risk assessment purposes.

Services conducted under this contract for the Phase I RI shall be sufficient to:

Develop a comprehensive understanding of the vertical and lateral extent of PFAS contamination in soil, groundwater, sediment, and surface water, as applicable, resulting from past PFAS use,
Determine the source-strength of residual soil contamination within unsaturated source zones, and
Update or develop a comprehensive CSM to include identifying potential exposure pathways and recommend sample requirements for follow-on RI efforts.

The AE is expected to complete activities such as:

a. Develop and update plans documenting the methods and procedures that will be used to conduct the 2 RI's including defining the nature and extent of PFAS contamination.
b. Collect and analyze geologic, geophysical, hydrogeological, chemical, physical, and hydrologic data, as well as appropriate environmental samples such as groundwater, soil, surface water, sediment, and drinking water.
c. Manage and dispose of investigation derived waste (IDW) and other waste generated during the execution of the investigation activities.
d. Develop and/or refine the CSM using validated environmental data to describe hydrogeological conditions and identify migration pathways and potential receptors.
e. Perform a source strength assessment of PFAS-impacted vadose zone sources.

f. Prepare a Phase I RI report for each installation in accordance with appropriate USEPA guidance.
g. Support meetings such as public, stakeholder, and regulatory interface.
h. Update the CERCLA administrative record (AR) and information repository with applicable work products and reports.

The AE shall furnish all services, materials, supplies, plans, labor, studies, management, travel, and other resources as required to successfully complete the Phase I RI as specified in this SOW. The AE shall conduct all field and office activities required to successfully complete the Phase I RI as required under the CERCLA. Required activities include project management, scoping, records review, generation of planning documents, update or generation of a Conceptual Site Model (CSM), source area investigation, groundwater plume delineation through the installation and sampling of monitoring wells, migration-to-groundwater investigation through the installation and sampling of lysimeters, where appropriate, or if technically impracticable, use of other techniques to evaluate potential continued leaching from source areas; evaluation of PFAS impact to surface water and sediment; data validation and interpretation; and generation of reports including tables, figures, and analyses. The CSM may be updated from the Site Inspection (SI) CSM or developed using existing data and data collected during the Phase I RI, as needed, and shall include PFAS release locations installation-wide, comingling of contamination, interaction with legacy contamination, geologic and hydrogeological conditions, and migration in the environment. This includes understanding the role and interaction of the geologic units, groundwater-bearing units, and surface water, as well as any man-made structures that may affect contaminant migration. Human Health and Ecological Risk Assessments will not be performed as part of the Phase I RI. The AE shall be responsible for additional activities in support of this contract such as assisting the Installations and/or AFCEC with public relations and access agreements.

The AE shall be responsible for obtaining and maintaining all registrations and certifications required by the various federal, state, and local regulatory agencies, and any other registrations, certifications, licenses, permits, warrants, or other credentials or permissions required to perform the required tasks. All work shall be conducted in a professional manner by credentialed members of architectural, planning, science, and engineering professions such as toxicologist, ecologist, hydrologist, geologist, chemist, architect, landscape architect, environmental engineer and scientist, planner, cost estimator, Computer Assisted Design and Drafting technician, publication writers/editor, technical writer, graphic artist, and Geographic Information System (GIS) analyst. These individuals are expected to possess and maintain the knowledge and experience to accomplish the specified tasks.

Generally, a credentialed professional (a) is licensed (e.g., registered professional engineer or geologist) to practice in the state where an installation/facility is located and (b) commands the necessary expertise, in terms of knowledge and experience, to undertake the specified task. An environmental professional's specific expertise may also be evinced through certification such as a Certified Hazardous Materials Manager (CHHM), Qualified Environmental Professional, or Certified Industrial Hygienist (CIH).

This contract will be awarded as a Firm-Fixed Price Contract to execute the SOW requirements and achieve a final Phase I RI for each of the aforementioned AF installations. The AE shall provide necessary and authorized resources to perform this work to applicable engineering, safety, and construction standards, in the timeliest manner possible, and with optimal cost containment.

This SOW includes the requirements and standards expected of the AE to complete the Phase I requirements for each site. Upon contract award, this SOW is legally binding upon the AE and the U.S. Government.

NOTE: For purposes of this contract, the term "Government" includes the AF and USACE. While regulators are a governmental entity, they are also a third party over whom the AF has no control and, as such, will be referred to as "Regulators."

2.0 AUTHORITIES, RESPONSIBILITIES, AND GOVERNING GUIDANCE

2.1 Authorized Service Center (USACE – Mobile District)

The Contracting Officer (KO), USACE – Mobile District has fully designated responsibility for execution of this contract on behalf of the AF. In turn, the KO has designated the Contracting Officer's Representative (COR) as the official Technical Manager (TM) with approval authority on all technical and contractual matters. This function will be executed by the Project Manager (PM) and/or COR as determined by the USACE.

The PM/COR does not have the authority to direct the AE on contractual changes outside the approved contract; however, the PM/COR has authority to ensure the elements of the contract, SOW, etc. are fully executed. The PM/COR will ensure AE compliance with the contract through surveillance, routine meetings, and evaluation of reports. The KO is the official line of communication with the AE concerning legal and contractual matters. The KO is the only person with authority to negotiate and enter contracts and to obligate funds.

2.2 Responsibilities

The AF has established its requirements in the Solicitation and this SOW. The implementation of this Contract requires cooperation between the AE, the Installation Restoration Program Managers (RPMs), the AFCEC Program Manager (PgM), and the USACE – Mobile District in order to execute this SOW. Roles and responsibilities include:

The AF RPMs shall:

- Ensure AF requirements relating to execution of RIs for PFAS compounds are fully met
- Facilitate regulatory interactions to achieve regulatory acceptance/concurrence
- Coordinate access for AE's services at the project sites
- Ensure review of deliverables by AF Subject Matter Experts (SMEs) and Legal
- Facilitate the processing of AE's site access/badges with base agencies
- Provide guidance to the AE on the dig permit process with base agencies
- In coordination with the base Public Affairs Representative and Base Commander, respond to inquiries from a variety of sources to include congressional inquiries, public inquiries, media inquiries, and other federal government inquiries, as appropriate.

The AFCEC Program Manager (PgM) shall:

- Plan, program, budget, and execute funding for this contract and out-years
- When needed, coordinate with the AF RPMs to respond to inquiries from a variety of sources to include congressional inquiries, public inquiries, media inquiries, and other federal government inquiries, as appropriate.

The USACE-Mobile District shall:

- Be responsible for executing the contract and overseeing the technical and administrative aspects of the contract
- Ensure AE compliance with contractual requirements, monitor and manage AE performance including, PMP, IMS, etc.
- Respond to inquiries from all the AF Installations and AFCEC, and

- Assist the AF installations and AFCEC in planning, programming, budget, and execution of funding for this contract and out-years.

The AE shall:

- Adhere to the terms of the contract and execute the SOW to complete the Phase I RIs for each installation;
- Ensure high quality technical performance and end products;
- Manage project risk and proactively communicate with stakeholders regarding issues and remedies;
- Accurately and promptly manage, track and report contract performance;
- Provide support to the USACE and AF in response to inquiries from a variety of sources to include congressional inquiries, media inquiries, and other federal government inquiries;
- Ensure protection of human health and the environment during contract performance;
- Meet all applicable regulatory requirements associated with environmental restoration during contract performance; and
- Directly supervise all subcontractors, including but not limited to, technical, quality, health, and safety, etc.

2.3 Regulatory Agency

The RI of environmental contamination by PFAS compounds is authorized under CERCLA (42 USC § 9601(33)) as a release of "pollutants or contaminants" that "may present an imminent and substantial danger to the public health or welfare." Interaction with regulatory agencies is expected. The AF RPM serves as the sole point of contact between the AE and the regulatory agencies, and will be present for all meetings, teleconferences, etc. The AE shall discuss all issues that require coordination or communication with regulatory agencies with the AF RPM and PM/COR before regulatory agencies are contacted. Any contact with the regulatory agencies will be initiated by the AF RPM, and an AF Team member will be present for all meetings, teleconferences, etc. The AE or subcontractors shall not communicate directly with a regulatory authority regarding this task order without the explicit authorization of the AF RPM.

2.4 Applicable Documents and Governing Guidance

The AE shall conduct this project in accordance with CERCLA and as amended by the Superfund Amendments and Reauthorization Act (SARA) and appropriate Resource Conservation and Recovery Act (RCRA) guidance as it pertains to the Installation's regulatory requirements. Work performed shall follow the requirements of the National Oil and Hazardous Substances Contingency Plan (NCP). In addition, all work performed under this contract shall follow the guidance and policy outlined in Management Guidance for the Defense Environmental Restoration Program, (Office of the Deputy Under Secretary of Defense, Sept 2001, or most recent version) and all applicable guidance documents. All definitions not specifically addressed in section 4 shall be defined as referenced in Management Guidance for the Defense Environmental Restoration Program, (Office of the Deputy Under Secretary of Defense, Sept 2001, or most recent version).

The AE shall identify and comply with all applicable Federal, State, and local statutes; AF/Military/ instructions, manuals, handbooks, regulations, guidance, and policy letters; Executive Orders (EOs); American Petroleum Institute (API) Codes; National Association of Corrosions Engineers (NACE); National Fire Protection Association (NFPA); Steel Structures and Painting Counsel (SSPC); National Electrical Code (NEC); Uniform Fire Code (UFC); and International Building Code (IBC) including all changes and amendments in effect on the date of issuance of this Contract . It is the AE's responsibility to identify and comply with all applicable requirements. In addition, the AE shall refer to the current versions of the Department of Defense (DoD) Policy and Guidelines for Acquisitions Involving

Environmental Sampling or Testing and the United States AF Construction Management Implementation Guide.

The AE shall identify and comply with all applicable documents including but not limited to, Preliminary Assessments, Site Investigations/Inspections, Records of Decision (RODs), ROD Amendments, Statements of Basis (SoBs), Explanation of Significant Differences (ESDs), RCRA Permits, FFA, SMP, and subsequent modifications, and other Decision Documents.

The AE is solely responsible for reviewing all publicly available information and forming their independent, professional conclusions/interpretation of site conditions and requirements to meet the objectives of this contract. The information provided in this SOW is not intended as a substitute for complete analysis of technical data available, nor is it intended to be a guide on how the AE should address achievement of the AF's objectives.

The AE shall conduct PFAS activities in accordance with all guidelines and references identified in Table 1 and any additional PFAS guidance, regulations, or requirements available at the time of this contract. As policies are refined and updated, the AE shall be responsible for accommodating those updates. Where conflicts appear to occur between the RFP and applicable regulations, the AE shall abide by the stricter of the requirements, and when in doubt, shall be responsible for contacting the USACE during the RFI period so clarity can be provided.

Table 1: Guidance Documents, References, and Technical Resources

Reference Publication	Date of Publication
Air Force Instruction (AFI) 32-7020, Environmental Restoration Program	11 March 2020
Air Force Memorandum: SAF/IE Policy on per Fluorinated Compounds (PFCs) of Concern	11 August 2016
Argonne National Laboratory Draft PFAS Ecological Screening Values	Spring 2020
Assistant Secretary of Defense Memorandum, Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program	October 2019
Assistant Secretary of Defense Memorandum, Establishing a Consistent Methodology for the Analysis of Per- and PolyFluoroalkyl Substances in Media Other than Drinking Water	November 2019
ASTM Standard Guide for Developing Conceptual Site Models for Contaminated Sites, ASTM E1689 95	May 2014
Department of Defense (DoD), Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, version 5.3, or most current version	2019
Department of Defense, General Data Validation Guidelines, Environmental Data Quality Workgroup, most current version	04 November 2019
Department of Defense Instruction (DoDI) Number 4715.18, Emerging Chemicals of Concern	4 September 2019
DoDI 4715.15 Environmental Quality Systems, Publication April 17, 2017 Change 3	8 July 2019
DoD Manual, 4715.20. Defense Environmental Restoration Program Management (Incorporating Change 1, August 31, 2018)	9 March 2012
EPA EcoUpdate Series http://www.epa.gov.oswer.riskassessment/ecoup	1991-2008
EPA Guidelines for Ecological Risk Assessment	1998
EPA Interim Final Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments	1997

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	**Date of Publication**
EPA Risk Assessment Guidance (RAGS) https://www.epa.gov/risk/risk-assessment-guidance-superfund-rags-part	NA
EPA RSL Calculator for Risk Assessment https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search	NA
FDEP Contaminated Site Cleanup Criteria F.C.A. 62-780	02 Feb 2017
ITRC PFAS Technical Guidance https://pfas-1.itrcweb.org/	17 April 2020
OSWER Directive 9272.0-17: Implementation of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) at Federal Facility Hazardous Waste Sites	June 7, 2005
Perfluoroalkyl and PolyFluoroalkyl Substances (PFAS) Methods and guidance for sampling and analyzing water and other environmental media (EPA/600/F-17/022h)	January 2020
USEPA Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites	December 2002
USEPA Drinking Water Health Advisory for PFOA, EPA 822-R-16-005, Office of Water	May 2016
USEPA Drinking Water Health Advisory for PFOS, EPA 822-R-16-004, Office of Water	May 2016
USEPA Exposure Factors Handbook: 2011 Edition	September 2011
USEPA Fact Sheet – PFOA & PFOS Drinking Water Health Advisories, USEPA 800-F-16-003	May 2016
USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA	October 1988
USEPA Guidance for Conducting Remedial Investigations https://www.epa.gov/superfund/superfund-remedial-investigationfeasibility-study-site-characterization	Various dates
USEPA Guidance for Data Usability in Risk Assessment (Parts A and B)	December 1991 and May 1992
USEPA Guidelines for Carcinogen Risk Assessment	March 2005
USEPA Guidelines for Exposure Assessment	May 1992
USEPA Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors	February 2014
USEPA Human Health Toxicity Values in Superfund Risk Assessments	March 2005
USEPA Office of Land and Emergency Management Memorandum regarding Interim Recommendations to Address Groundwater Contaminated with perFluooroctanoic Acid and perFluorooctanesulfonate, Directive No. 9283.1-47	December 2019
USEPA ProUCL Version 5.1 Technical Guidance Statistical Software for Environmental Applications for Data Sets with and without non-detect Observations	November 2015
USEPA Regional Screening Levels https://www.epa.gov/risk/regional-screening-levels-rsls	Various dates
USEPA Risk Characterization Program	March 1995
USEPA Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions	9 April 1991

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	**Date of Publication**
USEPA Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	March 2005
USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites	December 16, 2002

3.0 GOVERNMENT-FURNISHED INFORMATION, EQUIPMENT, AND PROPERTY

3.1 Services

The Government (USACE, AF Installations, and/or AFCEC) will provide coordination for access to the base and work sites and for badging of field staff. The Government will facilitate coordination with other AEs to exchange information and to organize field efforts. The Government will also coordinate access to other locations on and off the installations.

3.2 Facilities

The Government will not provide any facilities. The Government may provide a lay down area for AE's/subcontractor's equipment if requested. AE or subcontractor damage to any Government infrastructure shall be repaired or replaced at no cost to the Government.

3.3 Utilities

The Government will not provide any utilities.

3.4 Equipment

The Government will not provide equipment.

3.5 Materials

The Government will not provide materials.

4.0 GENERAL DEFINITIONS as Described in the DERP Manual

4.1 Remedial Investigation

As defined in 40 CFR § 300.430(d), CERCLA

The AF has developed an approach to characterize the nature and extent of PFAS contamination generally following the CERCLA Remedial Investigation process. The Phase I RI consist of 5 major components: 1) Site Characterization, 2) Conceptual Site Model (CSM), 3) Human Health Risk Assessment, 4) Ecological Risk Assessment, and 5) Final Report. The AF plans to utilize a phased RI approach as the PFAS science emerges and regulations are updated. The first phase will consist of Site Characterization, CSM, and a Phase I RI report. Work plans, reports, and other document requirements are presented in Section 7. The Phase II RI will include the HHRA, ERA, and a Phase II RI report. The Phase II RI will be executed under a separate contract. Although the scope of work for this contract does not include completion of the HHRA or ERA, the AE is responsible for collecting data of sufficient quantity and quality in order to minimize or eliminate any future data gap sampling to address HHRA and ERA needs.

a. Site Characterization: In this component, the lateral and vertical extent of PFAS (e.g. PFOS, PFOA, and PFBS) contamination is determined. The site characterization effort shall be conducted by the AE to provide a holistic understanding of the delineation of contamination in environment (e.g. soil, groundwater, surface water, sediment, etc.). Delineation of contamination shall include all applicable media; groundwater, surface water, soil, and sediment. The statement of work and site-specific details for each site at each installation is presented in Appendix A.
b. Conceptual Site Model (CSM): – The conceptual site model shall encompass PFAS release locations installation-wide to acquire a holistic understanding of the PFAS release, comingling of contamination interaction with legacy contamination, geologic and hydrogeological conditions, and migration in the environment. Conceptual site model development may include data collection on and off AF property.
c. Human Health Risk Assessment: - Not included in this SOW.
d. Ecological Risk Assessment: - Not included in this SOW.
e. Phase I RI Report: This shall be a comprehensive RI report following CERCLA guidance detailing components of the investigation excluding the risk assessment and FS.

4.2 Facility

Defined in section 9601 of CERCLA

4.3 Site

In general, the "Site" is the location where a contaminant release has occurred and includes the lateral and vertical extent of contamination including; source of contamination and areas where contamination has migrated or has the potential to migrate in soil, sediments, surface water, or groundwater, prior to initiation of this contract. The "Site" will be defined for all locations to be addressed under this SOW.

5.0 MANAGEMENT, PLANNING, AND REPORTING

The AE shall implement a full range of construction and engineering activities as required to meet objectives of this contract and in accordance with all applicable installation, regulatory, and site requirements. The AE shall supply all labor, equipment, and materials necessary to accomplish the work. The AE shall perform management and planning functions, including performance measurement and fund status reporting.

Requirements include efficient management of the contract including the submission of accurate, on-time, quality contract deliverables and timely identification and solution of impediments to successful project execution. Technical requirements include early involvement in the process to allow for the development of the most cost-effective and technically sound approach or solution. The Government will rely on the AE's expertise in recognizing and addressing problematic issues and successful execution of this contract. The AE shall perform all work in accordance with Federal, State, and local statutes and regulations. Remedies shall conform to environmental permits, decision document requirements, or other legal requirements and regulatory approval or concurrence.

The AE shall work closely with the USACE PM/COR to ensure effective communication is maintained to execute the contract in accordance with this SOW and other contract requirements. Project management coordination shall include, but not limited to, contract option subCLIN reviews to confirm the contract option modification is in alignment with the IMS, progress reviews, and other issues identified by the USACE PM/COR.

5.1 Project Management

5.1.1 Project Management Plan (PMP)

The AE shall develop and maintain a detailed PMP for each installation. The PMP shall include the Technical and Management Approach, Quality Control procedures, and Integrated Master Schedule (IMS). The PMP shall specify the project's resources and tasks corresponding to the SOW Contract Line Item Numbers (CLINs) for this contract as required for the planning, execution, control, and completion of contract requirements, and shall follow guidance documents. At a minimum, the PMP shall include the following sections:

- Description of the technical approach, the project organization, personnel and management, the project's resources and project tasks corresponding to the subCLINs for this contract,
- Technical approach for achieving the POs in accordance with the SOW;
- Contract cost/schedule baseline;
- Organization and integration of the project team (including an organization chart identifying the names of personnel and their involvement in the contract);
- Schedule management, project controls, and change management;
- Transitional activities;
- Risk management;
- Communication management;
- Quality management;
- Health and Safety management;
- Subcontractor and resource management; and
- Security management.

The AE PMP shall be consistent with USACE ER 5-1-11 (USACE Business Practices) and standard industry practice, i.e., PMP guidance. Clarification and approval of PMP content and the level of detail required to address the program shall be provided by the PM/COR.

The PMP shall include a Work Breakdown Structure (WBS) and WBS Dictionary. In addition, the WBS shall demonstrate a comprehensive decomposition of each work package/PO deliverable and exhibit a clear and concise correlation between the SOW, IMS and subCLIN structure. Decomposition of the SOW into discrete work packages at the lowest reasonable level shall be demonstrated in the WBS and WBS Dictionary.

The PMP shall also include a Milestone Payment Schedule/Plan that identifies the tangible elements to be tracked and monitored for invoicing and change control. The Milestone Payment Schedule/Plan shall be coordinated and approved by the PM/COR.

The first draft of the PMP shall be due within thirty (30) calendar days of Contract award (or a more aggressive schedule if agreed upon by the COR and the AE). The draft PMP and subsequent revisions shall be subject to USACE and AF review and approval. Response to comments and changes shown in redline/strikeout shall be provided within 14 calendar days, and the final PMP shall be due within seven calendar days of USACE and AF approval of responses to comments. A one-time payment milestone will be established for USACE approval of the final PMP through the PM/COR. The PMP shall be maintained throughout the duration of the contract and updated as necessary and has required by the PM/COR.

The PMP shall include the following aspect-specific plans:

- Quality Management Plan – detailing the quality management aspects of the task order including document quality, data quality, personnel qualifications, and other aspects of program quality management. The quality management plan shall include standard operating procedures for all quality-related tasks.
- Schedule Management Plan - defining how the project schedule is managed throughout the project lifecycle. The plan provides guidance and sets expectations for project schedule policies and procedures for planning, developing, managing, executing, and controlling the project schedule.

- Communication Management Plan – organizing and documenting the process, types, and expectations of effective communication for this task order, including stakeholder and project team communication requirements. The communications management plan shall include a comprehensive organizational chart including lines of responsibility, authority, and lines of communication for the task order.
- Subcontract Management Plan – detailing how the AE will manage all subcontracted activities, including laboratories, drillers, and professional services subcontracts that may be used for technical/management support. The subcontract management plan shall detail the means and methods used by the AE to provide subcontractor oversight and monitoring, inspections, audits, and other means of quality control throughout the task order. The Subcontract Management Plan shall detail how the AE shall always directly supervise work performed by subcontractors, including but not limited to management and safety oversight of all fieldwork.
- Project Controls Plan – This plan outlines how the schedule and budget will be managed throughout the project, including integrated chance control to monitor and document changes to the baseline schedule, and monitor and control use and expenditure of project resources. Since this task order is designed to allow resources to be reallocated and moved as needed across sites in order to achieve the site-specific horizontal and vertical delineation of PFAS contamination, this plan will document how resources will be tracked, controlled, monitored, and reported.
- Waste Management Plan – This plan will document the handling, storage, characterization, profiling, and final disposition of all generated waste, including investigation derived waste. The plan will address both PFAS and other potential contaminants that may be present at each site.
- Additional Plans – The PM/COR may require additional planning documentation and/or documentation for the PMP as project issues and complexities arise.

5.1.2 Project Information Repository

The AE shall maintain a web-based document repository for all Phase I RI-related documents, including but not limited to:

- Information on meetings including meeting agendas and meeting minutes
- Documents submitted, including but not limited to work plans, planning documents, reports, data, studies, invoices, presentations
- Sub-CLIN details
- IMS
- Monthly AE's Progress, Status, and Management Reports (CPSMRs)
- Current topics associated with the contract
- Basic stats/objectives
- Stakeholder POC contact information
- Calendar of events/meetings/milestones
- Analytical results/reports
- 3D conceptual models
- Links to Administrative Record/Information Repository records
- Links to associated appropriate reference documents
- State and Federal policy guidance
- Key performance indicator metrics tracking

The AE shall present a documentation repository format and template for PM/COR review and approval (e.g., the repository shall be logically organized by task/Site, CLIN and subCLIN, and phase of work). The AE shall include a Document Repository O&M procedure (included in the PMP) detailing how the AE will ensure information in the repository is correct, current, and complete. The AE shall present AF and the USACE with a proposed repository format, outline, and design for approval. The COR/PM may

require corrections and/or modifications of the repository throughout the Contract. Information assurance requirements for DoD information systems and/or data storage must meet the technical security requirements of the DoD/AF environment and is the responsibility of the service provider to meet the mandates defined in DoDI 8510.01 dated 28 July 2017. Responsibility for procedural and administrative security is shared between the service provider and the supported entity contracting for the service and must meet the Defense Information System Agency Best Security Practices.

The repository is intended to be a single access point repository for all contract-related documentation. The repository shall be accessible to stakeholders during the life of the contract, and the AE shall implement security measures to ensure/control access to appropriate parties. The AE shall provide email notifications to the AFCEC PM, AF RPM, and USACE PM/COR when information is included/modified in the repository. At close-out, all repository documents will be transferred to DVD or other digital media (per the PM/COR) and copies delivered to AF and USACE. Periodic format adjustments during the life of the contract may be required to ensure consistency and will be provided by the COR. Stakeholders will be provided with appropriate security password restrictions.

The AE shall create and maintain a Master Document List (MDL) that includes all documents, whether the document is a deliverable or not, prepared during this contract. The AE shall maintain the project documents for the duration of this contract and transfer custody to the Government within 90 calendar days prior to POP expiration.

5.1.3 Integrated Master Schedule (IMS)

The AE shall maintain a detailed baseline and working IMS for each installation that facilitates the management of the project work and provides the capability for project performance tracking and early identification of potential schedule impacts using Gantt charts and Critical Path Method analyses. The IMS shall:

- Identify work items based on the subCLIN structure
- Include both negotiated baseline dates and current schedule projections
- Identify all sites associated with each milestone/task
- List percent complete for each line item and a rollup percent complete for each milestone
- Accurately reflect program progress and provide realistic forecast projections.

The IMS shall be prepared following approved AF/USACE guidance and shall present a realistic sequence and timing of all activities and documents necessary to execute the SOW within the POP and complete a final Phase I RI report. The IMS shall be organized by WBS, aligned with the CLIN structure, and include, but is not limited to, the following columns in the prescribed order shown below, or as required by the PM/COR:

- Installation name
- Site number and identification
- CLIN or subCLIN
- WBS Element number
- Task description
- Task duration
- Start and finish dates
- Baseline start and finish dates
- Percent complete; and
- Logic, Predecessors, and successors

The WBS work package detail shall be further broken down into discrete manageable tasks in the IMS with activities at the detailed execution level. The IMS shall be realistic and include the appropriate work calendar, logic, and durations to complete the work under this contract. Sites associated with each milestone/task must be noted in the IMS. The PM/COR or AF RPM may require additional detail in the IMS.

The AE shall submit the baseline IMS for approval within 10 business days following contract award and update the schedule monthly thereafter for submittal with the monthly CPSMR. The IMSs shall be submitted in native and PDF formats to the Project Repository and in accordance with instructions from the PM/COR. The COR/PM may require corrections and/or modifications to the IMS throughout the Contract POP.

The schedule shall be provided to the AFCEC PM, AF RPM, and USACE COR/PM in electronic format consistent/compatible with DoD software, currently Microsoft™ Project, and in portable document file (.pdf). Certain versions of the IMS may be required to be submitted in Excel table format as well. Updated and revised schedules shall be submitted to the USACE COR/PM with monthly status reports with changes clearly identified by the AE. A copy of the proposed project schedule shall be provided with the proposal in MS Project format, or equivalent and shall be evaluated as part of the proposal review process.

5.2 Cost and Status Reporting

5.2.1 AE's Progress, Status, and Management Report

The AE shall prepare and submit a monthly CPSMR by the 15th working day of each month to the USACE PM, AF RPM, and AFCEC PM summarizing contract progress through the end of the previous month. The CPSMR shall be used to review and evaluate the overall progress of the project, along with any existing or potential problem areas. Additional cost/schedule status reporting detail may be required by the PM/COR. The CPSMR shall be presented by CLIN/subCLIN and shall include graphics, charts, and/or tables to clearly communicate the information presented in the CPSMR. The CPSMR shall also be used to indicate whether efforts for each site are on target for completing the Phase I RI in accordance with the SOW within the POP. The report shall be prepared in a format coordinated with the COR and shall be prepared and submitted in an electronic format to the AE's document repository and via electronic mail.

The CPSMR shall include a summary of the events that occurred during the reporting period, discussion of performance, identification of problems, proposed solutions, corrective actions taken, outstanding issues, and payments made to date. Failure to submit timely and complete monthly progress reports may result in payment withholding. Each report shall include the following information and formats at a minimum:

- Completed tasks in the previous month including a list of meetings held during the reporting period;
- Status update of the Milestone Payment Schedule/Plan
- Statused IMS
- Monthly cost performance data including planned value, actual cost, un-invoiced progress, cost/schedule variance, and other parameters as requested by the COR/PM.
- Address problems encountered in completing the various tasks and any changes in scope or direction from the program baseline, including actual or potential schedule and cost impacts;
- Upcoming tasks for the next two months;
- Regulatory meetings (completed or upcoming);

- Project the estimated cost at completion, in accordance with the Contract, if the Project Price is expected to be exceeded;
- Other pertinent information necessary to provide the AF RPM and AFCEC PM information necessary to monitor the project success.

These requirements shall apply unless the COR/PM provides the AE with specific written alternative instructions. Monthly reports shall be signed and dated by the senior project manager designated for the project.

5.2.2 Invoicing, Direction, and Responsibility

While submitting an invoice each month is not required, the AE shall submit no more than 1 invoice each month. All invoices shall be submitted using form ENG-93, which may be modified with COR/PM approval to better reflect the invoicing structure for this contract.

Partial payments, as authorized by the COR will be made monthly for the amount and value of the work and services performed by the AE in accordance with the General Provision of the task order. An updated progress chart/submittal and technical project status summary shall be submitted monthly to the technical manager at the time of each payment estimate (ENG Form 93).

A copy of the electronic ENG Form 93 may be found at the following website http://www.publications.usace.army.mil/USACEPublications/EngineerForms.aspx. The electronic copy of an ENG Form 93 shall be prepared by the AE, and shall be submitted via e-mail to EN-TS, at E-mail address: SAMAE-ENGFORM93@usace.army.mil. Please CC the Technical Manager (TM) and COR. The Mobile District Project Manager for this work is [redacted], PM-Ic [redacted] and Technical Manager is [redacted], PG, EN-GE, [redacted].

All required information must be filled in correctly by the AE, and the form must have a true electronic signature of an officer of the company. Cut and pasted images of signatures will not be accepted as electronic signatures. The estimate will be verified by the COR utilizing the progress report submitted by the AE and independent analyses of progress. The AE must submit the ENG form 93 and any supporting documentation in a separate PDF file, with the file name that includes the contract number, the delivery order number, the task order number and the invoice number, followed by an underscore ENG93.pdf. See the following example: W91278-15-D-0038 (W9127817F0088) 0013-02_ENG93.pdf. When submitting for final payment, include a Release of Claims Statement with, or on the ENG 93, the following statement is acceptable:

"The work under the above numbered task order having been completed and finally accepted, I hereby release the United States of America, its officers and agents from all claims whatsoever arising under or by virtue of this contract upon payment of a balance due of $_____."

"Directions"
The A-E shall accept technical directions only from the Mobile District Procuring Contracting Officer (PCO) or the Authorized Representative of the Contracting Officer (COR). Requests or desires of the users, using agency, or other Government employees made directly to the A-E will be immediately brought to the attention of the COR and PCO. Only a warranted Procuring Contracting Officer (PCO), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. Any changes to the project affecting scope, delivery, price, or other terms and conditions must be authorized in writing by the PCO. Proceeding with any change not authorized by the KO shall be at the Contractor's own risk.

5.3 Environmental Resources Program Information Management System (ERPIMS) Data Management

Comply with the Environmental Resources Program Information Management System (ERPIMS) data deliverable requirements for all field-derived data/information supported by ERPIMS data structure including, but not limited to, sampling data, relevant QA/QC data, lithology, groundwater, monitoring well location, well installation, well maintenance, and/or abandonment information.

After receipt of the contract, the AE shall submit an ERPIMS Data Submission Schedule within 30 days of award to establish the projected framework for ERPIMS data submissions. The AE shall record and enter field and laboratory data and submit this data as specified in the latest ERPIMS Data Loading Handbook (DLH) using the latest version of the ERPIMS software utility (ERPTools).

ERPIMS data submissions are required within 90 calendar days of sample collection unless a written waiver or extension is obtained from the KO in coordination with AF. The AE shall be responsible for the accuracy and completeness of all data submitted. The AE shall ensure that any required corrections are accomplished within both the contract POP and before funding expiration. The preferred procedure is for laboratories to use ERPTools to input/submit chemistry data for initial validation, import, and submission by the AE. ERPTools training is available to the AE and laboratory contractors. All milestones that include analytical sampling shall include successful ERPIMS loading of all relevant ERPIMS data elements into the production database as a minimum acceptance criterion.

The AFCEC website (https://www.afcec.af.mil/What-We-Do/Environment/Restoration/ERPIMS.aspx) offers the latest DLH, ERPTools client software, ERPIMS policy, ERPIMS Help Desk contact information, data submission requirements, ERPTools training schedules, and more. Data submissions shall be error-free, pass all validation checks and fully comply with the ERPIMS DLH. The AE shall ensure that any required corrections are accomplished within both this contract POP and before funding expiration. The preferred procedure is for laboratories to use ERPTools to input/submit chemistry data for initial validation, import, and submission by the AE. ERPTools training is available to the AE and laboratory contractors.

5.4 Meetings, Conferences, and Telecommunications

For each of the AF installations, it is expected that meeting participation and facilitation will include: (1) Several project scoping meetings, separate for each installation (number to be determined); (2) Monthly project status updates via teleconference with the COR, AF POCs, and technical support; (3) At a minimum, two (2) project status teleconferences per year with the Regulators; (4) A varying number of RAB meetings per year depending on the installation (see section 5.4.5) and (5) Public Meetings or Hearings. The frequency of the various meetings may change based on the status of the environmental restoration program at each installation. The USACE and AF will be present for all technical and public meetings with the regulatory agencies; however, the AE shall coordinate the meetings, provide logistical support (e.g., facilities, audio/visual), present materials, and lead technical discussions. The AE shall clearly identify themselves as "AEs" in all situations involving stakeholders. The AE shall prepare, and submit for USACE and AF review and concurrence, any presentation materials proposed for use at meetings.

The AE shall attend the meetings described below. For each meeting except the RAB and Public Meetings/Hearings, the AE shall submit an agenda at least 5 business days in advance to the USACE and AF for review and comment. The final agenda shall be provided at least 24 hours prior to the meeting. Within 1 week of each meeting completion, the AE shall submit meeting minutes to the USACE PM/COR, AF RPM, and AFCEC PgM which shall include a list of meeting attendees with email addresses and telephone numbers, a summary (not a transcript) of key issues discussed and their

disposition, a list of action items, and any other pertinent information discussed at the meeting. Copies of the final meeting minutes shall be submitted and distributed to the USACE PM/COR, AF RPM, AFCEC PgM, and any additional meeting attendees. Meeting agenda and meetings minutes can be submitted electronically and shall be uploaded to the information repository.

The AE shall function as an integral team member in support of the AF mission, to include the sharing of information with other AF and USACE AEs and AF personnel, and cooperation with communities, regulators, and other government entities.

5.4.1 Kickoff Meetings

The AE shall coordinate a post-award 'kick-off' meeting for each installation within 30 days of award meeting with the Government (USACE and AF) to review the project requirements, PMP, IMS, and other project requirements as determined by the COR/PM. The Government kick-off meeting shall include a comprehensive review of the PMP and site-specific approaches, IMS tasks, durations, and alignment of WBS and IMS.

Following the Government kick-off meetings and all document modifications resulting from the kick-off, the AE shall attend and support the post-award kick-off meetings with the regulators, USACE and AF to introduce technical approaches, schedules, etc. The intent of this meeting is to present the SOW requirements and a high-level approach to address these requirements, provide the deliverable schedule to regulatory agencies, and solicit feedback regarding the Phase I requirements and proposed approach to facilitate concurrence and buy-in when technical scoping sessions are performed.

5.4.2 Progress Meetings and Teleconferences

The AE will participate in telephone status meetings with USACE and AF. These meetings are anticipated to occur monthly, but depending on the amount of field activity, these could occur on a bi-weekly or weekly basis. The purpose of the telephone meetings is to ensure that all issues for work underway are addressed. Telephone conferences are usually less than one hour in length. Project progress teleconferences with regulators are anticipated to occur two times per year, usually less than 2 hours in length.

5.4.3 Project Scoping Meetings

The AE shall host project scoping meetings during project plan development to discuss and confirm the sampling plan and Quality Assurance Project Plan (UFP-QAPP) data quality objectives (DQO). The first 2 meetings will be held with the AF and USACE, and a final meeting will include the AF, USACE, and Regulator(s). The individual installation may need to increase the Internal and/or Scoping Meetings with the Regulator based on project complexity and/or expected Regulator interaction. Project scoping meetings shall be performed using web sharing program such as MicroSoft® Teams, WebEx, or similar. Conferences are expected to last approximately 2 to 4 hours each depending on the complexity of the project. Appropriate figures, tables, and draft UFP-QAPP worksheets shall be used to depict the details of the proposed sampling plan.

5.4.4 Project Management Review Meetings

The AE shall coordinate one PMR meeting or teleconference for each installation each year with the USACE and AF. The AE shall be responsible for ensuring that the attendees are selected to provide the necessary level of expertise required by the purpose and scope of the meetings.

5.4.5 Restoration Advisory Board (RAB) Meetings

The number of RAB meetings per year varies by installation as follows:

- HARB: Currently none, but that may change during this contract (assume 2x/year)
- TAFB: 2 RAB meetings/year

The AE should anticipate presentation of one or two select work topics to be determined by the AF RPM for each RAB. Presentations for the RAB shall be submitted at least 2 weeks in advance, or on an alternate schedule designated by the COR/PM, for USACE and AF review and comment. It is anticipated that all RAB meetings will be held at or near each Installation and the AE will be required to travel to the Base to attend.

5.4.6 Public Meetings and Hearings

The AE shall attend teleconferences when necessary, and support the AF RPM to provide updates and briefs to the assigned Public Affairs Officer (PAO) to ensure the PAO is fully aware of all ongoing activities, public outreach status, compliance with applicable regulations, and potential issues that might impact the AF and its public image in accordance with Clause H029, Implementation of Disclosure of Information.

Examples of types of Public Affairs requirements include the presentation of technical information and logistical support (e.g., advertising, audio-visual, handouts, report(s), recordings, verbatim transcripts, poster boards, slides, synopses, etc.) for events and/or meetings in support of the government's position. All reports and other information generated under this contract shall become the property of the Government, and distribution to any other source by the AE is prohibited unless authorized by the COR/PM.

The AE must utilize staff trained in public affairs to complement the technical staff on the project. These trained staff must attend all meetings with the public along with the appropriate technical staff. The credentials of the trained staff must be submitted to and approved by the USACE COR/PM in advance of any meeting with the public. The minimum acceptable credentials of the trained staff will demonstrate effective communications experience and experience in building relationships with the stakeholders involved in cleanup activities or similar efforts.

The AE may be tasked to research, coordinate and provide responses for short-notice internal and external requests for information such as congressional inquiries and media requests as requested by the PAO or other applicable action officers. These inquiries may require the AE to provide the USACE and/or AF factual and responsive information within one working day of the request.

5.5 Proprietary Information

All material gathered and/or developed in the performance of the tasks listed in this SOW shall be the property of the AF installation and shall only be used by the AE and their subcontractors for the execution of this SOW. Additionally, all documents shall be delivered to the government with unlimited rights and without restrictions. The AE is not authorized any other use or distribution of said material without the specific written permission of the COR/PM. After completion of the project, all materials shall be returned to AFCEC and USACE-Mobile District.

5.6 Record Keeping

The AE shall create and maintain in 1 location written (in bound, numbered logbooks and/or field forms) and electronic records (i.e., laboratory analytical data records, data logger, etc.) sufficient to recreate each sampling, analytical, testing, and monitoring event. The AE shall maintain records of all activities outlined in the appropriate portion of the Uniform Federal Policy for Quality Assurance Project Plans

(UFP-QAPP)/Work Plan (WP) supporting the generation of these sampling and analysis records. The AE shall also retain written calculations using information obtained from sampling, analysis monitoring and testing activities, to include all raw data. The AE shall make these records available to the government upon request. The AE shall retain records for a minimum of 5 years.

All field documentation shall be recorded in bound, numbered logbooks. Field logbooks shall have numbered pages and shall include a complete record of all field activities. If multiple field logbooks are required, each shall be numbered and specifically identified to indicate dates and sites where used. Field documentation shall be recorded at the time of fieldwork, i.e., details may not be added after the fact. All information required to fully recreate all sampling and investigation events shall be documented in the field logbook. Use of field forms may augment but not replace the detail required in the field logbook. Field logbook/field form entries must be legible. Digital field documentation may be used only with COR/PM review and approval, and only if the digital documentation methodology is securely recorded and includes an unalterable date and time stamp.

5.7 On-Installation Access and Site Access Badges

Standard work hours are typically 0800 to 1700 Monday through Friday but may vary per installation. Additional work hours and/or weekend work may be proposed by the AE and is contingent upon approval by the Government. Some work locations require an AF escort, an airfield driving permit, a line badge, etc. and work access restrictions may vary during the performance of this contract; therefore, all fieldwork shall be coordinated with and approved by the installation on which the work is being performed (see Part B, Technical Requirements, Site Specific Information). The AE shall conduct a weekly fieldwork planning meeting with each installation and present a schedule of site-specific tasks planned for that week. The Installations will review the schedule and identify locations with additional access or escort restrictions. The AE may be required to modify the planned work schedule as directed by the installations.

The AE shall obtain and monitor assigned security badges (used by both AE and subcontractor personnel) for the duration of this contract. All security badges and/or passes shall be returned to the AF point-of-contact (POC) or AF Security upon expiration of the badge, upon completion of the project, or when possession of the badge is no longer necessary (e.g., AE transition of personnel from the project).

5.8 GIS/GeoBase Spatial Data (Mapping) Requirements

In furtherance of the environmental construction or restoration effort, the AE shall provide geospatial data and map(s) of Installation features (historical, existing, or planned) altered or constructed as required to achieve the POs of this contract.

Source data and product data remain the property of the United States government. The AE may be required to explain and demonstrate the company's process for protecting all geospatial data, including but not limited to, geometry, attributes, metadata, topologies, and relational database schemas and operations used in association with this SOW. Further information about security and nondisclosure requirements should be obtained from the Installation Geospatial Integration Office (GIO).

The AE shall provide data to update the GIS and/or computer-aided design and drafting (CADD) files as required to achieve the POs of this contract. Source data and product data remain the property of the United States Government.

All products associated with this contract that provide a map representation of the location of installation features (historical, existing, or planned) including installation maps, site plans, area development plans, walls-out as-built depictions, or other related overhead (plan) views of an Installation (partial or entire) must adhere to the following requirements. (NOTE: This requirement does not currently involve walls-in facility floor plans or interior renderings.)

All maps and associated data must comply with the latest AF version of SDSFIE available from the SDSFIE Web site: http://www.sdsfieonline.org/ or contact the AFCEC GIO at AFCEC.GIO.WorkFLow@us.af.mil or (210) 925-4620. These data will be organized using the current version of the standard approved by the Headquarters Air Force GeoBase Office as the functional lead for Installation mapping and visualization. The SDSFIE will determine file and feature class identification and definition, attribution, and valid domain values. When any geospatial information collected as a result of the contract includes information identified in the Common Installation Picture (CIP) or recognized Mission Data Set (MDS), the AE will deliver data consistent with the established requirements for the data and will ensure functionality with the receiving system. The AE shall also consult with each Installation POC and/or Installation GIO office to ensure CADD and GIS data is compatible with each Installation's requirements.

Information must be collected at no less than 1:1200 scale. Spatial data will meet or exceed National Map Accuracy Standards at those scales. Metadata will be provided and will use Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM) for organization.

As a requirement of this contract, the AE shall provide to the Government all shape files, file geodatabases, map exchange files (MXDs), and Geospatial data accumulated as a result of investigation recorded on compact discs (CDs) and also electronically. Geospatial data must be delivered in a geo-referenced GIS format (feature-based file structures with one-to-one cardinality between spatial records and attribute records) which would include Environmental Systems Research Institute's (ESRI) shapefile and geodatabase formats. All attribute data as specifically outlined in the contract must be included either in the GIS data file or as a separate table with a SDSFIE key variable that may be used to relationally join the separate table with the GIS data file. All geospatial data must be delivered in the North American Datum 1983 (NAD83) projection, State Plane Coordinate System, using feet or metric coordinate units. For all locations within the Restricted Area, Universal Transverse Mercator (UTM) coordinates must also be provided. Further guidance on mapping units, coordinate systems, and projections is available from the Installation GIO.

Mapping- or Survey-Grade Global Positioning Systems (GPS) or comparable traditional survey methods will be used to collect geospatial data. The use of mapping- or survey-grade GPS will depend on the precision requirements of the product data. These requirements will be specified later in this SOW for all contract activities where geospatial data are involved. In the case of contracts involving utility construction, location and attribute data will be obtained at the time of excavation. Further information about precision requirements should be obtained from the Installation Execution Support (GeoBase) Office.

The AE shall be required to sign a non-disclosure agreement attesting to the same before source data are released. Further information about security and non-disclosure requirements should be obtained from the Installation GIO. Some installation map data, source and/or product, may be considered by the Government to be "sensitive, but unclassified." The intent of this clause is to prevent intentional or unintentional dissemination of "sensitive, but unclassified" information to include unauthorized access to the source and product data by any entity wishing to do harm to the AF or United States Government while the data resides on the AE's computer network. The AE is not authorized to release this information to any third party without the explicit consent of the AFCEC GIO (AFCEC/CPAB) or its involved installation. All source information must be returned to the Government POC or destroyed upon completion of this project.

Documentation of information destruction shall be documented and provided to the Installation POC. Special requirements for handling classified map data, if applicable, will be addressed elsewhere in this SOW. The AE is required to follow MD 11042.1 regarding Safeguarding Sensitive but Unclassified (For Official Use Only) information dated 5 January 2005.All final site data collected shall be in a geospatial data standard nomenclature. The data will be submitted to AFCEC, the installation, and USACE for

inclusion on their database. The AE shall work to ensure all data have been validated and is accurate. The AE shall not establish new geographic information system (GIS) systems. In furtherance of the environmental construction or restoration effort, the AE shall provide geospatial data and map(s) of installation features (historical, existing, or planned) altered or constructed as required to meet the objectives of this contract.

Source data and product data remain the property of the U.S. Government. The AE may be required to explain and demonstrate the company's process for protecting all geospatial data, including but not limited to, geometry, attributes, metadata, topologies, and relational database schemas and operations used in association with this SOW. Further information about security and nondisclosure requirements should be obtained from the Installation GIO. The AE shall also ensure that GIS data are submitted in a format compatible with the AF GeoBase program, as outlined in the AF GeoBase Strategic Plan.

5.8.1 Metadata Requirements

The National Spatial Data Infrastructure (NSDI) encompasses policies, standards, and procedures for organizations in the United States to cooperatively produce and share geospatial data. The Federal Geographic Data Committee (FGDC) has assumed leadership in the evolution of the NSDI in cooperation with the Department of Defense and other federal agencies, state and local governments, academia, and the private sector. The FGDC has developed standards for collecting common information describing the content, quality, condition, and other characteristics of map and imagery data. These standards are collectively known as the "Content Standards for Digital Geospatial Metadata". Executive Order 12906 "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," requires all federal agencies to use the FGDC Standard to document all geospatial data that they produce (beginning in 1995). Products Requiring Metadata Collection.

The AE will collect and report metadata on all delivered products, including intermediate products such as breaklines, etc. Information concerning FGDC's "Content Standards for Digital Geospatial Metadata" is available on the Internet at: http://www.fgdc.gov/standards/standards_publications/index_html.

The FGDC's "Draft Content Standards for Digital Orthoimagery" product can be found on the Internet at: http://www.fgdc.gov/standards/projects/FGDC-standardsprojects/ orthoimagery/ orth_299.pdf

5.8.2 Required Metadata Format and Data Elements.

Metadata will be submitted in an ArcXML based format capable of being utilized by ESRI's ArcGIS and at a minimum will include the following data elements:

- Identification Information
- Contact Information
- Time Period
- Data Quality
- General Information
- Attribute Accuracy
- Positional Accuracy
- Source Information
- Process Steps
- Spatial Reference
- General Information
- Horizontal Coordinate System
- Vertical Coordinate System
- Metadata Reference
- Metadata Date

5.9 Notification Requirements

The AE is required to notify the USACE KO, PM, COR and AF RPM of critical issues that may affect the contract performance. For issues that affect human health, safety and the environment, the AE shall verbally notify the PM/COR and AF POCs immediately and follow-up with email notification no later than 8 hours after occurrence.

Based on issue severity, the KO, PM/COR, and/or AF RPM may require the AE to "pause" work activities until more information is gathered. A work "pause" is not an official "stop-work," but is a suspension of activities that may exacerbate the issue.

The types of issues that require notification include, but are not limited to, health/safety risks and actual occurrences (e.g., breach of energized power lines), spills, Notices of Violation (NOVs) (received or anticipated), changes in critical personnel, and finding unanticipated unexploded ordnance (UXO), discarded military munitions, munitions constituents present in high enough concentrations to pose an explosive hazard, or chemical warfare material (CWM). The AE shall follow the 3Rs principal of Recognize, Retreat and Report if Munitions and Explosives of Concern (MEC) are encountered or suspect to have been encountered. The AE shall provide the KO with written notices, via email, of the incident occurrence and a follow-up notice of the incident resolution. Field activities shall not continue until clearance is received from the AF RPM and USACE KO. On critical issues, verbal notification should be made immediately, followed by written notification as soon as practical.

5.10 Permits

The AE shall develop, coordinate, apply and pay fees for, comply with, and/or modify all federal, state, local, and other applicable permits, right-of-entry agreements, easements, licenses, and certificates required to meet the objectives of this contract. The AE shall maintain a library of these documents at the AE's site office as well as the corporate facility handling each contract. The AE shall comply with all applicable permit conditions. It is expected that this effort will include activities such as:

a. Maintaining all needed permissions and clearance to areas such as RI areas, as these areas may be on active airfield, other secured areas, public water well locations, or private property. For private property the AE activities shall be at the direction of the government. Prior to work being performed on private property, the government will obtain permissions for site access; in some instances this could take up to 8 weeks or more.
b. Determining and obtaining all required site-specific training needed to access and work on sites.
c. Coordinating and scheduling work and other access with the AF RPM or a local representative with the current property owners.
d. Preparing Federal Aviation Administration obstruction clearance permits for work within the active airfield.
e. Supporting coordination with authorities for access at cultural and natural resource areas.
f. Providing metes and bound survey(s) as required to establish easements on the property utilizing a registered land surveyor.

5.11 Photo Documentation

The AE shall prepare digital photographic documentation, as required to meet the objectives of this contract. The AE shall include dated photographic documentation of site(s) and building(s) under investigation, field activities, and sample locations. The AE shall upload all photographs to the AE's web-based repository. Photography of any kind must be coordinated in advance through the USACE COR and AF RPM. All photographs must be digitally dated. Photo documentation shall be included in daily reports, CPSMRs, etc.

All of the AF installations prohibit photography of the flightline, aircraft, and in other sensitive areas.

Prior approval for photographs on all instllations is required and visual inspection of the photos after the photos are taken by AF installation personnel is required prior to use or dissemination.

5.12 Off-Installation, Remote and/or Austere Sites

The AE will be required to perform work as specified at off-installation, and possibly remote and/or austere locations. The AE shall be responsible for all personnel, security, supplies, equipment, and infrastructure (including, but not limited to, potable water, utility systems, housing, dining, transportation, and medical care) when there are no facilities and services available. This may occasionally include providing these facilities and services to a limited number of government personnel or other AE personnel present or visiting to oversee or assess the work.

If off-base RI work is conducted on private property, the AE will be responsible for protecting Personally Identifiable Information (PII) and will coordinate with the AF/USACE on how to incorporate into the required RI reports.

5.13 General Requirements for Field Activities

The AE shall comply with all applicable federal, state, and any other applicable regulations concerning safety during site characterization and remedial activities, including, but not limited to, drilling, sampling, construction, and remediation and operations activities. All AF, USACE, and AE employees shall be authorized to stop fieldwork that is being conducted in an unsafe manner until the deficiency is properly addressed to ensure worker safety.

All activities requiring AE access to the Installations (e.g., drilling operations, sample collections, well development and testing, surveying, demolition, construction, operations, and maintenance, etc.) or affecting other installation activities shall be coordinated with appropriate installation personnel before implementation. Work will be implemented in a manner that minimizes disruption of the installation's mission(s) and operations.

The AE shall coordinate worksite activities with all applicable AF and USACE personnel to ensure the protection of human health and the environment; the prevention of damage to property, utilities, materials, supplies, and equipment; and the avoidance of work interruptions. The AE shall provide physical security to work areas by furnishing security equipment and personnel. The AE shall perform emergency response to situations arising from project activities. The AE shall perform emergency repairs to facilities, systems, improvements, or utilities damaged while executing contract requirements made to either AF property or to public or private off-base properties. The AE shall comply with all local, state, federal and military law and guidance covering security activities. The AE must comply with Occupational Safety and Health Administration (OSHA) safety and health regulations, USACE EM-385-1-1, and all local safety office requirements. The AE is required to provide copies of any OSHA report(s) submitted during the duration of the contract the KO and AF RPM.

For environmental services, all on-site workers (AE and subcontractor) performing hazardous operations, including working with hazardous materials, must have completed the OSHA 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) training and/or other applicable training, plus annual refresher courses. The AE shall maintain documentation supporting training records and have the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) on site and available for workers, USACE, AF, and/or regulatory review.

The AE shall be responsible for any damage caused to property of the United States (Federal property) by the activities of the AE or their subcontractors under this contract and shall exercise due diligence in the protection of all property located on the premises against fire or damage from any and all other causes. Any property of the United States damaged or destroyed by the AE or subcontractors incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the AE to a condition

satisfactory to the USACE COR or reimbursement is made by the AE sufficient to restore or replace the property to a condition satisfactory to the USACE COR in accordance with FAR Clause 52.245-2.

5.14 Environment, Safety & Health

The AE shall prepare a HSP for each installation to comply with AF, USACE, Occupational Safety and Health Administration (OSHA), USEPA, federal, state, and local health and safety regulations and guidance, including EM 385-1-1 and ER 385-1-92. In accordance with EM 385-1-1, the HSP will consist of a Site-Specific Safety and Health Plan (SSHP) and Accident Prevention Plan (APP). Fully utilize any existing related HSP, tailored specifically to the current effort. The AE shall maintain written certification that the approved HSP has been reviewed with all personnel that work at the project site prior to their mobilization. The AE and all subcontractors are required to comply with the approved HSP (including SSHP and APP). The Government can shut down operations due to non-compliance or occurrence of a safety incident without cost to the Government until safety issues are resolved.

Prior to the start of any fieldwork, the USACE COR/PM, AF RPM, and Mobile District Safety Office must accept the AE's APP/SSHP. In addition, the USACE COR/PM must accept any changes to the APP/SSHP prior to commencing work covered by the changes. The APP/SSHP shall be included as an appendix or attachment to the UFP-QAPP/WP. The AE shall provide comprehensive Health and Safety oversight of all field activities.

5.15 Quality Management Plan

The AE shall develop and implement a Quality Management Plan (QMP) for each installation that addresses all aspects of the contract, including but not limited to, document quality, schedule updates, fieldwork, field documentation, etc. The AE shall conduct audits of all field efforts and shall provide the COR/PM and AF RPM with a report summarizing each field effort, issues identified, and corrective actions. The QMP shall include procedures for audits, root cause analysis, lessons learned, etc.

The AE shall develop and implement a Quality Program that addresses the work and processes to be completed under this contract, including applicable procedures required to support standard quality practices for document quality, field work, readiness reviews, lessons learned, root-cause analysis, and all other tasks related to overall contract execution. The goal and purpose of the Quality Program is to ensure work under this contract be of the highest quality to support technically sound decisions consistent with applicable Government and regulatory requirements, and to ensure all tasks include appropriate technical and safety authorization and controls. The AE QMP shall include details on how technical plans and reports will be produced in a quality and consistent manner and shall either contain or directly reference a style guide for all documents.

Quality Program documentation may be included as attachment to the PMP or as a stand-alone document.

6.0 QUALITY AND CHEMISTRY REQUIREMENTS

6.1 Quality Assurance/Quality Control

The AE shall develop project specific DQOs to ensure data of adequate quality are collected to support project decisions. DQOs shall be developed in consensus with the restoration project team and in accordance with the UFP-QAPP/WP and USEPA QA/G4, Guidance on Systematic Planning Using the Data Quality Objective Process (most recent version) and documented in the UFP-QAPP/WP. The DQOs shall be thorough and comprehensive and shall address all aspects of the DQO process. A UFP-QAPP/WP for each installation shall be prepared in accordance with the DQO process as described in EPA QC/G4 and UFP-QAPP guidance using the Optimized UFP-QAPP Worksheets, March 2012. Compliance with the DQO requirements will be confirmed by the USACE and AF and the AE shall be

required to correct any deficiencies noted prior to UFP-QAPP/WP completion. The AE shall ensure that all requirements specified in the UFP-QAPP/WP are met. If not met, the AE may be required to re-accomplish sampling at the AE's expense. All laboratory services shall be conducted in accordance with the approved project UFP-QAPP/WP. Samples shall not be submitted for analysis until the Final UFP-QAPP/WP is approved.

The AE shall conduct audits, administer an AFCEC-approved performance evaluation sample program, or participate in the AFCEC program, verify and validate data, and perform corrective actions in accordance with the programmatic UFP-QAPP/WP. Data verification, data validation, data qualification schema, and data usability assessment methodology shall be described in the UFP-QAPP/WP, and performed by an independent, qualified, and experienced data validator in accordance with DoD General Data Validation Guidelines and any applicable Modules. The AE can perform the required data validation, but the validators should be independent of contractors collecting the data (e.g., shouldn't be the project chemist). Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data for each sample delivery group, including DoD QSM, Table-B15 requirements.

The data validation standard operating procedure shall be included in the UFP-QAPP/WP. Significant deviations from project requirements discovered during data validation shall be communicated with the AF and USACE project chemists and PM/COR as part of the data validation process. A data validation report shall be prepared and shall sufficiently document the data validation procedure and provide a clear understanding of the representativeness of the data. The results of the data validation shall be summarized in the associated technical report with supporting data validation reports included in an appendix. A data usability assessment of the validated data shall be performed. The results of the data usability assessment shall be included in the technical report, and shall identify the limitations of the data, and the effect qualified results have on the decisions being made for the project.

6.2 Chemistry Requirements

The AE shall be responsible for the quality of all required chemistry services performed. The AE shall ensure that all chemistry-related tasks are conducted in accordance with the programmatic UFP-QAPP WP. The AE shall identify a Project Chemist as key personnel in the UFP-QAPP. The Project Chemist will act as a POC on all chemistry-related issues and shall be responsible for ensuring that all Data Quality Objectives (DQOs) are met. Data quality includes analytical and non-analytical data, measurements, and all other types of data/information collected to support achievement of the Phase I RI.

6.2.1 Laboratory Selection

The AE shall select 2 laboratories, a primary and a back-up, with analytical capabilities sufficient for the methods specified in the UFP-QAPP/WP with adequate throughput capacity to handle the project's analytical workload during all field activities. The AE shall ensure that each laboratory is accredited under the DoD Environmental Laboratory Accreditation Program (ELAP) to DoD QSM, version 5.3 or newer, and meets all federal requirements. Laboratories shall also possess any current registrations or certifications required by the state where the work is being performed. DOD ELAP accredited laboratories can be found here: https://www.denix.osd.mil/edqw/accreditation/accreditedlabs/

The AE may establish an on-site laboratory at the project site if determined necessary by the AE. However, on-site test laboratories shall also be accredited under the DoD ELAP and meet all state and federal requirements, including state certification, where appropriate.

During laboratory selection, it is recommended the AE confirm sampling container types, sizes, and initial volume requirements; standards containing both branched and linear isomers are used, when commercially available; chemical derivation of the ion transitions; and reagent or ultra-pure water used in the laboratory is confirmed to be free of PFAS.

6.2.2 Analytical Requirements

All laboratory services shall be in accordance with the analytical requirements described below and be conducted in accordance with the approved UFP-QAPP/WP. The UFP-QAPP/WP shall include SOPs for field sampling and laboratory analytical procedures. Samples shall not be collected or submitted for analysis until the UFP-QAPP/WP and addenda have received both Government and regulatory agency approvals of the final document.

PFAS analysis for all matrices (i.e., groundwater, surface water, soil, and sediment) shall be performed by a DoD ELAP accredited laboratory using a liquid chromatography tandem mass spectrometry (LC/MS/MS) method that is on the laboratory's DoD ELAP scope of accreditation and is compliant with the requirements in the DoD QSM (version 5.3 or most current) for Environmental Laboratories, Table B-15. All PFAS analytes in Table 6.4 must be reported. All compounds to be reported must be on the laboratory's DoD ELAP scope of accreditation. The DoD QSM allows for commercial PFAS standards that are available as salts providing the measured mass is corrected to the neutral acid concentration. Results shall be reported as the neutral acid with appropriate CAS number. The preferred nomenclature of the target analyte for reporting purposes will be the conjugate acid (i.e., sulfonic acid instead of sulfonate). Laboratories should be capable of converting concentrations from the conjugate base to the conjugate acid based on the molecular weight, as necessary based on stock standards purchased. As data is referenced in project reports, the text shall refer to the base conjugates (i.e., sulfonate instead of sulfonic acid) with associated concentrations displayed as the acid conjugate, with a note to clarify the differences. If analytes that are not listed in the DoD QSM are requested, laboratory in-house control limits must be approved by USACE and AFCEC.

Table 2: PFAS Analyte List		
Chemical	**CASRN**	**Acronym**
4:2 Fluorotelomer sulfonic acid	757124-72-4	4:2 FTS
6:2 Fluorotelomer sulfonic acid	27619-97-2	6:2 FTS
8:2 Fluorotelomer sulfonic acid	39108-34-4	8:2 FTS
N-ethyl perFluorooctanesulfonamidoacetic acid	2991-50-6	NEtFOSAA
N-methyl perFluorooctanesulfonamidoacetic acid	2355-31-9	NMeFOSAA
PerFluorobutanesulfonic acid	375-73-5	PFBS
PerFluorobutanoic acid	375-22-4	PFBA
PerFluorodecanesulfonic acid	335-77-3	PFDS
PerFluorodecanoic acid	335-76-2	PFDA
PerFluorododecanoic acid	307-55-1	PFDoA
PerFluoroheptanoic acid	375-85-9	PFHpA
PerFluoroheptanesulfonic acid	375-92-8	PFHpS
PerFluorohexanesulfonic acid	355-46-4	PFHxS
PerFluorohexanoic acid	307-24-4	PFHxA
PerFluorononanoic acid	375-95-1	PFNA
PerFluorononanesulfonic acid	68259-12-1	PFNS
PerFluorooctanesulfonamide	754-91-6	PFOSA
PerFluorooctanesulfonic acid	1763-23-1	PFOS
PerFluorooctanoic acid	335-67-1	PFOA
PerFluoropentanoic acid	2706-90-3	PFPA
PerFluoropentanesulfonic acid	2706-91-4	PFPS
PerFluorotetradecanoic acid	376-06-7	PFTeDA
PerFluorotridecanoic acid	72629-94-8	PFTriDA
PerFluoroundecanoic acid	2058-94-8	PFUnA

New or improved PFAS analytical methods are likely to come into existence in the near future. Prior to use for PFAS analysis, the laboratory must be DoD ELAP accredited, have the method and reported analytes on the laboratory's DoD ELAP scope of accreditation, and be in compliance with the version of the DoD QSM to which the laboratory is accredited.

There are no soil extraction methods in EPA publication, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, also known as SW-846. The laboratory shall process and analyze soil or sediment according to DoD QSM Table B-15. The AE should evaluate laboratory standard operating procedures for industry standard expectations. The entire soil or sediment sample received by the laboratory must be homogenized prior to subsampling.

6.2.3 Analytical Data Management

The AE shall ensure that all hard copy and electronic data deliverables supplied by the laboratory are complete and adequate to support the quality and usability of the data. Stage 4 data packages shall be submitted to the USACE and AFCEC. Data packages shall include all information required to re-create the analysis, including correspondence with the laboratory regarding exceeding quality assurance/quality control (QA/QC) measurements and documentation of corrective actions. The AE shall meet ERPIMS data deliverable requirements as currently required by AFCEC. Stage 4 laboratory reports in accordance with the QSM shall be provided to include QA/QC results, chromatographs, and manual integrations completed during analysis.

6.2.4 Data Validation

The AE shall be responsible for assessing the environmental data's quality by performing data validation against criteria established within the analytical method, the DoD QSM, the DoD General Data Validation Guidelines, and the UFP QAPP/WP. Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data, including DoD QSM, Table-B15 requirements.

A data validation report shall be prepared and shall sufficiently document the data validation procedure and provide a clear understanding of the representativeness of the data. The results of the data validation shall be summarized in the associated technical report with supporting data validation reports included in an appendix. A data usability assessment of the validated data shall be performed. The results of the data usability assessment shall be included in the technical report, and shall identify the limitations of the data, and the effect qualified results have on the decisions being made for the project.

7.0 PLANS AND REPORTS

7.1 Technical Plans and Reports

The AE shall provide technical plans and reports, as well as various other deliverables. The AE shall complete these documents according to the most appropriate industry standard.

The deliverables required under this contract shall demonstrate SOW compliance and milestones attainment. Most of these documents must be submitted for initial USACE and AF review followed by submittal to the regulatory agency. The AE must confirm the number of copies required for delivery to all relevant parties as depicted in the table presented in Section 7 of this SOW. The protocols described in the Attachments to this SOW, as well as relevant and appropriate USEPA and AF guidance should be used in development of these plans as applicable. Collection methods for all sample media, water levels, water quality parameters, sample collection and handling, and analytical methods will be included in all project work plans and required reports. The AE may utilize existing plans in their entirety or prepare updates, revisions, or addenda to the existing plans, as appropriate, in lieu of developing new plans.

7.1.1 Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP) Work Plans (WPs)

Since this task order is specific to Air Force bases in Florida and will be executed under the same regulatory framework and requirements, the AE may elect to prepare a Programmatic UFP-QAPP that addresses aspects and details common to all locations, and then prepare base/location-specific UFP-QAPP/WPs that contain the site-specific detail and reference the Programmatic UFP-QAPP. The AE may also elect to prepare comprehensive all-inclusive and site-specific UFP-QAPP/WPs for each base RI.

The UFP-QAPP/WP(s) for this contract, to include a Draft, Draft Final, and Final version for USACE, AF, and Regulatory review and approval. The AE must implement, maintain, and comply with the approved programmatic UFP-QAPP/WP and its installation-specific addenda.

The UFP-QAPP/WP shall be written in the format specified in the Intergovernmental Data Quality Task Force Optimized UFP-QAPP Worksheets (March 2012), the EPA Guidance on Systematic Planning Using the DQOs Process, February 2006, and in accordance with other applicable USEPA and DoD guidance documents. The UFP-QAPP/WP shall include, as appendices, the APP/SSHP prepared in accordance with EM 385-1-1 and an Investigation-Derived Waste (IDW) Management Plan in accordance with this SOW and all federal and state regulations as appendices.

7.1.2 Health and Safety Plan (HSP) and Accident Prevention Plan (APP)

Prepare a HSP and APP for each installation to comply with Air Force, OSHA, USEPA, state, and local health and safety regulations regarding the proposed work effort. The AE shall fully utilize any existing, related HSP or APP tailored specifically to the current effort. The AE shall maintain written certification that the approved HSP and APP have been reviewed with all personnel that work at the project site prior to their mobilization.

7.1.3 Phase I RI Report

The AE shall prepare and submit a Phase I RI Report (for each installation) for USACE, AF, and Regulator review and approval to include a summary of results of field investigation activities to characterize the site, sources of contamination, nature and extent of contamination, fate and transport of contaminants, site CSMs, and exposure CSMs, which includes potential exposure pathways and human and ecological receptors, and other requirements for a CERCLA RI report, excluding a Feasibility Study and Risk Assessment. The report format and content will be in accordance with EPA Guidance (EPA 1988) except for risk assessment components not included in the scope of the Phase I RI. The Phase I RI Report shall include all required supporting materials (e.g., bore logs, waste manifests, supporting calculations, etc.) and analytical information (e.g., required data validation and usability reports, data packages, etc.). A separate Phase I RI report shall be prepared for each base, i.e., two separate reports.

7.2 Deliverable Submission Cycle

Major deliverables are defined as any document that must be submitted to the Regulatory Agency. All major deliverables specified in this SOW shall be submitted in 3 phases unless otherwise stated. Submission requirements including number of copies, distribution, and submission schedule are stated in this SOW; however, actual document version names, distributin, and other details will be determined by the specific requirements of each installation and will be verified by the PM/COR.

Typically, the first submission shall be considered a preliminary/draft document and shall be submitted for Government-only review. The AE shall respond to each comment in writing and shall make the appropriate revisions to the draft document. The preliminary/draft UFP-QAPP/WP and preliminary/draft Phase I RI Report may require up to a 90-day review by the Government. This includes a 30-day review by the project delivery team (PDT), revisions by the AE, and a 60-day review by the USACE Environmental and Munitions Center of Expertise (EM CX), if required. The revised preliminary/draft will be submitted as a draft-final document for regulatory review. The AE shall again respond to each Regulator comment in writing and shall make the appropriate revisions to the draft-final document. Responses to all regulatory agency comments and any associated revised document shall be reviewed by the Government before submittal to the agencies. Should a review meeting be scheduled, the minutes of the meeting shall contain the written record of the comments and responses provided by the AE. The revised draft-final document shall be submitted as the final document. However, these submittal requirements should in no way be construed to limit the number of version submittals required for the AE to obtain USACE, AF, and/or Regulatory approval. All iterations will require Government review and response to comments or approval. The actual naming of document versions will be determined by each installation.

The AE shall submit all plans, reports, and other deliverable documents in three versions as appropriate for that specific document and as required by the Government. Additional document versions may be required, e.g., Preliminary Draft at the request of the Government. Submittals shall be in electronic format; however, hard copies may be required at the request of the Government or as specified in this SOW. Document submittals shall include both native file formats (e.g., MS Word, MS Project, etc.) and pdf. Unless otherwise specified, final document versions shall be submitted in both digital and hard copy. Multiple versions of documents may be generated by the AE including:

- Preliminary-Draft Documents – Preliminary-Draft documents are internal documents that are submitted for USACE and AF review and approval. In all respects, preliminary-draft documents shall be complete; substantively correct and consistent with applicable laws, regulations, Department of Defense/USACE/AF policies; in proper format; and free of grammatical and typographical errors. All draft documents shall be thoroughly screened through in-house peer/technical review during this phase of the review process. Preliminary-draft documents shall not be submitted to regulatory agencies for review.
- Draft-Final Documents – In general, draft-final documents have undergone USACE and AF review, incorporation of government review comments, and are submitted to the appropriate regulatory agencies for review. A second version of the draft-final document incorporating initial regulatory comments and resubmitted for regulatory agency review may also be required prior to the submittal of the final document. Responses to all regulatory agency comments and any associated revised document shall be reviewed by the Government before submittal to the agencies. Note that some documents may initially be submitted to the regulatory agencies as final with any comments being incorporated into subsequent documents as appropriate (e.g., system status reports, monitoring reports, "data dumps").
- Final Documents – Final documents are the version of the document that has successfully incorporated all review comments and has received USACE, AF and regulatory concurrence and written approval. At least 1 electronic copy of the final document consisting of original productivity software files and all quality control data, drawings, and GIS-type information, shall be provided to the USACE and AF. Electronic copies should be compatible with the current USACE and/or AF Microsoft™ Office Suite and GIS software versions. All figures shall be delivered in original application files GIS format as described in this SOW. In addition, an electronic version of the final document shall be submitted in a single portable document file (.pdf) format approved by the USACE and AF complete with electronic bookmarks.

7.3 Deliverables and Recipients

The planned deliverables for this contract are listed in Table 3 and shall be included in the AE's IMS. This deliverables list details the types and number of documents that are required to achieve the specific site objectives and will be transmitted to the regulatory agents, the Information Repository, and the Administrative Record file. The AE shall ensure that publicly released documents exclude Personally Identifiable Information (PII) and Freedom of Information Act (FOIA) – Exemption 6 personal privacy information. Planned submittal recipients are listed in Table 3.

Table 3: Document Name/Type	A	B	C	D	E
Draft and Final PMP	1 digital 1 hard copy	1 digital	1 digital	---	---
Draft Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	1 digital	1 digital	1 digital	---	---
Draft Final Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	1 digital	1 digital	1 digital	2 CDs 2 hard copies	2 CDs 2 hard copies
Final Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	2 CDs 2 hard copies	2 CDs 2 hard copies	2 CDs	2 CDs 2 hard copies	2 CDs 2 hard copies
Analytical Data – EDD and Hard Copy	1 digital	1 digital	1 digital	---	---

Note: Primary submittal format will be digital; however, the Government may request hard copies, or DVDs as needed. Digital includes pdf and native files emailed to recipient and posted in the repository.

Planned submittal recipients are listed below. However, it should be noted that that there may be different FDEP or EPA regulators for each installation. Hard copies should not be needed for each (unless documents are installation-specific), but electronic distribution should include all appropriate regulatory stakeholders. Should AE files be too large to be readily downloaded on-line via DOD Safe and other means, DVDs may be required. Additionally, at Homestead the county (DERM) is also copied on submittals.

Table 4: Planned Submittal Recipients		
A	**USACE** **Project Manager/COR** [redacted] CHMM CESAM-PM-I(C) Programs and Project Management Interagency and Environmental Branch PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]	**USACE Technical Manager** [redacted] CESAM-ENGE Environmental & HTRW Section PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]
B	**AFCEC/CZRE** **Project Manager** [redacted] Restoration Program Manager, CZRE 2261 Hughes Ave., Bldg 1650 JBSA Lackland, TX 78236 [redacted] Courier delivery (FedEx, UPS, DHL) 3515 S. General McMullen San Antonio, TX 78226-9853	
C	**AFCEC BASE RPMs:** **Homestead ARB, FL** [redacted] DAF Restoration Program Lead	**Tyndall AFB, FL** [redacted] Environmental Restoration Project Manager Tyndall AFB, Air Force Civil Engineer Center

Table 4: Planned Submittal Recipients		
	1224 Jupiter St Patrick SFB, FL 32925 [redacted]	USAF AFMC AFCEC/CZOE [redacted]
D/E	FDEP/EPA Regulators, and DERM in some instances. TBD by the Government	

7.3.1 USACE Project Delivery Team (PDT)

The USACE - Mobile District has reviewed the requirements for this project and has assembled a PDT of scientists and engineers with a skill set commensurate with the project complexity. Additional PDT members may be added as needed to address specific project needs. The PDT for this Contract includes the following personnel:

a) PM/COR: [redacted] CESAM-PM-I(c)

b) Technical Manager: [redacted] CESAM-EN-GE

c) Project Geologist: [redacted] CESAM-EN-GE

d) Project Geologist: [redacted] CESAM-EN-GE

e) Project Chemist: [redacted] CESAM-EN-GE

f) Project Env. Eng: [redacted] CESAM-EN-GE

g) Project Risk Assessor: TBD CESAM-EN-GE

7.3.2 Responses to Comments

The AE shall submit written responses for all written comments generated during the review of project deliverables. Copies of the comment responses shall be provided for all participants in the review process for each deliverable. Wherever practical, the minutes of review meetings may be used as the vehicle to provide the written response.

8.0 SITE WORK

The AE shall perform site preparation, incidental characterization and field investigation, conservation, and waste handling as required to meet the objectives of this contract.

8.1 Conservation

Activities shall be planned and implemented in a manner that protects existing site utilities, structures, surface features, service operations, monitoring and other types of wells, and the general site environment. This includes the protection of trees, shrubs, and other vegetation not in the affected zone from dust damage, soil compaction, and physical contact with machines and equipment. If appropriate, the AE shall conserve uncontaminated topsoil by removal, storage, or redistribution. All reasonable measures shall be taken to minimize and suppress fugitive emissions of dust, vapors, and other site materials during site work. All fill materials shall be tested, confirmed, and verified to be non-contaminated. The AE shall conduct all operations and activities with the intent of reducing the amount of pollution generated. Specific areas to be focused on are generation of solid waste, use of hazardous

materials, use of ozone depleting chemicals, generation of hazardous waste, and use of energy and water. During site work the AE shall plan, construct, operate, maintain, optimize, and decommission systems necessary to control storm water run-on and run-off; and transport surface water drainage to a treatment plant, discharge location, or any other appropriate destination.

8.2 Demobilization

The AE shall decontaminate equipment and facilities, decommission facilities as necessary, and restore the site. The AE shall remove any temporary facilities and implement erosion control measures such as seeding, mulch, sod placement, and erosion control fabrics; restore roads, structures, and utilities; and plant trees, shrubbery, grasses, and other vegetation. The AE shall document and report on activities and train government personnel to perform required maintenance, as requested.

8.3 Site Characterization

The AE shall perform field investigation and sampling/analysis that characterizes environmental conditions, in accordance with approved DQOs, as required to achieve the POs of this project. The AE shall identify specific site characterization activities proposed to achieve the POs.

8.4 Site Preparation

The AE shall perform site work as necessary to prepare sites for field activities. Security and access controls shall be implemented to prevent unauthorized entry to sites and to protect wildlife from site exposure. The AE shall survey existing utilities to determine adequacy and need for modifications to support site activities. The AE shall perform all necessary installation coordination to gain approvals for, and shall construct connections or new systems for electrical power, water, sewer, gas distribution, telephone, and other utilities, as required, to meet the objectives of this contract.

8.5 Waste Management

Aqueous and solid IDW may be generated during activities at the Installations. A Waste Management Plan (WMP) for each installation shall be provided as an attachment to each installation UFP-QAPP that shall address the handling, storage, and disposal requirements for IDW. The AE shall have a comprehensive knowledge of the management and disposal of all wastes that will potentially be generated and require disposal as well as the regulatory requirements for the state in which the work shall be performed. The AE shall be responsible for handling, transportation, and disposal of all AE-generated wastes to permitted off-site treatment, storage and/or disposal facilities within 90 days from waste generation, in accordance with the IDW procedures in operation at each AF installation. IDW generated off AF property shall be containerized, sampled, analyzed, and properly disposed. Handling, transport, and disposal of these materials shall be performed in accordance with requirements mandated by all applicable federal, state, and local regulations. The AE shall provide all hazardous materials used and hazardous waste disposal documentation to the USACE COR/PM and/or AF RPM, to ensure appropriate and efficient tracking of the AE's hazardous material purchases, inventories, use, and releases as required by the Emergency Planning and Community Right-to-Know Act (EPCRA), Executive Orders, or any installation reporting requirements.

The AE shall also comply with federal, state, and local requirements for any task involving the transportation and disposal of hazardous wastes and/or contaminated materials. This includes 40 Code of Federal Regulations (CFR) 260, 49 CFR 172, 173, 178, 179 and all other applicable local, state, and federal transportation regulations. The WMP will address the disposal requirements for IDW. It also is necessary to comply with the regulations regarding listed hazardous waste at the Installation and the AE must ensure that there is a generator identification number. After IDW disposal, IDW documentation of shipping and recycling/disposal shall be provided as an appendix to the RI Report.

The AE shall remove, render inert, destroy, recycle, and dispose of hazardous wastes and materials and provide all hazardous materials use and hazardous waste disposal documentation to the USACE COR/PM and AF RPM or designated alternate. An AF representative for each installation will sign all waste manifests and other transportation/disposal-required documents. The AE shall perform associated characterization and profiling work as required. Soil and groundwater IDW shall be containerized and stored as approved by the Government in accordance with all applicable guidance and requirements.

9.0 POINTS OF CONTACT (POCS)

9.1 USACE PM/COR:

[redacted]
U.S. Army Corps of Engineers
CESAM-PM-I(c)
109 Saint Joseph Street
Mobile, Alabama 36602
[redacted]

9.2 USACE Technical Manager:

[redacted]
CESAM-ENGE
Environmental & HTRW Section
PO Box 2288, Mobile, AL 36628
109 Saint Joseph St. Mobile, AL 36602
[redacted]

9.3 USACE KO:

[redacted]
Environmental Section Chief
U.S. Army Corps of Engineers, Mobile District
Office:
Mobile: [redacted]
Email: [redacted]
Web: www.sam.usace.army.mil

9.4 AFCEC PgM:

AFCEC/PgM: [redacted]
Bldg 171, 2261 Hughes Ave, Ste 155
Lackland AFB, TX 78236-9853
[redacted]

9.5 AFCEC RPMs:

Homestead ARB, FL (HARB)
[redacted] DAF
Restoration Program Lead
1224 Jupiter St
Patrick SFB, FL 32925

[redacted]

Tyndall AFB, FL (TAFB)
[redacted]
Environmental Restoration Project Manager
Tyndall AFB, Air Force Civil Engineer Center
USAF AFMC AFCEC/CZOE
[redacted]
Phone
Cell: [redacted]

10.0 ADDITIONAL REQUIREMENTS

10.1 News Releases

Neither the AE nor the AE's personnel shall give out any news releases or conduct media interviews concerning the work performed under this SOW. All media inquiries should be directed to the designated AF installation Public Affairs representative.

10.2 Community Relations

Community relations activities will be the responsibility of each AF installation. The AE shall support those activities, such as public meetings, in coordination with the AF, by providing necessary existing technical information to the AF installation. The AE shall not discuss the program with anyone that does not have an official "need to know" for the purpose of task completion. The AE shall not provide any press releases relating to this work without express written authorization from the AF installation and AFCEC.

10.3 Regulatory Interface

The AF has authority for all regulatory interactions pursued on behalf of the AF. All interactions with regulatory agencies must be coordinated through the AF. The AF RPM (or his/her designee) will be present for all meetings with the Regulatory Agency and will be included in the review of all documents or other materials that may be presented to the Regulatory Agency. All written communication with the regulator will be through the AF RPM. Distribution of project work plans, reports, and other information shall be coordinated through and directed by the AF RPMs and submitted with the AF RPM copied on the communication.

10.4 Program Completion Requirements

The AE shall collaborate with the AF and USACE COR/PM on development of a discrete, measurable basis for verifying completion of each task or activity planned through program completion. This basis will be used to acquire the AF and USACE concurrence that task completion has occurred, and contractual obligations have been satisfied. At the conclusion of all assigned work, the AE shall submit project documentation as directed by the KO. Project completion forms shall be sent to the KO no later than 4 months after completion of all work or the expiration of the contract POP.

10.5 Identification of Unrelated Contamination

If, during the course of site activities, the AE discovers contamination that appears to be unrelated to the existing sites being investigated under this SOW, the AE shall notify the USACE KO in writing within 3 business days of discovery and copy the USACE PM, AF RPM, and AFCEC PgM.

10.6 Other Provisions

AE shall notify the USACE COR/PM, AF RPM, and AFCEC PgM in writing within 3 business days of becoming aware of the occurrence of an event described below:

a. AE or any agent or subcontractor receives notice of violation (NOV) of any governmental enactment, requirement, or authorization, which relates to the performance of the SOW;
b. Permits, licenses, or other governmental authorizations relating to implementation of the SOW are revoked or denied;
c. Litigation is commenced or threatened concerning or impacting the SOW or any sites;
d. Any other condition occurs or is threatened to occur which may have a materially adverse effect on the timely performance of the SOW, or the timely performance of any duties the AE or the installation may have under any applicable law, regulation, ordinance, order, decree or plan;
e. The installation personnel are interfering or wrongfully preventing AE from performing its material duties and obligations under this SOW to such an extent that the AE's costs, schedule, and/or quality are being adversely impacted.

10.7 Key Personnel

The AE and subcontractor personnel shall be experienced and competent in the tasks for which they are responsible and currently possess any required certifications, registrations, or licenses required under federal, state, and/or local laws and regulations. The AE shall be limited to utilizing the key personnel and subcontractors identified in the AE's technical proposal unless the KO approval prior to the substitutions is obtained during the performance execution of the SOW. The AE shall obtain the KO's written consent before making any substitutions for key personnel or subcontractors by submitting in writing to the KO the reasons for the substitutions and submit the qualifications of the new persons or subcontractors. The AE shall provide the same level of detail on credentials and qualifications on the key personnel or subcontractor as was required by the solicitation. The key personnel or subcontractors that are proposed as substitutes must possess equal or greater qualifications than the individuals or subcontractors who were accepted at the award of the contract. The minimum required personnel qualifications are as follows, but not limited to:

10.7.1 Project Manager (PM)

The PM is the AE POC responsible for implementing work specified in the SOW. The PM shall evaluate the requirements of the contract and shall develop and implement a plan to meet those requirements. The PM shall have in-depth, relevant experience and proven ability to provide effective and efficient management and implementation of the efforts as outlined in the SOW. The PM must demonstrate availability to meet the requirements of the SOW through multiple means of communications, meetings, and required activities. The PM shall be competent, experienced, and knowledgeable in the field of investigation and remediation of Hazardous, Toxic, and Radioactive Waste (HTRW) sites. The PM shall be responsible for the day-to-day coordination with stakeholders and must be an employee of the AE.

The PM must have, at a minimum, the following qualifications:

- Bachelor's degree from an accredited school in a technically related field such as: engineering, geology, environmental science (15 years as a PM meeting the requirements below can be substituted for a bachelor's degree).
- Professional registration in Florida.
- A minimum of 10 years managing HTRW projects.
- Experience managing a HTRW project that included sampling for PFAS at AF installations in Florida.

- Working knowledge of applicable federal, state, and local laws, regulations, and guidance pertinent to this project.

10.7.2 Project Geologist

The AE shall designate a Project Geologist who is knowledgeable in the field of investigation and remediation of HTRW and has experience investigating PFAS. This individual shall be trained and have experienced as a geologist to ensure activities, to include plan development, field activities, report writing, designs, etc. are of the quality to meet project objectives. The geologist should have experience in surface and subsurface soil, ground-water, surface water, sediment, etc. sampling techniques, as well as aspects of obtaining all types of samples through various drilling and sampling techniques, along with appropriate documentation procedures. The Project Geologist will be responsible for all geologic interpretation and will either perform or directly oversee staff performing geologic work. The senior geologist must have, at a minimum, the following qualifications:

- Bachelor's degree in geology or geological engineering from an accredited 4-year program.
- Professional Geologist in Florida.
- A minimum of 10 years specialized experience in HTRW projects.
- Experience investigating PFAS at AF installations in Florida.

10.7.3 Senior Project Chemist

The Senior Project Chemist shall be responsible for the development of the UFP-QAPP chemistry worksheets, along with the PDT to establish the project DQO following the USEPA seven step DQO process. The Senior Project Chemist shall have direct experience with PFAS. The Senior Project Chemist must meet provisions of Section 7.2 of the DoD Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing, November 2007 by performing the following minimum functions:

- Provides coordination and quality assurance surveillance of laboratory services
- Approves project-specific Method Quality Objectives and Data Quality Indicators that will meet the project specific performance standards;
- Verifies appropriateness of sampling and analytical methods and laboratory quality systems;
- Verifies laboratory qualifications and makes recommendations for laboratory selection;
- Coordinates with the laboratory during contract execution;
- Notifies the Government Quality Assurance Manager of any problems or nonconformance issues;
- Directs the performance of data review and validation, per contract specifications; and Monitors corrective action, as needed.
- The Senior Project Chemist shall have, at a minimum, the following qualifications:
- Bachelor's degree in chemistry.
- A minimum of 5 years of directly related environmental chemistry experience in HTRW projects.
- Experience with analysis for PFAS.

10.7.4 AE Quality Control Supervisor (CQCS)

The CQCS shall be responsible for developing, maintaining, and ensuring implementation of the environmental quality program. This responsibility includes oversight of activities, periodic reviews of the processes being implemented, evaluation of any recommendations made by the project team over the course of the project regarding use of these processes, and continuous improvement evaluations of the quality program. The CQCS is also responsible for providing support to the project team in ensuring that the quality of products and services provided to the Government is in accordance with the terms and conditions of the contract.

The CQCS shall, at a minimum, the following qualifications:

- The individual proposed as the CQCS shall have a minimum of five (5) years working QA/QC experience in the chemical/hazardous waste investigation/remediation field, including PFAS projects; and can address overall quality management, quality control/assurance, quality auditing, or process improvement.
- The individual proposed as the CQCS shall have formal education or training in technically related field such as geophysics, environmental engineering, environmental science, geology, environmental chemistry, or other.

10.7.5 Senior Site Manager(s)

The Senior Site Manager(s) shall be the AE personnel responsible for providing full, direct, on-site oversight and supervision of field activities conducted by the AE and subcontractor personnel. The Senior Site Manager is expected to be onsite at all times during field activities to directly supervise all personnel and subcontractors, and shall be responsible for implementing specific work under this contract, i.e., approved work plans, safety plans, quality plans, etc. The Senior Site Manager(s) shall be the primary onsite point-of-contact for the contract to the Government for on-site activities, site visit interaction, and QASP surveillances. Based on the management structure proposed by the Offeror, one or more Senior Site Manager may be assigned to this contract.

A Senior Site Manager shall have, as a minimum, the following qualifications:

- Bachelor's degree from an accredited school in a technically related field such as: engineering, environmental science, geology, hydrology, chemistry, industrial hygiene or other science or engineering-related discipline.
- Professional registration, where required by discipline, i.e., Florida PE or PG.
- A minimum of seven (7) years' experience performing field management duties similar to those described for this Key Personnel position, with a minimum of five (5) years' experience managing environmental investigation/remediation projects at the field operational level in the state of Florida.

OR

- A minimum of ten (10) years' experience as a Senior Site Manager, with a minimum of five (5) years' experience managing environmental or traditional projects at the field operational level in the state of Florida.
- Working knowledge of applicable federal, state, and local laws, regulations, and guidance.

11.0 VETERAN'S EMPLOYMENT

Emphasis for U.S. Army Corps of Engineers Contracts

In addition to complying with the requirements outlined in FAR Part 22.13, FAR Provision 52.222-38, FAR Clause 52.222-35, FAR Clause 52.222-37, DFARS 222.13 and Department of Labor regulations, U.S. Army Corps of Engineers (USACE) AEs and subcontractors at all tiers are encouraged to promote the training and employment of U.S. veterans while performing under a USACE contract. While no set-aside, evaluation preference, or incentive applies to the solicitation or performance under the resultant TO, USACE AEs are encouraged to seek out highly qualified veterans to perform services under this TO. The following resources are available to assist USACE AEs in their outreach efforts:

- Federal Veteran employment information at https://www.fedshirevets.gov
- Department of Labor Veterans Employment Assistance http://www.dol.gov/vets/
- Department of Veterans Affairs–VOW to Hire Heroes Act http://benefits.va.gov/vow/

- Army Wounded Warrior Program – http://wtc.army.mil/modules/employers/index.html
- U.S. Chamber of Commerce Foundation–Hiring Our Heroes
- https://www.uschamberfoundation.org/hiring-our-heroes
- Guide to Hiring Veterans – Reference Material https://obamawhitehouse.archives.gov/blog/2012/04/10/white-house-business-councils-guidehiringveterans

12.0 SUSTAINABILITY REQUIREMENTS

Green Procurement is the purchase of environmentally preferable products and services and is known as sustainable acquisitions and Green Procurement. Practicing Green Procurement takes into consideration economic facets, environmental considerations, and resource efficiency.
Here are some of the benefits of Green Procurement:

- Prevents pollution and reduces environmental impact
- Increases energy independence
- Protects and conserves natural resources
- Minimizes waste
- Supports new markets and job creation
- Supports the USACE Campaign Plan and Sustainability Plan Goals
- Saves $$ by reducing waste
- It is a Federal mandate!

Some Mandatory Environmental Initiatives are as follows:

- Energy Star
- Federal Energy Management Program (FEMP)-Designated Products
- WaterSense
- BioPreferred/Biobased
- Environmentally Preferable Purchasing (EPP)
- Electronic Product Environmental Assessment Tool (EPEAT)
- Significant New Alternatives Policy (SNAP)
- Recovered Materials

FAR Part 23 requires Federal agencies to ensure that 95% of new contract actions require products that are:

- Energy-efficient
- Biobased
- Non-ozone depleting
- Water-efficient
- Environmentally preferable
- Made with recovered materials

The AE shall review and follow scope, purpose, applicability, and policy of FAR Part 23 and FAR 52.223-4 requirements, as they pertain to their specific contract/TO requirements to meet sustainability acquisitions or Green procurement initiatives. Some examples of sustainability achievements are:

- Car-pooling to meeting from local offices
- Doubled-sided documents using recycled paper
- Submittal of documents through electronic methods
- Use of energy-efficient products
- Use of non-toxic or low-toxic products
- Reconditioned or remanufactured supplies or materials

II. PART B - TECHNICAL REQUIREMENTS

1.0 SITE SPECIFIC INFORMATION

1.1 Installation Location, Characteristics, and Description

Information about regional/local geology, topography, and hydrogeology for HARB and TAFB is available in various investigation reports located in the AF Administrative Record (https://ar.afcec-cloud.af.mil/Search.aspx), and/or also with the installation RPMs listed in section 9.5.

The AE is responsible for locating and acquiring, either via the AR or the individual installation RPMs, previous site investigation reports with the necessary information required to accomplish the contract objectives successfully.

1.1.1 Homestead ARB, FL

Some investigative document examples are as follows:

- Final Preliminary Assessment Report for PerFluorinated Compounds at Homestead Air Reserve Base, Florida, HydroGeologic, Inc. Aug 2015.
- Final Site Inspections Report of Fire Fighting Foam Usage at Homestead Air Reserve Base, Aerostar SES, LLC. 12 Mar 2019.
- Final Remedial Investigation/Feasibility Study for Area of Concern 3 (OU-34), HydroGeologic, Inc. 17 Dec 2020. (This is a relatively recent CERLCA RI/FS that has been fully approved—although it is not directly relevant to PFAS sites.)

HARB Installation Overview

Homestead Air Reserve Base consists of almost 2,000 acres. The base, activated as Homestead Army Airfield in 1942, originally encompassed only approximately 1,200 acres. In 1953, it was re-designated as Homestead AFB (HAFB) and as the mission expanded, the size of the base grew to almost 3,000 acres. On 24 August 1992, HAFB was devastated by Hurricane Andrew. As a result of the destruction caused by the hurricane, the DOD Base Realignment and Closure (BRAC) Commission recommended HAFB for realignment in 1993. In 1994, two-thirds of the property (2,086 acres) was transferred to the Air Force Base Conversion Agency (AFBCA). The remaining one-third of the property (852 acres) was transferred to the Air Force Reserve Command (AFRC) as an Air Reserve Station (ARS), with the 482nd Reserve Fighter Wing as the host unit.

In 2003, Homestead ARS was officially re-designated as Homestead ARB under AFRC. The 1,965 acres that comprise HARB are referred to as the cantonment area. The growth of the cantonment area from the original 852 acres to the current acreage is a result of the AF maintaining ownership of the airfield along with other areas that were originally proposed to be transferred. (HARS became HARB as a direct result of maintaining ownership of the Airfield). The Air Force Real Property Agency (AFRPA), formerly known as the Air Force Base Conversion Agency (AFBCA), transferred the remaining property that was within the confines of the Homestead AFB, but outside of the cantonment area, to the US Department of Labor, Department of Homeland Security, Florida Army National Guard, and Miami-Dade County.

Homestead Air Reserve Base is located near the southern end of the Florida peninsula, about 25 miles south of Miami, Florida in Miami-Dade County. The base is located between two national parks, Everglades National Park to the west and Biscayne National Park to the east. Biscayne Bay, an estuary classified as an Outstanding Florida Water body, is two miles directly east of the base. The climate is subtropical with a very low elevation and flat topography. The groundwater table is shallow (average 5 feet below ground surface [bgs]) and limestone bedrock is present at or near ground surface in some

locations. The Biscayne Aquifer consists of a heterogeneous karst and unconfined system with a slightly alkaline substrate that produces a buffering capacity.

The 482nd Fighter Wing (482 FW) is the host unit of Homestead ARB and supports contingency and training operations of US Southern Command (SOUTHCOM) and a number of tenant units including Headquarters Special Operations Command South (SOCSOUTH), US Coast Guard Maritime Safety and Security Team (MSST), and an air and maritime unit of US Customs and Border Protection. In addition, Homestead ARB is home to the most active North American Aerospace Defense Command (NORAD) alert site in the continental United States, operated by a detachment of F-15 fighter interceptors from the 125th Fighter Wing (FW), Florida Air National Guard (FANG).

Remediation activities at Homestead Air Reserve Base are being conducted pursuant to the CERCLA, as amended by the SARA, and NCP requirements; RCRA; Florida Administrative Code (FAC) Chapter 62-780. Regulatory oversight is provided by the USEPA and FDEP. The USEPA is the lead regulatory authority for CERCLA operable units (OUs). FDEP coordinates on CERCLA activities. The Miami-Dade County Department of Environmental Resources Management (DERM) also participates on the "Base Cleanup Team" (BCT) and generally works in coordination with FDEP. Their comments on CERCLA OU documentation are "for consideration", as would be any comment from a member of the public.

Homestead Air Reserve Base was placed on the National Priorities List (NPL) in 1990. A Federal Facilities Agreement (FFA) was signed in 1991 by the AF, USEPA, and FDEP, which excluded petroleum sites. A consent agreement was signed by the FDEP and the AF in 1991 for petroleum sites. The installation also has a RCRA Corrective Action Permit. Since RCRA authority was granted to FDEP in 2001, the RCRA Corrective Permit falls under FDEP's regulatory purview. The HARB RCRA Permit addresses corrective action requirements only and is managed by the Restoration Program. The permit (2438-HH-002) was issued to HARB on 16 Sep 2016 and is re-issued every 10 years (current permit expires 09 Feb 2026). FDEP's corrective action decision-making process is governed by FAC 62-780.

Note that the CERCLA and RCRA programs at Homestead include both HARB (Active) and former HAFB (BRAC) sites. BRAC sites are addressed under a separate AF cleanup program and are not included under this contract. However, from a regulatory perspective, all sites (BRAC and HARB) are managed under the same Federal Facility ID (FL7 570 024 037) and are considered to be one program. The same regulators govern both the BRAC and HARB cleanup programs via the BCT. Generally, both AF restoration programs (Active and BRAC) submit separate independent documentation (e.g., a Five-Year Review for the HARB sites and a separate Five-Year Review for the BRAC sites).

For access to Homestead Air Reserve Base, the AE employees and any Sub-AEs will need to pass a background check to obtain a base entry badge. This process may take up to two weeks. In addition, the AE will need to have a CAC for escorting privileges (e.g., equipment deliveries, etc.). Access to Sites located in proximity to the airfield/ramp/flightline will require additional coordination with the Airfield Manager. To drive around Perimeter Road (around the airfield) to work outside of the Controlled Movement Area (CMA), the driver must possess an airfield driver's license. If the Contractor uses a Company Vehicle it must have clear signage with company name and must obtain a Privately Owned Vehicle (POV) pass from the Airfield Manager's office. Access may be limited depending on mission requirements and maintaining radio contact with the control tower is required when working in the area. These sites, including Site SS15A and FT005 (OU-1), are considered "Restricted Access Areas" and require Flightline Driver's Course and Airfield Manager Coordination each occurrence prior to work activities. In addition, the person acting as an escort to these restricted areas will require a Line Badge.

Sites for Investigation in this SOW:

a.	FT004P-SUB:	FIRE PROTECTION TRAINING AREA 3 (OU-8)
b.	FT005P-SUB:	FIRE PROTECTION TRAINING AREA 2 (OU-1)
c.	SS051P:	HANGARS 194 – AFFF AREA 3
d.	SS052P:	HANGARS 193, 200, AND BUILDING 217 – AFFF AREA 3
e.	DA053P:	CURRENT FIRE STATION – AFFF AREA 5
f.	DA054P:	PLANE CRASH AREA – AFFF AREA 6
g.	SS055P:	FIRE TRUCK TANK RELEASE – AFFF AREA 9
h.	DA056P:	F-16 Aborted Take-off Location
i.	SA652P-SUB:	OU-11T: Outfall Canal Terr. / Sewage Treat./Incin.
j.	SS15AP-SUB:	APRON AREA – includes HANGAR 877 – AFFF AREA 4, APRON FUEL SUPPRESSION AREA – AFFF AREA 7, and EQUIPMENT TEST RELEASE AREA – AFFF AREA 8

FT004P-SUB, FT005P-SUB, DA054P, SS055P, DA056P: Site access requires flightline badge, flightline driver's license and coordination with the Airfield Manager (additionally FT004 (OU-8) and SS055P require advanced coordination with Security Forces).

SS051P, SS052P: These sites are within a restricted area and will require a flightline badge and AF escort with advanced coordination with the respective Hangar Manager.

DA053P: Site access requires advance notification to the Fire Department.

SS15AP-SUB: Site access requires flightline badge, flightline driver's license and POV pass and coordination with the Airfield Manager's office or Florida Air National Guard (FANG).

SA652P-SUB: Site access requires advance coordination with Security Forces and the presence of a CAC Holder.

It may also be worth noting that although several existing "legacy" sites have existing "OU" numbers, it is unknown whether new/different OU #s will be established for the PFAS investigation process at these sites. Additionally, it is more than likely that the other "new" sites (which don't have an assigned legacy "OU" #) will be designated as OUs by the EPA. The EPA will expect these regulatory IDs to be referenced in/on documents, once assigned.

Site FT004 (OU-8) is located between the Mako Ramp, Munitions Storage Area (MSA) and the flightline areas. Additional advanced coordination is required with Security Forces.

Site SA652 (OU-11T) is a fenced area and activities will require additional coordination with the Security Forces and requires off-base access (CAC card escort required).

Although other Site source areas may not have specific additional security requirements, the flightline is located downgradient from many of the sites. Plume delineation could require flightline access, which would trigger the requirement state above for SS15A and FT005.

Any construction activities that disturb the surface or subsurface (including digging, compaction, soil sampling, injection or sampling point installation using Direct Push Technology (DPT), Hollow-Stem Auger (HSA), or any other intrusive technology) must be coordinated with the Facility Manager when working in close proximity to a building.

The AE is also responsible for completing the appropriate steps of the construction coordination process (e.g., AF Form 103 and AF Form 332) for intrusive activities including sampling. This includes, but is not limited to, completing and submitting dig permit paperwork, attending associated meetings to answer

questions, obtaining dig permit signatures, marking dig locations for utility locates, meeting utility locators, escorting any subcontractors or delivery vehicles, and consultations with Wing POCs, such as natural resources personnel.

1.1.2 Tyndall AFB, FL:

Some investigative document examples are as follows:

- Final Preliminary Assessment Report for PerFluorinated Compounds at Tyndall Air Force Base, Panama City, FL, CH2MHill, April 2015
- Final SI Report for Aqueous Film Forming Foam Areas at Tyndall AFB (Aerostar SES LLC (ASL), Sep 2018

TAFB Installation Overview

Tyndall AFB is located on an 18-mile-long, narrow, northwest-to southeast-trending peninsula occupying approximately 29,000 acres. Tyndall AFB is bordered by St. Andrew Sound and the Gulf of Mexico to the south-southeast, St. Andrew Bay and the Gulf of Mexico to the south-southwest, East Bay to the north, and the Mexico Beach area to the east-southeast.

Tyndall AFB was activated in December 1941 at the outset of World War II. The first mission of Tyndall AFB was to train instructors for a gunnery school. In May 1946, Tyndall AFB became the home of the Air University's Air Tactical School, training junior officers in the responsibilities of command at squadron level. This mission continued until 1950 when the base became responsible for training all-weather jet interceptor pilots and air weapons controllers. The air weapons controller school remains an important part of the activities at Tyndall AFB. Tyndall AFB transferred from the Air Training Command to the Aerospace Defense Command in July 1957. At that time, its mission shifted to that of a weapons center. The USAF Air Defense Weapons Center (ADWC) activated 1 January 1968, to provide a single area within the Department of Defense for the centralization of operational and technical expertise on air superiority matters. The ADWC and Tyndall AFB transferred to the Tactical Air Command (TAC), 1 October 1979, as part of a USAF reorganization when TAC picked up the continental air defense mission. On 1 July 1981, the USAF ADWC again reorganized and activated the 325th Fighter Weapons Wing, later renamed the 325th Tactical Training Wing. Under the center and wing concept, the USAF ADWC continued to provide a variety of missions, all tied directly with combat readiness training for TAC. The command was changed again in June 1992 from TAC to the Air Combat Command (ACC). In 1993, the command was changed to the Air Education and Training Command and in 2013, the command was changed back to ACC.

AE personnel needing access to Tyndall AFB on a frequent basis must obtain a contractor badge. Approximate time required is ten (10) working days to obtain approved contractor badge. Prior to performing work involving disturbing soil and/or structures, AE must obtain an approved AF Form 103, Work Clearance Request. Approximate time required is ten (10) working days to obtain approved form.

Sites for Investigation in this SOW:

a.	SS041P:	AFFF Area 1 Fire Station #1 (Building 214)
b.	FT017P-Sub:	AFFF Area 2 Nozzle Spray Test Area
c.	SS516P-Sub:	AFFF Area 3 QF-4 Drone Crash Site Response #1 (2001)
d.	SS042P:	AFFF Area 5 F-15 Jet Fuel Fire Response
e.	SS043P:	AFFF Area 6 F-15 Jet Tire Fire Response
f.	SS022P-Sub:	AFFF Area 8 F-22 Raptor Crash Site Response
g.	SS044P:	AFFF Area 9 F-106 Crash Site Emergency Response
k.	TU539P-Sub:	AFFF Area 10 Silver Flag WWTP Spray Field
l.	TU539P-Sub:	AFFF Area 11 Former Silver Flag Wastewater Treatment Faciliy
m.	TU539P-Sub:	Silver Flag Fire Trng Area (in AFFF SI Report) (Named AFRL Fire Trng

Pit in EESOH)
n. FT016P-Sub: Shell Bank Fire Training Area
o. FT017P-Sub: Highway 98 Fire Training Areas
p. FT023P-Sub: Little Cedar Creek/Bayou Fire Training Area Former Active Fire Training Area

1.2 General Intent

This task order includes the PFAS RI at HARB and TAFB. All sites within each installation shall be fully delineated both horizontally and vertically, and any un-allocated resources required for delineation at an installation can be moved to other sites within that Installation as needed to achieve the final Phase-I RI requirements.

The initial plan presented in this SOW includes the approach, methods, and quantities the Government deems necessary to fully delineate each location/site; the AE shall plan, initiate, and conduct planning sessions with the Government to refine the allocation of resources to complete the location/site-specific requirements. The AE shall document all planning sessions including resources used and/or reallocated, as well as Government concurrence to ensure work remains within the existing scope and quantities of this task order.

The AE shall:

1) Plan and conduct a Phase I RI (following CERCLA guidance) to delineate the nature and extent of PFAS in surface and subsurface soil, groundwater, surface water, and sediment (all PFAS-impacted media) from AF releases at HARB and TAFB, and
2) Collect data from AFFF release areas identified for further investigation in this SOW, and
3) Develop a comprehensive understanding of the PFAS fate and transport including a comprehensive baseline groundwater flow.

The CSM shall encompass PFAS release locations installation-wide to acquire a holistic understanding of the PFAS release, comingling of contamination, interaction with legacy contamination, geologic and hydrogeologic conditions, and migration in the environment. This includes understanding the role and interaction of the geologic units, groundwater-bearing units, and surface water, as well as any man-made structures that may affect contaminant migration. Data from PFAS on the laboratory analyte list shall be used as necessary to update or develop the CSM.

A quantitative baseline risk assessment will not be prepared under this Phase 1 RI effort, but sample collection for the purposes of delineation of nature and extent in soil, groundwater, surface water, and sediment shall consider potential human and ecological receptors under reasonable scenarios in accordance with USEPA risk assessment guidance (USEPA RAGS). In addition, relevant exposure areas and depth intervals, required data quality for use in risk assessment, and minimum number of samples required to compute exposure point concentrations during development of the Phase I RI sampling design shall be considered.

Per AF policy, human health risk assessments must address an unlimited use/unrestricted exposure (UU/UE) scenario (i.e., hypothetical future residential) (AFI 32-7020). While risk assessments are not required under this Phase I Contract, sufficient data should be collected to support completion of a risk assessment in future phases.

The screening criteria in the 15 October 2019, and/or its updates, Assistant Secretary of Defense (ASD) Memorandum, *Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program*, shall be used to delineate PFOA, PFOS, and PFBS. On 08 April 2021, the PPRTV toxicity value for PFBS was updated. The report can be found on the EPA's webpage https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=542397. The ASD screening values are

presented in Table 14.2. State promulgated values will not be used for delineation or considered as preliminary applicable or relevant and appropriate requirements without approval from the Office of the Secretary of Defense.

Table 5: ASD Screening Values

Chemical	Carcinogenic Slope Factor - Oral (SF) (mg/kg-day)$^{-1}$	Non-Carcinogenic Reference Dose (RfD) (mg/kg-day)	Residential Screening Levels					
			Tap Water (µg/L)			Soil (mg/Kg)		
			HQ =0.1	**ILCR = 1E-06**	**ILCR = 1E-04**	**HQ= 0.1**	**ILCR= 1E-06**	**ILCR= 1E-04**
PFOS	NA	2.00E-05	0.040	NA	NA	0.13	NA	NA
PFOA	7.00E-02	2.00E-05	0.040	1.1	111	0.13	7.8	775
PFBS	NA	3.00E-04	0.602	NA	NA	1.9	NA	NA

Note: The tap water RSL (HQ=0.1) shall be used for delineation in groundwater and surface water. The residential soil RSL (HQ=0.1) shall be used for delineation in soil and sediment.

2.0 Project Planning

The AE shall review the existing AF installation AR and other resources, as necessary, to evaluate all available information for the PFAS release sites identified in this SOW, evaluate potential PFAS transport mechanisms, provide a preliminary site CSM or update an existing CSM which shall be utilized to develop the Phase I RI technical approach, and ensure SOW compliance to complete the Phase I RI.

The Phase I RI planning shall include DQO project scoping sessions to review the existing site information and define project DQOs. The first 2 scoping sessions will include only USACE and AF stakeholders and the remaining sessions shall include USACE, AF, and regulatory stakeholders. The AE shall follow guidance in the UFP-QAPP and document the project work plan using the UFP-QAPP worksheets for stakeholder review and approval.

Additional scoping sessions shall be completed for step-out well installation and/or sampling events after initial mobilization sample results, potentiometric maps, and well network optimization analysis have been developed to inform additional monitoring well and/or sampling locations. The pertinent sections of the UFP-QAPP shall be amended, as needed, to update the project plan. It is expected that the Phase I RI for each site will be an iterative process where data is collected and presented to the AF and USACE for planning/confirmation of subsequent investigation elements. This iterative process will continue until all sites are fully delineated and required information for the Phase I RI has been collected.

It is expected that the RI scoping will consist of:

a) Identifying data needs and developing DQOs.
b) Performing a site reconnaissance, community interviews and preliminary risk screening activities to evaluate all potentially complete exposure pathways.
c) Developing an initial area-wide baseline of groundwater flow and contaminant hydrogeologic conditions.
d) Reviewing existing data and updating the CSM to determine migration and exposure pathways requiring evaluation.
e) Evaluating storm water and other conveyances to determine potential transport mechanisms.

2.1 Prohibited and Acceptable Items

PFAS are present in a wide variety of commercial products including common household items (fabric softeners, sunscreens, low density polyethylene containers, Gore-Tex, cosmetics, moisturizing lotions, etc.). Given the low detection limits associated with PFAS analysis and the many potential sources of trace levels of PFAS, field personnel will strictly adhere to the sampling equipment and protocols summarized in Appendix D. If in doubt about a particular product or item in contact with environmental media including well construction materials and sampling equipment, the AE shall collect and analyze a rinsate sample using laboratory-supplied PFAS-free water to verify the materials do not contain PFAS.

2.2 Direct-Push Technology (DPT) Investigation

The AE shall develop a planned approach to complete initial characterization and delineation of contamination at each site using DPT methodologies. Data collected by DPT shall include both soil and groundwater samples for laboratory analysis as a screening tool to support the placement of permanent monitoring wells for more accurate and efficient horizontal and vertical delineation. The DPT methods/ equipment used shall be sufficient to complete both horizontal and vertical characterization and collect both soil and groundwater samples. A higher density of soil samples (vertical and horizontal) are expected to be collected in suspected source areas.

DPT equipment requirements shall be selected by the AE that will be capable of achieving the depth and sampling requirements for this Phase I RI including, but not limited to, vehicle weight, equipment hydraulic size and power, DPT tool size and sonic/vibratory capabilities, depth to groundwater, and DPT refusal considerations, etc. Equipment shall be compatible for low-detection requirements of PFAS sampling and analyses.

Vertical Aquifer Sampling (VAS) will be performed at selected DPT locations within source areas to determine the vertical distribution of contamination in groundwater. Discrete groundwater samples will be collected starting at the water table and then at specified intervals to the base of the aquifer and tested for PFAS. All groundwater removed will be treated or disposed of in accordance with the IDW Plan.

Surface soil sampling shall also be done in areas where PFAS impacted groundwater has been used for irrigation or watering of lawns/gardens at on-base and/or off-base locations.

At each site source area, an additional 3-5 soil samples (composite samples of each sample depth at each site) shall be collected for the analysis of geotechnical parameters (e.g., pH, grain size, Total Organic Carbon, and anion/cation exchange capacity). See installation-specific requirements in Appendix A.

The AE shall document all subsurface soils during well installation by a qualified and experienced geologist working under the direction of licensed Professional Geologist in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The number of DPT locations and depths, and some other RI requirement details are presented for each installation in Appendix A. Any unallocated resources may be reallocated between sites within an installation, with COR/PM approval, to address site-specific characterization requirements as needed to achieve Phase I RI objectives.

Direct Push Sampling for vertical delineation of PFAS impacted groundwater shall include groundwater samples at discrete depth intervals at each location to aid in developing a vertical profile of PFAS distribution in the subsurface. Direct Push Sampling in soil source areas shall also include soil samples for PFAS laboratory analysis per DPT location. The total number of DPT locations, depths, and soil and water samples may be adjusted and reallocated between sites as needed to achieve Phase I RI objectives.

2.3 Monitoring Well Installation

The AE shall install groundwater monitoring wells at or near PFAS release locations (on and/or off Installation) identified by stakeholders during scoping sessions. The actual monitoring well surface completion requirements will be determined during work plan preparation but the AE shall assume 2-inch diameter, Schedule 40 or 80 PVC (schedule 80 is required for wells > 50ft bgs or if the AE deems necessary given the local geological conditions), and completed at the surface with flush-mounted well boxes. The AF will be responsible for obtaining access agreements needed to install monitoring wells on non-AF property. Each monitoring well must be constructed, installed, and developed per governing state regulations for well installation. Governing State is defined as the state in which the installation is located. Monitoring wells shall be installed following all applicable State laws.

The AE shall include a description of the decision process logic for placing and completing step-out sampling (all media) in the UFP-QAPP WP.

The AE shall collect all surface and subsurface soil samples in accordance with F.A.C. 62-780 for all locations during sampling events so that the sampling results may be used for decision making purposes later. Samples shall be tested for PFAS on a standard turnaround.

Groundwater monitoring well installation at off-installation locations cannot take place until offsite access agreements have been completed by the AF and USACE.

If PFAS contamination is suspected or known in more than 1 discrete water-bearing zone, the AE shall screen each water-bearing zone separately. Soil core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations.

The AE shall not drill through confining materials while performing subsurface investigations and monitoring well installations. If natural confining materials (e.g., clay) 2 feet in thickness or engineered confining materials (e.g., geosynthetic liners) are encountered during drilling activities, the AE shall immediately halt drilling activities and contact the USACE and/or AF Project Geologists for guidance.

The AE shall document all subsurface soils during well installation by a qualified and experienced Geologist working under the direction of licensed Professional Geologist licensed in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The AE shall develop all newly installed monitoring wells using a surge and pump procedure. Well development shall be in accordance with local, state, and federal requirements. All groundwater removed will be treated or disposed of in accordance with the approved WMP. Wells should be developed in order of those anticipated to be least contaminated to most contaminated, and equipment shall be properly decontaminated in-between wells. Pre- and post- development photographs are required.

2.4 Groundwater Sampling

The AE shall collect monitoring well samples from new and any existing monitoring wells and analyze the samples for PFAS. The AE shall collect the samples in up to 3 sample events.

- One initial sampling event to sample the existing monitoring well network. This data will be evaluated to determine placement of additional wells.
- Second sampling event (six months after first sampling event) for existing wells and newly installed wells.
- Third sampling event (six months after second sampling event) for existing wells and newly installed wells.
- If additional sampling is needed the options would be exercised as required.

Groundwater samples collected from monitoring wells shall be collected in a manner consistent with all applicable guidance and using a purge method appropriate for the aquifer characteristics and approved by the Base RPM. Groundwater samples shall be field tested for the following parameters: oxidation-reduction potential (ORP), pH, temperature, total dissolved solids (TDS), conductivity, dissolved oxygen (DO), and turbidity. In accordance with the applicable State requirements, use of passive diffusion bag (PDB) samplers or equivalent are not acceptable. All groundwater removed will be treated or disposed of in accordance with the approved Waste Management Plan.

2.5 Surface Water and Sediment Sampling

The AE shall collect surface water and sediment samples at co-located sample locations, unless otherwise specified. Samples shall be collected from downstream to upstream locations in creeks, streams, rivers, etc. In addition, storm water conveyances shall be sampled, as appropriate.

Samples shall be collected in a manner consistent with all applicable guidance. If site-specific conditions indicate, the influence of groundwater on surface water bodies or storm water conveyances shall be evaluated to document the contribution of contamination from base flow of groundwater into these features.

Surface water must be collected by inserting a capped sampling container with the opening pointing down to avoid the collection of surface films. At the time of container opening, the container must be more than 1 foot from the sediment bed and more than 1 foot below the surface water level and as close to the center of the channel as possible, where practicable. Surface water shall not be filtered to remove suspended solids, either in the field or at the laboratory. Centrifuging of the sample at the laboratory shall be used if phase separation is required. Sediment core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations. Sampling in creeks/streams/rivers will be conducted from downstream to upstream locations.

2.6 Pore Water Sampling with Lysimeters

The AE shall evaluate the potential for PFAS in soil to leach to groundwater at representative PFAS source areas using lysimetry. The AE shall install suction lysimeters at a representative range of soil types and contamination levels to evaluate migration to groundwater (source strength). Selection of locations for lysimeters should be done after soil data is available for review to ensure lysimeters are placed at locations best suited to address potential migration to groundwater. Lysimeters shall be installed at appropriate depths based on site-specific conditions per source area. Source areas shall be investigated to evaluate migration to groundwater. Pore water samples from lysimeters shall be collected during 4 separate sampling events. The duration of time between each of the 4 sampling events will be determined later. It is not expected the lysimeters will need to remain in place after the prescribed sampling has been performed and results have been reviewed.

2.7 Surveying

A licensed surveyor is required to survey horizontal and vertical elevations of newly installed wells, the vertical elevations of the ground surface near the wells, and the top of the inner well casings. Other surveys required during the performance of work in the SOW include but are not limited to: DPT and lysimeter locations, and all soil, sediment, and surface water sample locations. A licensed surveyor may not be required for DPT, lysimeter, soil, sediment, or surface water sample locations as long as the equipment used is capable of achieving sub- meter accuracy and appropriate benchmarks/controls are used in accordance with best practices and standard operating procedures (see Section 5.8). Installed monitoring wells will be surveyed to 0.01-ft accuracy for location and elevation data by a professional land surveyor that is registered in the state in which the work is being performed.

2.8 Basewide Synoptic Groundwater Gauging

One UFP-QAPP for each installation (total of 2 UFP-QAPPs) shall define the exact procedure for a single Basewide Synoptic Groundwater Gauging event for up to 120 wells. The AE will gauge depth to groundwater on the designated wells and use the data to develop a potentiometric groundwater map depicting groundwater flow.

2.9 Decontamination

Decontamination of drilling equipment must only use materials listed in Appendix D. All equipment must be scrubbed with a plastic brush or steam cleaned and rinsed thoroughly in PFAS-free water to clean away any debris or material on exposed surfaces and then triple-rinsed in distilled (Grade 3 or better) or deionized water (or millipore water). Sampling must include submission of sample(s) representing any water at the point of use (i.e., water truck or tank on-site) used by the driller for drilling purposes.

Equipment that contacts well water within the well (pumping equipment, water meters, etc.) must not contain or be coated with Teflon® unless the Teflon® is internal to the equipment and does not contact the external environment.

2.10 AFFF Release Areas and Phase 1 RI Requirements

AFFF Release Areas were investigated in the SI phase conducted in accordance with CERCLA. Areas of Interest (AOIs) identified for investigation under this Phase I RI are listed in Appendix A and have been determined to have an AFFF release that requires additional investigation in this Phase I RI. Additional information about each of these areas is available in the Installation Site Investigation (SI) reports in the AR or available via the Installation RPMs.

2.11 RI Report

The AE shall prepare a Phase I RI Report for each installation that characterizes environmental conditions, describes the complete nature and extent of the PFOA, PFOS, and PFBS, describes and portrays a comprehensive groundwater flow and contaminant hydrogeological conditions, and evaluates the migration pathways based on the geologic, geophysical, hydrogeological, ecological, chemical, physical, and hydrologic data.

The report shall include analysis and interpretation of multiple factors such as groundwater hydrology/modeling and development of a CSM, groundwater transmissivity, fate transport and contaminant mass flux, calculation of travel times, contamination extent, source identification, and preliminary evaluation remedial alternatives (to be identified at a later date). Other RI reporting to be accomplished include:

- Three-dimensional CSM with pictorial.
- Site level conclusions and whether DQOs were met.
- Analytical data tables for that includes all 24 PFAS compounds.
- Hydrogeologic cross-section(s).
- Potentiometric maps.
- Isoconcentration contaminant contour maps.
- Basewide Investigative Data Report prepared in table format for internal technical/regulatory team distribution.
- Identification of potentially complete and/or complete exposure pathways and potential receptors.
- Recommendations for any future sampling to address risk assessment needs.

All project deliverables (plans, reports, memorandum, meeting minutes, handouts, etc.) for limited non-AF distribution must include a separate technical memorandum on non-publicly releasable information.

2.12 General Support Requirements

The AE shall be responsible for additional activities in support of this contract such as assisting the Government with public relations, access agreements, and other activities related to this task order.

Examples of support requirements are presented on Table 6.

Table 6: Additional General Support Tasks Required for this Contract

Task	Description	Frequency/Duration/Assumptions
RAB Meetings	Support AF RPM for preparations, reservations, mailings, and attend RABs	RAB meetings (if required)
Progress Status Teleconferences	Teleconferences between AE, AF and USACE	Assume biweekly per base
Partnering/Working Meetings (Site Reconnaissance)	Meetings with AF and USACE. Assume at AF unless COVID-19 restrictions require teleconferences	Assume 2 meetings/year per base
Miscellaneous PM and Tech support to USACE and AF	General support/requests related to the ERP	Assume labor support of up to 100 hours/year for miscellaneous, unscheduled support for requests, e.g., correspondence review, data calls, presentations, figures, data analysis/summaries, etc.
Public Affairs	Assist PAO by distributing mailers, attending a public meeting, document preparation, etc.	Assume home office support of up to 80 hours/year of effort related to responding to inquiries, review of requests, etc.
AE Manpower Reporting		Yearly
PMP, IMS, project web site	Maintain current documentation	Update web site and PMP as needed to maintain current, update IMS monthly. Update frequency shall be approved by the COR/PM and additional more frequent updates may be required per COR/PM.

2.13 Phase I Remedial Investigation CLIN Structure

The SOW includes the tasks required to complete a Phase I RI (in accordance with CERCLA) for each installation at the release area sites included in Appendix A. This task order does not include completing a Risk Assessment or FS. The Phase I RI shall be completed in accordance with the most recent EPA guidance and 40 CFR § 300.430(d), and the additional requirements stated in this SOW. All release areas shall be fully delineated both horizontally and vertically for affected media (soil, groundwater, surface water, sediment) and contaminant migration pathways. Details of the actual scope required to fulfill the Phase I RI requirement will be determined in DQO scoping meetings with AF, the USACE, and environmental regulators.

2.14 Period of Performance (POP)

The performance period of this contract is 36 months after effective date of the contract. Subject to the availability of funds, the KO may exercise the optional line items by written notice to the AE. If exercised, options will have an initial POP of 36 months.

3.0 Optional Tasks

Optional tasks for each installation are in **Appendix B** below the site-specific requirements tables. The optional tasks may be exercised, as determined necessary by the Government, to complete the Phase I RI. The Phase I RI UFP-QAPP WP shall be prepared with the decision logic and worksheet details included to allow the exercise of these options without WP modification. **Quantities may be reallocated between sites on a given installation as needed** to address site-specific requirements to complete the Phase I RI.

The AE shall guarantee the negotiated price for options for the full contract period of performance (POP). If an option is awarded and later determined to be not required, the option and associated funds may be modified and removed from the contract. The Government will notify the AE of the intent to exercise the following options during the execution of this task order as specific optional tasks are needed to complete the Phase I RI, and the Government will issue the AE a notice to proceed prior to executing all options.

APPENDICES A: Installation-Specific Requirements Tables

APPENDIX A1: Homestead Air Reserve Base Phase 1 RI Requirements

HARB Site-Specific Phase I RI Requirements																			
MW Install						DPT for Soil Screening					Lysimeters		Other Samples		DPT for GW Screening				
Qty New LDW	Est LDW Depth bgs (ft)	Total LDW Footage (ft)	Qty New VDW	Est VDW Depth bgs (ft)	Total VDW Footage (ft)	Qty SBs	SB Depth (ftbgs)	SB Total Feet (ft)	Qty Soil Samples (per SB)	Qty Soil Samples for Analysis	Qty Lysimeters	Lysimeter Feet (ft)	Qty Surface Water Samples (each event)	Qty Sediment Samples (each event)	Qty DPTs for LDW Install	DPT Total Feet for LDW (ft)	Qty DPTs for VDW Install	Qty GW Samples for VDW Install	DPT Total Feet for VDW (ft)
5	15	75	1	35	35	15	4	60	3	45	3	15	0	0	15	225	3	9	135
8	15	120	1	35	35	6	4	24	3	18	0	0	6	6	24	360	3	9	135
7	15	105	1	35	35	6	4	24	3	18	0	0	0	0	21	315	3	9	135
7	15	105	1	35	35	8	4	32	3	24	0	0	0	0	21	315	3	9	135
15	15	225	3	35	105	20	4	80	3	60	3	15	0	0	45	675	9	27	405
8	15	120	2	35	70	15	4	60	3	45	5	25	0	0	24	360	6	18	270
8	15	120	2	35	70	15	4	60	3	45	5	25	0	0	24	360	6	18	270
8	15	120	2	35	70	15	4	60	3	45	0	0	0	0	24	360	6	18	270
14	15	210	2	35	70	20	4	80	3	60	0	0	10	10	42	630	6	18	270
30	15	450	8	35	280	30	4	120	3	90	7	35	15	15	120	1800	30	90	1350
110		**1650**	**23**	**350**	**805**	**150**		**600**		**450**	**23**	**115**	**31**	**31**	**360**	**5400**	**75**	**225**	**3375**

DW depth; equals the number of GW samples needed during screening for LDWs

r DPT
DPT depth = estimated VDW depth (column K) plus 10 ft)
ed during 4 separate sampling events
w and existing MWs
samples (for seasonal variation; sample at low tide if applicable)

APPENDIX A2: Tyndall Air Force Base Phase 1 RI Requirements

TAFB Site-Specific Phase I RI Requirements

	MW Install						DPT for Soil Screening					Lysimeters		Other Samples		DPT for GW Screening				
g	Qty New LDW	Est LDW Depth bgs (ft)	Total LDW Footage (ft)	Qty New VDW	Est VDW Depth bgs (ft)	Total VDW Footage (ft)	Qty SBs	SB Depth (ftbgs)	SB Total Feet (ft)	Qty Soil Samples (per SB)	Qty Soil Samples for Analysis	Qty Lysimeters	Lysimeter Footage (ft)	Qty Surface Water Samples (each event)	Qty Sediment Samples (each event)	Qty DPTs for LDW Install	DPT Total Feet for LDW (ft)	Qty DPTs for VDW Install	Qty GW Samples for VDW Install	DPT Total Feet for VDW (ft)
	12	15	180	2	25	50	15	5	75	4	60	0	0	12	5	36	540	6	18	210
	10	10	100	1	22	22	4	2	8	2	8	3	6	0	0	30	300	3	9	96
	5	15	75	1	25	25	3	4	12	3	9	0	0	0	0	15	225	3	9	105
	12	15	180	2	25	50	2	2	4	2	4	0	0	0	0	36	540	6	18	210
	10	10	100	1	20	20	2	2	4	2	4	0	0	0	0	30	300	3	9	90
	8	10	80	2	25	50	7	4	28	3	21	4	20	0	0	24	240	6	18	210
	10	15	150	1	25	25	5	4	20	3	15	0	0	0	0	30	450	3	9	105
	15	15	225	3	25	75	6	2	12	2	12	3	9	12	4	45	675	9	27	315
	12	15	180	3	25	75	6	2	12	2	12	0	0	10	4	36	540	9	27	315
	15	15	225	4	20	80	10	2	20	2	20	4	12	0	0	45	675	12	36	360
	15	15	225	4	20	80	6	2	12	2	12	5	15	10	6	45	675	12	36	360
	12	10	120	3	20	60	5	1	5	2	10	0	0	0	0	36	360	9	27	270
	15	15	225	4	20	80	12	3	36	3	36	5	20	12	5	45	675	12	36	360
	151		**2065**	**31**	**297**	**692**	**83**		**248**		**223**	**24**	**82**	**56**	**24**	**453**	**6195**	**93**	**279**	**3006**

vells
e at LDW depth; equals the number of GW samples needed during screening for LDWs
s)
vals per DPT
(VDW DPT depth = estimated VDW depth (column K) plus 10 ft)
collected during 4 separate sampling events
all new and existing MWs
collect samples (for seasonal variation; sample at low tide if applicable)

-Sub (see section 1.1.4 of the SOW); line 8 on the requirements table refers to section 1.1.4 item h, etc

APPENDIX B – Installation-Specific Optional Tasks

1.0 HARB Options

1.1 Option-001 DPT (soil screening) and Soil Sampling I

The AE shall complete up to 300 ft of DPT. Up to 120 soil samples will be collected at up to 3 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

1.2 Option-002 DPT (soil boring) and Soil Sampling II

The AE shall complete up to 300 ft of DPT. Up to 120 soil samples will be collected at up to 3 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

1.3 Option-003 Groundwater Sampling and Analysis I

The AE shall complete all task required to collect a groundwater sample from 29 existing monitoring wells and 133 new monitoring wells (total = 162 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

1.4 Option-004 Groundwater Sampling and Analysis II

The AE shall complete all task required to collect a groundwater sample from 29 existing monitoring wells and 133 new monitoring wells (total = 162 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc..

1.5 Option-005 DPT and Groundwater Sampling I for Groundwater Screening

The AE shall complete up to 3000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 150 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

1.6 Option-006 DPT and Groundwater Sampling II for Groundwater Screening

The AE shall complete up to 3000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 150 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

1.7 Option-007 Monitoring Well Installation and Sampling I

The AE shall install up to 1200 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 70 groundwater samples and up to 2 separate sampling events (total of up to 140 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.8 Option-008 Monitoring Well Installation, Sampling II

The AE shall install up to 1200 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 70 groundwater samples and up to 2 separate sampling events (total of up to 140 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.9 Option-009 Surface Water Sampling

The AE shall complete all tasks required to collect up to 31 surface water samples (up to 2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.10 Option-010 Sediment Sampling

The AE shall complete all tasks required to collect up to 31 additional sediment samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.11 Option-011 Surface Water and Sediment (Co-located Sampling)

The AE shall complete all tasks required to collect up to 25 surface water and 25 sediment co-located samples (up to 2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.12 Option-012 Lysimeter Installation and Porewater Sampling

The AE shall complete all tasks required to install up to 30 additional Lysimeters to the water table depth (assume additional Lysimeter footage of 150ft) and collect up to 30 additional porewater samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.13 Option-013 Optional Site 1 - Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to DA054P in Appendix A1, but also include an additional 10 surface water and 10 sediment samples per event.

1.14 Option-014 Optional Site 2 - Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to DA054P in Appendix A1, but also include an additional 10 surface water and 10 sediment samples per event.

2.0 TAFB Options

2.1 Option-001 DPT (soil screening) and Soil Sampling I

The AE shall complete up to 150 ft of DPT. Up to 80 soil samples will be collected at up to 4 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

2.2 Option-002 DPT (soil boring) and Soil Sampling II

The AE shall complete up to 150 ft of DPT. Up to 80 soil samples will be collected at up to 4 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

2.3 Option-003 Groundwater Sampling and Analysis I

The AE shall complete all task required to collect a groundwater sample from 117 existing monitoring wells and 182 new monitoring wells (total = 299 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

2.4 Option-004 Groundwater Sampling and Analysis II

The AE shall complete all task required to collect a groundwater sample from 117 existing monitoring wells and 182 new monitoring wells (total = 299 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

2.5 Option-005 DPT and Groundwater Sampling I for Groundwater Screening

The AE shall complete up to 2000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 120 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

2.6 Option-006 DPT and Groundwater Sampling II for Groundwater Screening

The AE shall complete up to 2000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 120 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

2.7 Option-007 Monitoring Well Installation and Sampling I

The AE shall install up to 1000 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 50 groundwater samples and up to 2 separate sampling events (total of up to 100 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.8 Option-008 Monitoring Well Installation, Sampling II

The AE shall install up to 1000 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 50 groundwater samples and up to 2 separate sampling events (total of up to 100 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.9 Option-009 Surface Water Sampling

The AE shall complete all tasks required to collect up to 56 surface water samples (up to 2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.10 Option-010 Sediment Sampling

The AE shall complete all tasks required to collect up to 24 additional sediment samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.11 Option-011 Lysimeter Installation and Porewater Sampling

The AE shall complete all tasks required to install up to 40 additional Lysimeters to the water table depth (assume additional Lysimeter footage of 200ft) and collect up to 40 additional porewater samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.12 Option-012 Optional Site 1 – Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to SS041P in Appendix A4.

2.13 Option-013 Optional Site 2 – Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to TU539P-SUB Silver Flag Fire Trng Area (in AFFF SI Report) (Named AFRL Fire Trng Pit in EESOH) in Appendix A4.

APPENDIX C: List of Acronyms

AF	Air Force
AFB	Air Force Base
AFCEC	Air Force Civil Engineering Center
AFFF	Aqueous Film-Forming Foam
AFI	Air Force Instruction
AOI	Area of Interest
API	American Petroleum Institute
APP	Accident Prevention Plan
ASD	Assistant Secretary of Defense
bgs	Below Ground Surface
CAC	Common Access Card
CADD	Computer-aided Design and Drafting
CD	Compact Disc
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
COR/PM	Contracting Officer's Representative
CPSMR	AE's Progress, Status and Management Report
CSM	Conceptual Site Model
DLH	Data Loading Handbook
DoD	Department of Defense
DPT	Direct-Push Technology
DQO	Data Quality Objectives
EDD	Electronic Data Deliverable
EO	Executive Order
ELAP	Environmental Laboratory Accreditation Program
EM CX	Environmental and Munitions Center of Expertise
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPP	Environmental Preferable Purchasing
EPEAT	Electronic Product Environmental Assessment Tool
ERPIMS	Environmental Resources Program Information Management System
ESD	Explanation of Significant Differences
FAR	Federal Acquisition Regulations
FDEP	Florida Department of Environmental Protection
FEMP	Federal Emergency Management Program
FFA	Federal Facilities Agreement
FGDC	Federal Geographic Data Committee
FS	Feasibility Study
FSC	Federal Service Code
FE	Government-Furnished Equipment
GFI	Government-Furnished Information
GFP	Government-Furnished Property
GIO	Geospatial Integration Office
GIS	Geographical Information System
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPE	High-Density Polyethylene
IBC	International Building Code
IDW	Investigation-Derived Waste
IMS	Integrated Master Schedule

KO	Contracting Officer
KTR	AE (Prime Contractor)
LDPE	Low-Density Polyethylene
NA	Not Applicable
NACE	National Association of Corrosions Engineers
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEC	National Electrical Code
NFPA	National Fire Protection Association
NOV	Notice of Violation
NSDI	National Spatial Data Infrastructure
OSHA	Occupational Safety and Health Administration
PAO	Public Affairs Office
.pdf	portable document file
PDT	Project Delivery Tea,
PM	Project Manager
PMP	Project Management Plan
PMR	Project Management Review
POC	Point of Contact
POP	Period of Performance
PVC	Polyvinyl Chloride
SOW	Statement of Work
QA/QC	Quality Assurance/Quality Control
OSD	Office of the Secretary of Defense
QSM	Quality Systems Manual
RAB	Restoration Advisory Board
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
Phase I RI	Remedial Investigation
ROD	Record of Decision
RPM	Restoration Project Manager
SARA	Superfund Amendments and Reauthorization Act
SB or SoB	Statement of Basis
SDSFIE	Spatial Data Standard for Infrastructure and Environment
SMP	Site Management Plan
SNAP	Significant New Alternatives Policy
SSHP	Site Safety and Health Plan
SSPC	Steel structures and painting counsel
SI	Site Inspection
SWMU	Solid Waste Management Unit
TO	Task Order
TBD	To Be Determined
UFC	Uniform Fire Code
UFP-QAPP	Uniform Federal Policy- Quality Assurance Program Plan
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited use/unrestricted exposure
WP	Work Plan

APPENDIX D: Summary of Prohibited and Acceptable Items

Prohibited Items	Acceptable Items
Field Equipment	
Teflon® containing materials	High-density polyethylene (HDPE) materials
Low density polyethylene (LDPE)	Polyvinyl chloride (PVC) or acetate liners
Aluminum foil	Silicon tubing
Waterproof field books	Loose paper (non-waterproof)
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
	Sharpies®, pens
Post-It Notes	
Field Clothing and Personal Protective Equipment (PPE)	
New cotton clothing or synthetic water resistant, waterproof, or stain- treated clothing, clothing containing Gore-Tex™	Well-laundered clothing, defined as clothing that has been washed 6 or more times after purchase, made of natural fibers (preferably cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore-Tex™	Boots made with polyurethane and polyvinyl chloride (PVC)
Tyvek®	Cotton Clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	Sunscreens - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are "free" or "natural" Insect Repellents - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics Sunscreen and insect repellant - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion
Sample Containers	
LDPE or glass containers	HDPE or polypropylene
Teflon®-lined caps	Unlined polypropylene caps
Rain Events	
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior to and following sampling activities
Equipment Decontamination	
Decon 90	Alconox® and/or Liquinox®
Water from an on-site well	PFAS-free water from a tested source
Food Considerations	
All food and drink, with exceptions noted on the right	Bottled water and hydration drinks (i.e., Gatorade® and Powerade®) to be brought and consumed only in the staging area

SWORN STATEMENT

For use of this form, see AR 190-45; the proponent agency is PMG.

PRIVACY ACT STATEMENT

AUTHORITY:	Title 10, USC Section 301; Title 5, USC Section 2951; E.O. 9397 Social Security Number (SSN).
PRINCIPAL PURPOSE:	To document potential criminal activity involving the U.S. Army, and to allow Army officials to maintain discipline, law and order through investigation of complaints and incidents.
ROUTINE USES:	Information provided may be further disclosed to federal, state, local, and foreign government law enforcement agencies, prosecutors, courts, child protective services, victims, witnesses, the Department of Veterans Affairs, and the Office of Personnel Management. Information provided may be used for determinations regarding judicial or non-judicial punishment, other administrative disciplinary actions, security clearances, recruitment, retention, placement, and other personnel actions.
DISCLOSURE:	Disclosure of your SSN and other information is voluntary.

1. LOCATION	2. DATE (YYYYMMDD)	3. TIME	4. FILE NUMBER
Mobile District HQ	20240531	10 am	

5. LAST NAME, FIRST NAME, MIDDLE NAME	6. SSN	7. GRADE/STATUS
[redacted]		[redacted]

8. ORGANIZATION OR ADDRESS
Mobile District

9. I, [redacted], WANT TO MAKE THE FOLLOWING STATEMENT UNDER OATH:

[redacted]

10. EXHIBIT	11. INITIALS OF PERSON MAKING STATEMENT	Page 1 of 3
	[redacted]	

ADDITIONAL PAGES MUST CONTAIN THE HEADING "STATEMENT OF_____ TAKEN AT _____ DATED _____"

THE BOTTOM OF EACH ADDITIONAL PAGE MUST BEAR THE INITIALS OF THE PERSON MAKING THE STATEMENT, AND PAGE NUMBER MUST BE INDICATED.

USE THIS PAGE IF NEEDED. IF THIS PAGE IS NOT NEEDED, PLEASE PROCEED TO FINAL PAGE OF THIS FORM.

STATEMENT OF [redacted] TAKEN AT Mobile District HQ DATED 5/31/24

9. STATEMENT *(Continued)*

[redacted]

INITIALS OF PERSON MAKING STATEMENT [redacted]

STATEMENT OF [redacted] TAKEN AT Mobile District HQ DATED 5/31/24

AFFIDAVIT

I, [redacted], HAVE READ OR HAVE HAD READ TO ME THIS STATEMENT WHICH BEGINS ON PAGE 1, AND ENDS ON PAGE 3 . I FULLY UNDERSTAND THE CONTENTS OF THE ENTIRE STATEMENT MADE BY ME. THE STATEMENT IS TRUE. I HAVE INITIALED ALL CORRECTIONS AND HAVE INITIALED THE BOTTOM OF EACH PAGE CONTAINING THE STATEMENT. I HAVE MADE THIS STATEMENT FREELY WITHOUT HOPE OF BENEFIT OR REWARD, WITHOUT THREAT OF PUNISHMENT, AND WITHOUT COERCION, UNLAWFUL INFLUENCE, OR UNLAWFUL INDUCEMENT.

[redacted]
ment)

WITNESSES:

ORGANIZATION OR ADDRESS

ORGANIZATION OR ADDRESS

Subscribed and sworn to before me, a person authorized by law to administer oaths, this 31st day of May, 2024 at Mobile District HQ.

(Signature of Person Administering Oath)

(Typed Name of Person Administering Oath)

(Authority To Administer Oaths)

From: [redacted] USARMY CESAM (USA)
To: [redacted] USARMY CEHNC (USA)
Subject: FW: Tyndall AFB PFAS RI Phase I: Adjustment to the Site Sampling Requirements - Sampling Inside Site Boundaries due to MILCON-Rebuild
Date: Thursday, May 30, 2024 4:20:16 PM
Attachments: (moved to its own file - Ltr: AF PFAS RI Phase I Adj Site...dated 13 Dec 22)
Importance: High

From: [redacted] USAF AFMC AFCEC/CZOE [redacted]
Sent: Tuesday, December 13, 2022 5:22 PM
To: [redacted] USARMY CESAM (USA) [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZRE [redacted] [redacted] USARMY CESAM (USA) [redacted]; [redacted] USARMY CESAM (USA) [redacted]; [redacted] (USA) [redacted]; [redacted] USARMY CESAM (USA) [redacted]>; [redacted] USAF AFMC AFCEC/CZOE [redacted]>; [redacted]>; [redacted] USAF AFMC AFCEC/CZOE [redacted]>; [redacted] USAF AFCEC AFCEC/CZO [redacted]>; [redacted] USAF AFMC AFCEC/CZOE [redacted]>; [redacted] USAF AFCEC AFCEC/CZO [redacted]>
Subject: Tyndall AFB PFAS RI Phase I: Adjustment to the Site Sampling Requirements - Sampling Inside Site Boundaries due to MILCON-Rebuild

[redacted]

This letter is to inform you the Air Force (AF) is requesting a Performance Work Statement (PWS) language change in the Tyndall AFB PFAS Phase I RI contract pertaining to sampling limitations due to the MILCON-Rebuild at Tyndall AFB. These limitations will affect Tyndall AFB only.

Due to the MILCON-Rebuild, PFAS sampling conducted by Tetra Tech during the Phase I RI contract may only be completed within the specified Tyndall AFB PFAS site boundaries. Because of this limitation on sampling the current PWS requirement of characterizing the nature and extent of PFAS contamination in all site media may not be possible and will need to be revised. The PWS language should be revised to state sampling during this Phase I RI can only be conducted within each site's boundary.

The AF requests your review of the Power Point presentation embedded in this Letter and your concurrence with COA #3 – Modify PFAS Phase I RI contract to limit RI to the site boundaries established in the Tyndall AFB PFAS PA/SI or other approved site boundary. Your concurrence with this request would trigger the modification to the Tyndall AFB portion of the PFAS Phase I RI contract and notification to Tetra Tech of this occurrence.

Please contact me if you have any questions pertaining to this request.

//Signed//

[redacted]
AFCEC/CZOE, Environmental Restoration Program Manager
Tyndall AFB RPM
[redacted]
[redacted]

DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
JOINT BASE SAN ANTONIO LACKLAND TEXAS

13 December 2022

[redacted]
Remedial Project Manager
AFCEC/CZOE
103 Mississippi Road, Building 36233
Tyndall AFB, FL 32403

[redacted]
Contracting Officer
Environmental Contracting Section Chief
U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street
Mobile, AL 36602

Subject: Tyndall Air Force Base (AFB) MILCON-Rebuild and per- and polyfluoroalkyl substances (PFAS) Phase I Remedial Investigation (RI) Contract Integration; Tyndall AFB, Florida

Dear [redacted]

This letter is to inform you the Air Force (AF) is requesting a Performance Work Statement (PWS) language change in the Tyndall FB PFAS Phase I RI contract pertaining to sampling limitations due to the MILCON-Rebuild at Tyndall AFB. These limitations will affect Tyndall AFB only.

Due to the MILCON-Rebuild, PFAS sampling conducted by Tetra Tech during the Phase I RI contract may only be completed within the specified Tyndall AFB PFAS site boundaries. Because of this limitation on sampling the current PWS requirement of characterizing the nature and extent of PFAS contamination in all site media may not be possible and will need to be revised. The PWS language should be revised to state sampling during this Phase I RI can only be conducted within each site's boundary.

The AF expectation is characterization of nature and extent of PFAS contaminants will be possible at most of the Tyndall AFB sites. However, several of the site's Phase I RI characterizations won't be completed and will require additional work in a future contract and/or the current contractor will have to wait until the Tyndall AFB MILCON-Rebuild is complete before completing site characterization.

Air Force Civil Engineer Center Environmental Directorate Operations Division East Region Eglin Installation Support Section, U.S. Army Corps of Engineers (USACE) Mobile personnel working on contracts for the Tyndall AFB MILCON-Rebuild, and the regulators for Environmental Protection Agency and Florida Department of Environmental Protection have all agreed to this course of action (COA). AFCEC Restoration Division (CZR) concurred with this COA in an email on November 4, 2022. Please see the attached Power Point presentation AFCEC/CZR reviewed to make their determination and their concurrence email.

The AF requests your review of the attached Power Point presentation and your concurrence with [redacted] PA/SI or other approved site boundary. Your concurrence with this request would trigger the modification to the Tyndall AFB portion of the PFAS Phase I RI contract and notification to Tetra Tech of this occurrence.

If you have any questions regarding this request, feel free to contact me by phone at [redacted] or by e-mail at [redacted]

Sincerely

[redacted]

Remedial Project Manager

Enclosure: Tyndall AS RI – MILCON Integration 26 OCT 22 Final presentation
[redacted] USAF AFMC AFCEC/CZR email concurrence on COA #3 in PFAS RI/MILCON COA Slides

Cc: [redacted]/CZR, [redacted]/USACE, [redacted]/USACE, [redacted]/USACE, [redacted]/CZOE, [redacted]/Tetra Tech, and [redacted]/Tetra Tech

Air Force Installation & Mission Support Center

Tyndall Rebuild and PFAS RI Integration

Purpose

Present Courses of Action (COAs) to CZR Leadership Pertaining to Mitigating Tyndall PFAS RI Impacts on Tyndall Rebuild

COA 1 – No Change to RI Contract

•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

COA 2 – Terminate RI Contract

•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

COA 3 – Modify RI Contract

•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

Recommendation

•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

BACKUP SLIDES

•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

MILCON Schedule

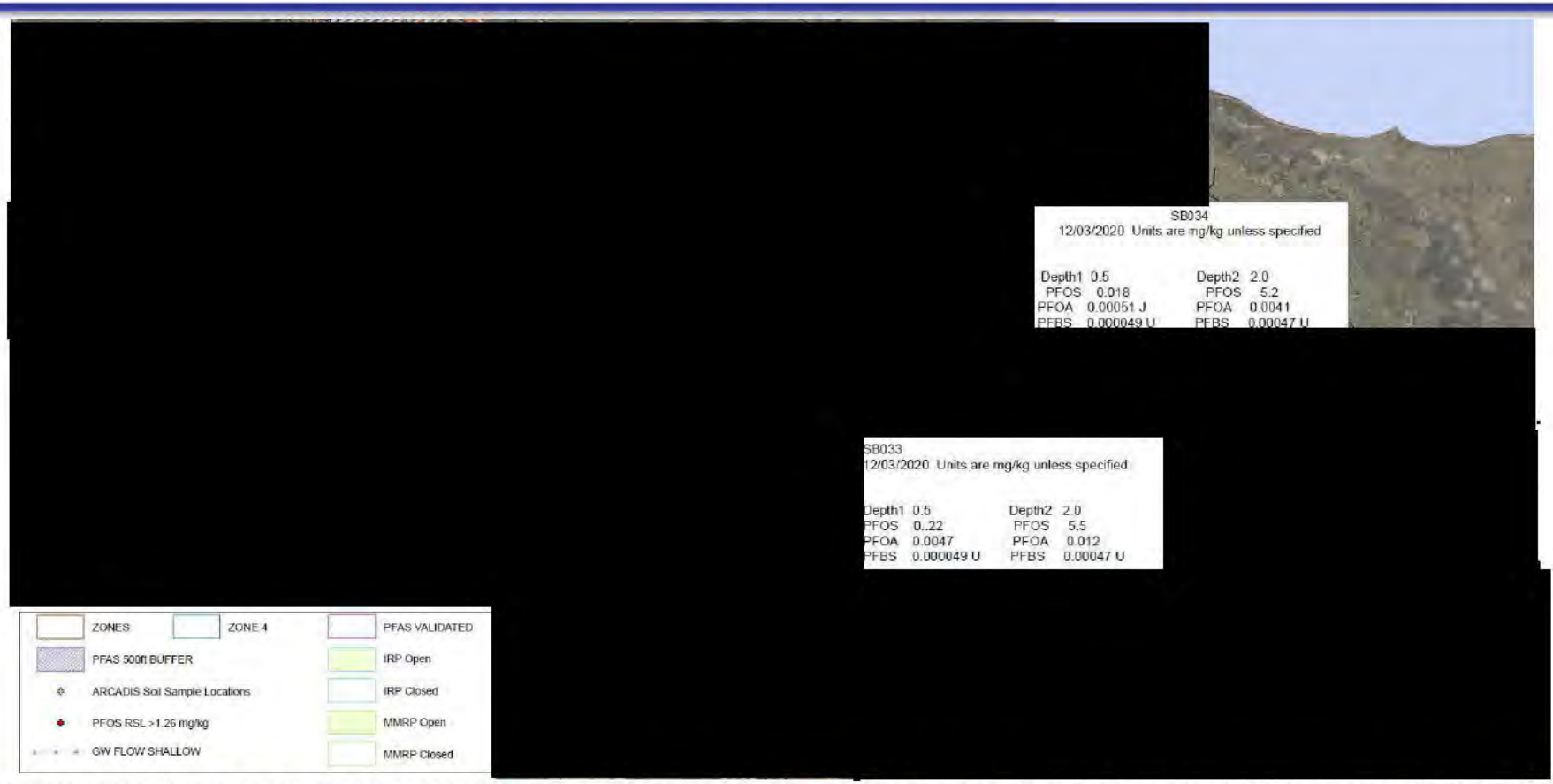
Zone	Project Title	AFFF Study Area Present or within 500' (Y/N)	AFFF Comments	NTP	BOD	Status
[redacted]						

•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

ARCADIS Sample Locations 500ft Buffer

[redacted]

PFAS Site and MILCON Zone Overlaps



•If acronyms are used on the slide, they must be listed and spelled out here, at the bottom of the slide, in 10pt font, i.e. SAB – Scientific Advisory Board, COTS – Commercial Off The Shelf, OS – Open Source

[redacted] **USAF AFMC AFCEC/CZOE**

From: [redacted] USAF AFMC AFCEC/CZOE
Sent: Sunday, November 6, 2022 8:43 PM
To: [redacted] USAF AFMC AFCEC/CZRE; [redacted] USAF AFMC AFCEC/CZOE
Subject: FW: Draft PFAS RI/MILCON COA Slides
Signed By: [redacted]@us.af.mil

FYI

-----Original Message-----
From: [redacted] USAF AFMC AFCEC/CZOE <[redacted]>
Sent: Saturday, November 5, 2022 4:44 AM
To: [redacted] USAF AFMC AFCEC/CZOE <[redacted]>
Subject: FW: Draft PFAS RI/MILCON COA Slides

FYI - CZR concurs on COA3

-----Original Message-----
From: [redacted] USAF AFMC AFCEC/CZR <[redacted]>
Sent: Friday, November 4, 2022 8:02 PM
To: [redacted] USAF AFMC AFCEC/CZO [redacted]>
Cc: [redacted] USAF AFMC AFCEC/AFCEC/CZR
<[redacted]>; [redacted] USAF AFMC AFCEC/CZOE
<[redacted]>; [redacted] USAF AFMC AFCEC/CZO
<[redacted]>; [redacted] USAF AFMC AFCEC/CZRE
<[redacted]>
Subject: RE: Draft PFAS RI/MILCON COA Slides

[redacted]

CZR concurs with COA3 as recommended.

[redacted]
Chief, Environmental Restoration PMO
AFCEC/CZR
Mobile: [redacted]

-----Original Message-----
From: [redacted] USAF AFMC AFCEC/CZO
<[redacted]>
Sent: Thursday, November 3, 2022 4:24 PM
To: [redacted] USAF AFMC AFCEC/CZR <[redacted]>
Cc: [redacted] USAF AFMC AFCEC/AFCEC/CZR
<[redacted]>; [redacted] USAF AFMC AFCEC/CZOE
<[redacted]>; [redacted] USAF AFMC AFCEC/CZO
<[redacted]>
Subject: FW: Draft PFAS RI/MILCON COA Slides

Circling back to get your feedback on this one. Where does CZR stand? Personally, I think COA 3 is a no-brainer, but I'd like to discuss if you have different views.

-----Original Message-----
From: [redacted] USAF AFMC AFCEC/CZO
<[redacted]>
Sent: Monday, October 31, 2022 2:09 PM
To: [redacted] USAF AFMC AFCEC/CZR <[redacted]>
Cc: [redacted] USAF AFMC AFCEC/CZOE <[redacted]>;
[redacted] CIV USAF AFMC AFCEC/AFCEC/CZR <[redacted]>;
[redacted] USAF AFMC AFCEC/CZO <[redacted]>
Subject: FW: Draft PFAS RI/MILCON COA Slides

[redacted]

I strongly endorse [redacted] MILCON rebuild of Tyndall AFB has a higher mission priority than short-term progress on our PFAS RI, and we have regulator concurrence on this approach. We'll continue to make progress on the RI, but we'll stay out of the areas being massively disturbed by construction, which would likely trigger a re-do on the RI anyway.

Please let me know if you have a different perspective.

Many thanks,

[redacted]

//SIGNED//
[redacted]
Chief, Operations Division (CZO)
Environmental Management Directorate (CZ)
Air Force Civil Engineer Center (AFCEC)
E-Mail: [redacted]
Telephone: [redacted]
Government Cell Phone / Telework Contact Number: [redacted]

-----Original Message-----
From: [redacted] USAF AFMC AFCEC/CZOE <[redacted]>
Sent: Wednesday, October 26, 2022 12:46 PM
To: [redacted] USAF AFMC AFCEC/CZO
<[redacted]>; [redacted] USAF AFMC AFCEC/CZO
<[redacted]>; [redacted] USAF AFMC
AFCEC/CZOO <[redacted]>
Cc: [redacted] USAF AFMC AFCEC/CZOE <[redacted]>;
[redacted] USAF AFMC AFCEC/CZOO <[redacted]>;
[redacted] USAF AFMC AFCEC/CZOO <[redacted]>
Subject: FW: Draft PFAS RI/MILCON COA Slides

Sirs,

FYSA - attached please find Tyndall PFAS-RI - MILCON Integration slides that [redacted] will use to brief [redacted]. CZOE and Eglin ISS recommendation is [redacted] which both State and Federal regulators verbally concur with. Providing this as a "heads up" that [redacted] may be reaching out to [redacted] to discuss. This may/may not be an issue depending on [redacted] thought process. [redacted] mentioned this last week to [redacted].

v/r,
[redacted]

US Army Corps
of Engineers
Mobile District

[redacted]

Flightline Aircraft Shelters
Environmental – Mutual Understanding Meeting

November 30, 2023

CONTRACT NUMBER:	W912HN21D3000, W9127823F0424
CONTRACT TITLE:	Flightline Aircraft Shelters Tyndall AFB, Florida
AWARD DATE:	September 25, 2023
NTP DATE:	November 15, 2023
CONTRACT DURATION:	740 calendar days
CONTRACT AMOUNT:	$49,680,981
CONTRACTOR:	B.L. Harbert International, LLC
CONTRACTING OFFICER:	[redacted]
RESIDENT ENGINEER/ACO:	[redacted]
PROJECT MANAGER:	[redacted]
PROJECT ENGINEER/COR:	[redacted]
QA REPRESENTATIVE:	[redacted]
TYNDALL AFB AREA OFFICE MAILING ADDRESS:	U.S. ARMY CORPS OF ENGINEERS Attn: ACO [redacted] 301A Iowa Ave. Bldg. 36231 Tyndall AFB, FL 32403 PHONE: [redacted] EMAI [redacted]

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PERTINENT SPECIFICATION REFERENCES

1. Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS (& Appendices)
2. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
3. Section 02 41 00 DEMOLITION
4. Section 02 61 13 EXCAVATION & HANDLING OF CONTAMINATED MATERIAL
5. Section 02 81 00 TRANSPORT & DISPOSAL OF HAZARDOUS MATERIALS

1. PURPOSE

To discuss environmental compliance, conservation, and pollution prevention during performance of work associated with this contract.

2. ENVIRONMENTAL SUBMITTAL REQUIREMENTS

Government review is required for all submittals listed below. The following submittals will be required during the performance of this contract:

Pre-construction Submittals:

- Preconstruction Survey (Spec 01 57 19, 1.5.1)
- Solid Waste Management Permit (Spec 01 57 19, 1.9)
- Regulatory Notifications and Permits (Spec 01 57 19, 1.5.2)
- Environmental Protection Plan (Spec 01 57 19, 1.6)
- Stormwater Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP) (Spec 01 57 19, 3.3.1.2)
- Dirt and Dust Control Plan (Spec 01 57 19, 1.6.9.1)
- Employee Training Records (Spec 01 57 19, 1.5.5)
- Environmental Manager Qualifications (Spec 01 57 19, 1.5.4)
- Construction Waste Management Plan (Spec 01 74 19, 1.7)
- Demolition Plan (Spec 02 41 00, 1.2.2)
- Waste Management Plan (Spec 02 61 13, 1.3)
- Dewatering Work Plan (Speo31 00 00)
- Hazardous & Non-hazardous Soil & Groundwater Work Plan
- Hazardous Material Forms (TAFB FORMS 81 & 82) and Safety Data Sheets

Closeout Submittals:

Stormwater Pollution Prevention Plan Compliance Notebook
Stormwater Notice of Termination
Waste Determination Documentation
Disposal Documentation for Hazardous and Regulated Waste
Assembled Employee Training Records
Solid Waste Management Permit
Hazardous Waste/Debris Management
Regulatory Notifications
Sales Documentation
Contractor Certification
As-Built Topographic Survey
Hazardous Material Usage Form (TAFB FORM 83)

[redacted]

3. APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND PERMIT REQUIREMENTS, ERP, 404/401, INDUSTRIAL WASTEWATER

FEDERAL
Are Federal Regulatory requirements anticipated for the current scope of work?
☐ **NO**
☒ **YES**, Classify the coordination required and point of contact person below:

Tyndall is a CERCLA site so has EPA and FDEP oversight. FDEP will need to approve Dewatering Plan.
DOR is stating FDEP ERP permit is not required
Base must approve SWPPP, Need CGP, and Dig Permit

STATE (FDEP)
Are State Regulatory requirements anticipated for the current scope of work?
☐ **NO**
☒ **YES**, Classify the coordination required and point of contact person below:

AF, FDEP and USACE have agreed to how work should be managed in IRP and AFFF sites.
Dewatering Plan must be approved by FDEP, USACE to assist KTR as needed
CGP required

☒ GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (CGP), DEP Form 62-621.300(4)(b)/NOI
☐ GENERIC PERMIT FOR DISCHARGE OF GROUND WATER FROM DEWATERING OPERATIONS (subsection 62-621.300(2), F.A.C.) Dewatering Plan is required, approval by USACE/BASE/FDEP
☐ ENVIRONMENTAL RESOURCE PROGRAM (ERP) PERMIT –DOR says NO
☐ WETLANDS 404 APPLICATION (If required)
☐ WASTEWATER APPLICATION FORM 2EG - PERMIT TO DISCHARGE NON-PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO GROUND WATERS Form 62-620.910(6) (Form 2EG) (If required)
☐ WASTEWATER APPLICATION FORM 2ES - PERMIT TO DISCHARGE NON-PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS Form 62-620.910(7) (Form 2ES)

LOCAL
Are Local Regulatory requirements anticipated for the current scope of work?
☐ **NO**
☒ **YES**, Classify the coordination required and point of contact person below:

Discuss TAFB Requirements, Groundwater, Soils and Concrete
Discharge of GW, outside of Project Limits??? May need new AF813-discussion

[redacted]

4. PROTECTION OF FEATURES PLAN & HISTORICAL, ARCHAEOLOGICAL, CULTURAL/BIOLOGICAL RESOURCES & WETLANDS PLAN

Are any known Historical, Archaeological, Cultural/Biological Resources & Wetlands plan requirements anticipated for the current scope of work?

☐ **NO**

☐ **YES**, Include Protection of Features Plan required and point of contact person below:

Review the AF 813 form and the findings for the project site
Discuss the Cultural Findings Tips Pamphlet

5. SITE IDENTIFICATION AND PLANNED ENVIRONMENTAL CONTROLS – SWPPP

The minimum required site documentation for environmental controls (layout and details) with supporting specification(s) are shown below:

☒ A – Vicinity Map and Site Plan with disturbance boundary and known or potential contamination boundary

☒ B – Notice of Intent Form/Construction General Permit

☐ C – Hydrologic and Hydraulic Design Drawings, Analysis and Flood Prevention Program

☒ D – BMP Materials Details and Data Sheets

☒ E – Inspections Forms

Existing AF/USACE Site Identification

☒ **IRP**

☒ **AFFF**

☒ **NON-IRP/NON-AFFFF (CLEAN)**

☒ **SOILS DISTURBANCE**

☐ Project site net Fill / ☐ Project site net Cut

☒ **DEWATERING**

☒ Dewater Plan Required

Review Environmental overview sheets

6. SEDIMENT AND EROSION CONTROL, DEWATERING MEASURES

Is the SWPPP Plan available for the current scope of work?

☐ **NO**

☐ **YES**

Dig permit will not likely be issued until SWPPP is approved, should be the rule but not always followed

6.1 Hauling/Tracking Soils

- Don't overload trucks spillage on roads
- Be prepared with sweeper to clean up tracked soil on roads
- Be prepared to control dust with water truck
- Clean sides of truck after loading and dumping
- Being so close to the airfield, should be extra vigilant to keep roads cleaned and control dust

6.2 Permit Submittal and Review Sequence

SWPPP submission requiring USACE/Base Approval >Dig Permit> NOI > Construction General Permit

NOTE: Contractor is encouraged to keep the SWPPP simple, direct and relevant to your project only. The FDEP NOI is available as a simple on line application. Construction General Permits are issued 48 hours after completion of NOI application

Soils Management:

- What type of soils do you have? IRP, AFFF, Clean, Combination Sites
- Project soil mass balance (excess or deficit)
- Where will your project haul excess soils? Which stockpile?—Does BLHI anticipate any excess soils that have to be hauled to Ammo Gate?
- Est 15,000 Tons of Concrete demo—where will this material go?
- Does survey support the IRP shape files, do the boundaries make sense
- All soil movement needs to be tracked (IRP soils need load ticket)
- Reuse soil on site possible?
- Stockpile management or by others (Site C)

Is the Dewatering Plan available for the current scope of work?

☐ **NO**

☐ **YES**, Include submittal number and point of contact person below:

Existing AF/USACE Site Groundwater Identification:

☒ **IRP**

☒ **AFFF**

☒ **NON-IRP/AFFFF (CLEAN)**

☒ **IS GROUNDWATER (GW) SAMPLING AND ANALYSIS REQUIRED?**

☐ **DO ANALYTICAL LIMITS EXCEED 70 PPT?—Project is in a buffer zone where historical data shows >70ppt, these maps are in ENVL appendices**

☐ **IS ONSITE TREATMENT ANTICIPATED?--Likely**

Regulated Water Source Information (Subsurface/Surface/Containment)

☐ SURFACE Normal low flows along the channel.

☐ SURFACE Storm/flood flows along the channel.

☐ SURFACE Flows from existing storm drain pipelines.

☐ SURFACE Local surface inflows not conveyed by pipelines.

☐ SUBSURFACE Shallow Groundwater w/o Piezometric Pressure

☐ SUBSURFACE Shallow Groundwater w Piezometric Pressure (Aquifer)

☐ CONTAINMENT Liners, Rigid Volumes, Artificial Impermeable Lenses

Dewatering plan guidance available for Contractor to review

7. ENVIRONMENTAL MONITORING

7.1 Tracking Soil Movement

1. Track IRP/AFFF soils with a load ticket. Each load will need to be tied to a 400 CY batch of soil and associated analytical
2. Track Clean soils in daily report
3. Clean soils may be hauled to other project sites with proper coordination
4. On site reuse of soils don't require tracking
5. Select a DOD ELAP certified lab for water and soils analytical if required
6. All suspected IRP soils not intended for reuse at the point of excavation must be hauled to designated IRP stockpile location
7. If suspected contaminated soils are identified in a clean area of the site, sampling is required to determine soil type (IRP, AFFF)
8. Sampling frequency for soil analysis is 1 sample/400 CY of the planned excavation

7.2 Soil/Water/Permits General Guidance

- Clean soils excavated on project site can be used elsewhere within project site boundary
- Clean soils excavated on project site can be hauled to dedicated clean soil stockpiles with coordination
- Clean soils excavated on site can be brought to other sites with prior coordination
- **No soil is to be removed from Tyndall AFB property, clean or contaminated**
- Clean soils are clean unless show visible signs (or smell) of contamination—May need to wash bottom of concrete if shows signs of contamination
- Any contaminated equipment must be decontaminated prior to transporting equipment
- Soils of undetermined contamination must be temporarily staged on 10-mil poly containment barrier
- All imported soils must be certified clean with proper documentation provided by DoD approved lab
- Clean and contaminated soils may not be stockpiled together (comingled)
- All materials approved to leave the site (by Base Environmental CES/USACE) must have complete tracking documentation: Bill of Lading and/or Waste Manifest
- Never haul saturated soils with free water that may potentially escape from truck or vessel
- Potentially contaminated materials sampling must be performed by a qualified consultant
- Off-site soil disposal
    - Must stay on site until approved for off-site disposal
    - Must be covered, do not haul to an off-site stockpile location

7.3 PFOA/PFOS Guidance

- All disturbed soil and water must be tested
    - Soil: if tests above 1.3 ppm, must be removed or treated
    - Water: if tests above 70 ppt, must be removed or treated
- In area of known AFFF release, must test soil and groundwater (if dewatering)
- Water that tests below the 70 ppt concentration may be percolated into the existing known plume per the approved dewatering plan.
- Any soils pending analytical results shall be staged and contained on poly sheeting and covered with poly sheeting
- Groundwater (GW) greater than 70 ppt concentration must be treated, then returned to the existing plume boundary
- If treatment is required, will need to receive an Administrative Consent Order to Treat by FDEP, this is in lieu of a WWT permit
- Dewatering sampling frequency: check contract, the following may not be in line with contract docs

- Sample four times a day for first two days
- Sample 2 times a day for following three weeks
- Sample one time per day if pumping is still occurring until the dewatering point is no longer being used.

- Use a flow meter to track pumped volume
- Groundwater return requirements
- 30 day notification required prior to starting excavation of contaminated material
- Must comply with OSHA 1910.120 Hazardous Waste Workers

8. SPILL PREVENTION AND CONTAINMENT PLAN

Is the Spill and Contamination Prevention available for the current scope of work?

☐ **NO**

☒ **YES**, include submittal number and point of contact person below:

Spill prevention is addressed in the EPP

Spill Plan must be available, maintained and updated when necessary, at project site.

9. MAINTENANCE OF HAZARDOUS MATERIAL SDS

Is the Hazardous and Non-Hazardous Materials List available for the current scope of work?

☐ **NO**

☐ **YES**, Include submittal number and point of contact person below:

BLHI is aware of the forms 81, 82 and 83.

Create and Maintain a Chemical Inventory List. Chemical Inventory List must be available, maintained and updated when necessary at project site. See AF forms 81, 82, and 83

10. DESCRIPTION OF CONTRACTOR'S ENVIRONMENTAL TRAINING PROGRAM

Reference the applicable safety and material handling documentation or protocols below:

11. NON-HAZARDOUS SOLID WASTE DISPOSAL PLAN

Is a Non-Hazardous Solid Waste Disposal Plan available for the current scope of work?

☐ **NO**

☐ **YES, Include submittal number and point of contact person below:**

NO SOIL LEAVES TYNDALL, DON'T MIX SOIL WITH VEGETATION, CONCRETE, WOOD, ASPHALT

☐ **Any off-site disposal of non-soil material anticipated?**
☐ **Any Recycled materials anticipated?**
☐ **Steel** ☐ **Concrete** ☐ **Other C&D**
☐ **Any off-site disposal shall be completely free of soils, contaminated or non-contaminated**
☐ **Maintain all disposal records for all types of material**
☐ **Submittal required for all anticipated disposal facilities**

12. REVIEW OF EPP, DEMOLITION, WASTE MANAGEMENT, HAZARDOUS & NON-HAZARDOUS WORK PLAN SUBMITTALS

- Environmental Protection Plan (01 57 19-3)
- Hazardous/Non-Hazardous Soil & Groundwater Work Plan (02 61 13-1)
- Demolition Plan (02 41 00-1.2)
- Waste Management Plan (01 74 19-1.1)

13. ACTION ITEMS

[redacted]

14. ACKNOWLEDGEMENTS AND EXCEPTIONS

- **Signatures of Representatives**

NOTE: *"Applicable Contract Provisions" and discussions were not intended to be all-inclusive. The provisions and discussions were intended only to highlight important points only, and do not alter or modify any Contract requirement.*

Contractor Representative

Signature: _____

Name/Position: _____

Date: _____

Exceptions taken (x): Yes ( ) No ( )
Please explain any exceptions taken on an attached sheet.

Signature of U.S. Army Corps of Engineers Representative

Signature: _____

[redacted]

Name/Position: _____

Date: _____

ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 36

1. CONTRACT/PURCH. ORDER/ AGREEMENT NO.	2. DELIVERY ORDER/ CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ./ PURCH. REQUEST NO.	5. PRIORITY
W9127820D0026	W9127821F0424	2021 Sep 27	W31XNJ12647034	

6. ISSUED BY CODE W91278
ENDIST MOBILE CONTRACTING DIVISION
109 ST JOSEPH ST
MOBILE AL 36602

7. ADMINISTERED BY *(if other than 6)* CODE
SEE ITEM 6

8. DELIVERY FOB
[X] DESTINATION
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE 078E8 FACILITY
NAME AND ADDRESS
TETRA TECH, INC.
3475 E FOOTHILL BLVD
PASADENA CA 91107-6024

10. DELIVER TO FOB POINT BY (Date) *(YYYYMMMDD)*
SEE SCHEDULE

11. MARK IF BUSINESS IS
[ ] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS
Net 30 Days

13. MAIL INVOICES TO THE ADDRESS IN BLOCK
See Item 15

14. SHIP TO CODE W91278
ENGINEERING DIVISION
[redacted]
P O BOX 2288
109 ST. JOSEPH STREET
MOBILE AL 36628

15. PAYMENT WILL BE MADE BY CODE W916TX
USACE FINANCE CENTER - DISBURSING OFFICE
5722 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER			
	DELIVERY/ CALL	X	This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
	PURCHASE		Reference your quote dated Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS S[redacted]GREES TO PERFORM THE SAME.

Tetra Tech, Inc.	[redacted]	[redacted] Operating Unit President	20210928
NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)

[X] If this box is marked, supplier must sign Acceptance and return the following number of copies: 1

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE
See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* *If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.*

24. UNITED STATES OF AMERICA
TEL: [redacted]
EMAIL: [redacted]
BY: [redacted]
[redacted]
CONTRACTING / ORDERING OFFICER

25. TOTAL $5,837,603.95
26. DIFFERENCES

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE
c. DATE *(YYYYMMMDD)*
d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE

f. TELEPHONE NUMBER
g. E-MAIL ADDRESS

28. SHIP NO.
29. DO VOUCHER NO.
30. INITIALS

[ ] PARTIAL [ ] FINAL

31. PAYMENT
[ ] COMPLETE [ ] PARTIAL [ ] FINAL

32. PAID BY

33. AMOUNT VERIFIED CORRECT FOR

34. CHECK NUMBER

35. BILL OF LADING NO.

36. I certify this account is correct and proper for payment.
a. DATE *(YYYYMMMDD)*
b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

Section B - Supplies or Services and Prices

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0001		1	Job	$5,837,603.95	$5,837,603.95

Base Homestead RI
FFP
W59XQG12035639 F2MUAA1200GW02 Homestead ARB
Phase-1 RI Total: $5,837,603.95 -KYJM20217054PF- AES

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)

See attached Appendix A for all requirements in this Task Order.

“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

FOB: Destination
PURCHASE REQUEST NUMBER: W31XNJ12647034
PSC CD: C211

MAX NET AMT	$5,837,603.95
ACRN AA	$5,837,603.95

CIN: W31XNJ126470340001

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0002		1	Job	$80,625.00	$80,625.00

OPTION

Option 1.1
FFP
The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)

See attached Appendix A for all requirements in this Task Order.

"Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor's own risk."
FOB: Destination
PURCHASE REQUEST NUMBER: W31XNJ12647034
PSC CD: C211

MAX NET AMT	$80,625.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0003		1	Job	$80,625.00	$80,625.00

OPTION

Option 1.2
FFP
The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)

See attached Appendix A for all requirements in this Task Order.

"Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor's own risk."
FOB: Destination
PURCHASE REQUEST NUMBER: W31XNJ12647034
PSC CD: C211

MAX NET AMT	$80,625.00

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0004		1	Job	$203,123.62	$203,123.62
OPTION	Option 1.3 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				

MAX NET AMT	$203,123.62

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0005		1	Job	$203,123.62	$203,123.62
OPTION	Option 1.4 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$203,123.62

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0006		1	Job	$402,902.69	$402,902.69
OPTION	Option 1.5 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				

MAX NET AMT	$402,902.69

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0007		1	Job	$402,902.69	$402,902.69
OPTION	Option 1.6 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$402,902.69

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0008		1	Job	$489,906.82	$489,906.82
OPTION	Option 1.7 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$489,906.82

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0009		1	Job	$489,906.82	$489,906.82
OPTION	Option 1.8 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				

MAX NET AMT	$489,906.82

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0010		1	Job	$43,350.30	$43,350.30
OPTION	Option 1.9 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$43,350.30

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0011		1	Job	$32,404.86	$32,404.86
OPTION	Option 1.10 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$32,404.86

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0012		1	Job	$65,962.43	$65,962.43
OPTION	Option 1.11 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				

MAX NET AMT	$65,962.43

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0013		1	Job	$216,494.68	$216,494.68
OPTION	Option 1.12 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				

MAX NET AMT	$216,494.68

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0014		1	Job	$340,084.49	$340,084.49
OPTION	Option 1.13 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$340,084.49

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0015		1	Job	$340,084.49	$340,084.49
OPTION	Option 1.14 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$340,084.49

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0016		1	Job	$6,350,545.17	$6,350,545.17
OPTION	Option TAFB RI FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				

MAX NET AMT	$6,350,545.17

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0017		1	Job	$56,964.14	$56,964.14
OPTION	Option 4.1 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$56,964.14

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0018		1	Job	$56,964.14	$56,964.14
OPTION	Option 4.2 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$56,964.14

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0019		1	Job	$363,642.47	$363,642.47
OPTION	Option 4.3 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$363,642.47

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0020		1	Job	$363,642.47	$363,642.47
OPTION	Option 4.4 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$363,642.47

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0021		1	Job	$309,642.47	$309,642.47
OPTION	Option 4.5 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$309,642.47

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0022		1	Job	$309,642.47	$309,642.47
OPTION	Option 4.6 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$309,642.47

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0023		1	Job	$446,265.56	$446,265.56
OPTION	Option 4.7 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$446,265.56

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0024		1	Job	$446,265.56	$446,265.56
OPTION	Option 4.8 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$446,265.56

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0025		1	Job	$63,857.37	$63,857.37
OPTION	Option 4.9 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$63,857.37

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0026		1	Job	$33,008.92	$33,008.92
OPTION	Option 4.10 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$33,008.92

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0027		1	Job	$81,600.08	$81,600.08
OPTION	Option 4.11 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$81,600.08

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0028		1	Job	$345,440.02	$345,440.02
OPTION	Option 4.12 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
			MAX NET AMT		$345,440.02

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0029		1	Job	$409,671.63	$409,671.63
OPTION	Option 4.13 FFP The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024) See attached Appendix A for all requirements in this Task Order. “Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.” FOB: Destination PURCHASE REQUEST NUMBER: W31XNJ12647034 PSC CD: C211				
				MAX NET AMT	$409,671.63

Section E - Inspection and Acceptance

INSPECTION AND ACCEPTANCE TERMS

Supplies/services will be inspected/accepted at:

CLIN	INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
0001	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0002	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0003	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0004	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0005	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0006	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0007	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0008	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0009	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0010	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0011	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government

0012	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0013	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0014	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0015	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0016	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0017	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0018	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0019	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0020	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0021	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0022	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0023	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0024	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government

0025	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0026	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0027	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0028	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government
0029	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government

Section F - Deliveries or Performance

DELIVERY INFORMATION

CLIN	DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
0001	POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278
0002	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0003	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0004	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0005	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0006	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0007	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0008	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0009	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0010	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0011	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0012	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0013	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278

0014	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0015	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
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0028	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278
0029	POP 27-SEP-2021 TO 26-SEP-2024	N/A	(SAME AS PREVIOUS LOCATION) FOB: Destination	W91278

Section G - Contract Administration Data

ACCOUNTING AND APPROPRIATION DATA

AA: 021 NA 2021 2021 2021 2020 000 0000 CCS: NA K5 2021 08 8028 49300812000 01076 3230 56DFK6 NA 56DFK6
AMOUNT: $5,837,603.95

ACRN	CLIN/SLIN	CIN	AMOUNT
AA	0001	W31XNJ126470340001	$5,837,603.95

US Army Corps of Engineers
Mobile District

[redacted]

TWO-PHASE DESIGN BUILD ZONE 2
OSS RADAR AND FIRE TRUCK MATERIAL HANDLING EQUIPMENT VEHICLE MAINTENANCE FACILITY

ENVIRONMENTAL MUTUAL UNDERSTANDING MEETING

22 September 2022

CONTRACT NUMBER:	W9127822C0011
CONTRACT TITLE:	**TWO-PHASE DESIGN BUILD ZONE 2 OSS RADAR AND FIRE TRUCK MATERIAL HANDLING EQUIPMENT VEHICLE MAINTENCE FACILITY, TYNDALL AIR FORCE BASE, FLORIDA**
AWARD DATE:	**25 May 2022**
NTP DATE:	**27 June 2022**
CONTRACT DURATION:	750 DAYS
CONTRACT REQUIRED COMPLETION:	**16 July 2024**
CONTRACT AMOUNT:	$43,045,122.00
CONTRACTOR:	The Haskell Company
A/E:	Benham
SENIOR RESIDENT ENGINEER/ACO:	[redacted]
PROJECT MANAGER:	[redacted]
PROJECT ENGINEER/LEAD QA REPRESENTATIVE:	[redacted]
ENVIRONMENTAL COMPLIANCE REG SPECIALIST:	[redacted]
TYNDALL AREA OFFICE MAILING ADDRESS:	U.S. Army Corps of Engineers (TA-F-FF) Flightline Resident Office 301A Iowa Ave, Bldg. 36230 Tyndall AFB, Florida 32403-5601

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13. Action Items 10
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PERTINENT SPECIFICATION REFERENCES

1. Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS (& Appendices)
2. Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL
3. Section 02 41 00 DEMOLITION
4. Section 02 61 13 EXCAVATION & HANDLING OF CONTAMINATED MATERIAL
5. Section 02 81 00 TRANSPORT & DISPOSAL OF HAZARDOUS MATERIALS

1. PURPOSE

To discuss environmental compliance, conservation, and pollution prevention during performance of work associated with this contract.

2. ENVIRONMENTAL SUBMITTAL REQUIREMENTS

Government review is required for all submittals listed below. The following submittals will be required during the performance of this contract:

Pre-construction Submittals:

- Preconstruction Survey
- Solid Waste Management Permit
- Regulatory Notifications and Permits
- Environmental Protection Plan
- Stormwater Notice of Intent and/or Stormwater Pollution Prevention Plan (SWPPP)
- Hazardous & Non-hazardous Soil & Groundwater Work Plan
- Demolition Plan
- Dirt and Dust Control Plan
- Employee Training Records
- Environmental Manager Qualifications
- Hazardous Material Forms (TAFB FORMS 81 & 82) and Safety Data Sheets

Closeout Submittals:

- Stormwater Pollution Prevention Plan Compliance Notebook
- Stormwater Notice of Termination
- Waste Determination Documentation
- Disposal Documentation for Hazardous and Regulated Waste
- Assembled Employee Training Records
- Solid Waste Management Permit
- Hazardous Waste/Debris Management
- Regulatory Notifications
- Sales Documentation
- Contractor Certification
- As-Built Topographic Survey
- Hazardous Material Usage Form (TAFB FORM 83)

[redacted]

3. APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, REGULATIONS, AND PERMIT REQUIREMENTS, ERP, 404/401, INDUSTRIAL WASTEWATER

FEDERAL

Are Federal Regulatory requirements anticipated for the current scope of work?

☐ **NO**

X YES, Classify the coordination required and point of contact person below:

Tyndall AFB is regulated under EPA as a CERCLA Site

STATE (FDEP)

Are State Regulatory requirements anticipated for the current scope of work?

☐ **NO**

☒ **YES**, Classify the coordination required and point of contact person below:

Haskell will need to complete an ERP application that gets approved by USACE, Base Envl, And FDEP.
Dewatering plans are reviewed/approved by USACE, Base Envl and FDEP

☒ GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES (CGP), DEP Form 62-621.300(4)(b)/NOI

☒ GENERIC PERMIT FOR DISCHARGE OF GROUND WATER FROM DEWATERING OPERATIONS (subsection 62-621.300(2), F.A.C.) Dewatering Plan is required, approval by USACE/BASE/FDEP

☒ ENVIRONMENTAL RESOURCE PROGRAM (ERP) PERMIT

☐ WETLANDS 404 APPLICATION (If required)

☐ WASTEWATER APPLICATION FORM 2EG - PERMIT TO DISCHARGE NON-PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO GROUND WATERS Form 62-620.910(6) (Form 2EG) (If required)

☐ WASTEWATER APPLICATION FORM 2ES - PERMIT TO DISCHARGE NON-PROCESS WASTEWATER FROM NEW OR EXISTING INDUSTRIAL WASTEWATER FACILITIES TO SURFACE WATERS Form 62-620.910(7) (Form 2ES)

LOCAL

Are Local Regulatory requirements anticipated for the current scope of work?

☐ **NO**

☒ **YES**, Classify the coordination required and point of contact person below:

Discuss TAFB Requirements: Forms 81, 82 and 83; Dig Permits; Stormwater Pollution Prevention Plan (SWPPP); Any chemical sprays (herbicide, pesticide, fertilizer)

4. PROTECTION OF FEATURES PLAN & HISTORICAL, ARCHAEOLOGICAL, CULTURAL/BIOLOGICAL RESOURCES & WETLANDS PLAN

Are any known Historical, Archaeological, Cultural/Biological Resources & Wetlands plan requirements anticipated for the current scope of work?

☐ **NO**

☐ **YES**, Include Protection of Features Plan required and point of contact person below:

Review the AF 813 form and the findings for the project site
Discuss the Cultural Findings Tips Pamphlet
See AM05, appendix F for the AF 813 and the Environmental Assessment (EA)

5. SITE IDENTIFICATION AND PLANNED ENVIRONMENTAL CONTROLS – SWPPP

The minimum required site documentation for environmental controls (layout and details) with supporting specification(s) are shown below. Need to have a dig permit before the base will approve a SWPPP:

☐ A – Vicinity Map and Site Plan with disturbance boundary and known or potential contamination boundary

☐ B – Notice of Intent Form/Construction General Permit

☐ C – Hydrologic and Hydraulic Design Drawings, Analysis and Flood Prevention Program

☐ D – BMP Materials Details and Data Sheets

☐ E – Inspections Forms

Existing AF/USACE Site Identification

☒ **IRP**

☒ **AFFF**

☒ **NON-IRP/NON-AFFFF (CLEAN)**

☒ **SOILS DISTURBANCE**

☐ Project site net Fill / ☐ Project site net Cut

☒ **DEWATERING**

☒ Dewater Plan Required

Review Environmental overview sheets

6. SEDIMENT AND EROSION CONTROL, DEWATERING MEASURES

Is the SWPPP Plan available for the current scope of work?

☐ **NO**

☒ **YES**

SWPPP plan is required, not submitted yet

6.1 Hauling/Tracking Soils

Don't overload trucks spillage on roads
Be prepared with sweeper to clean up tracked soil on roads
Be prepared to control dust with water truck
Clean sides of truck after loading and dumping
Being so close to the airfield, should be extra vigilant to keep roads cleaned and control dust
Excess contaminated material will be hauled to Site C, currently under construction

7. Permit Submittal and Review Sequence

SWPPP submission requiring USACE/Base Approval >Dig Permit> NOI > Construction General Permit>ERP Application

NOTE: Contractor is encouraged to keep the SWPPP simple, direct and relevant to your project only. The FDEP NOI is available as a simple on-line application. Construction General Permits are issued 48 hours after completion of NOI application

Soils Management:

- What type of soils do you have? IRP, AFFF, Clean, Combination Sites
- Project soil mass balance (excess or deficit)
- Where will your project haul excess soils? Which stockpile? Site C Stockpile Area
- Does Survey support the IRP shape files, do the boundaries make sense
    - Show Maps that have different boundaries for OW217
- All soil movement needs to be tracked (IRP soils need load ticket)-USACE Elaborate
- Reuse soil on site possible?
- Stockpile management or by Others? Haskell Hauls to Site C, they'll be directed where to dump, once dumped, Haskell is done, they don't manage the stockpile area.

Is the Dewatering Plan available for the current scope of work?

☐ **NO**

☐ **YES**, If dewatering plan required:

Dewatering plan will be required. USACE/BASE/FDEP review and approval. Consider discharge points and multiple plans to address different zones (i.e. non-contaminated, IRP, AFFF, AFFF & IRP, etc.)
Guidance is for re-infiltration of contaminated water into plume, very little available area for infiltration
Address the sampling that will be required with dewatering in contaminated sites. (Storage, Sampling, Waiting Period, Discharge) Only use DOD ELAP certified lab

Existing AF/USACE Site Groundwater Identification:

☒ **IRP**
☒ **AFFF**
☒ **NON-IRP/AFFFF (CLEAN)**
☒ **IS GROUNDWATER (GW) SAMPLING AND ANALYSIS REQUIRED?**
☐ **DO ANALYTICAL LIMITS EXCEED 70 PPT?**
☐ **IS ONSITE TREATMENT ANTICIPATED?**
☐

Dewatering plan guidance available for Contractor to review

8. ENVIRONMENTAL MONITORING

8.1 Tracking Soil Movement

1. Track IRP/AFFF soils with a load ticket. Each load will need to be tied to a 400 CY batch of soil and associated analytical
2. Track Clean soils in daily report
3. Clean soils may be hauled to other project sites with proper coordination
4. On site reuse of soils don't require tracking
5. Select a DOD ELAP certified lab for water and soils analytical if required
    a. Recommendation: for analytical testing, have your lab evaluate the data (best equipped to do it); For example, if hauling IRP soils to your stockpile area, need to run TCLP analysis, have the lab evaluate the data to determine the soil does not exhibit any hazardous characteristics. That evaluation of the data is required, and it will make USACE/Base review so much quicker if the lab evaluates the data

6. All suspected IRP soils not intended for reuse at the point of excavation must be hauled to designated IRP stockpile location-Site C/need to run Toxic Characteristics Leaching Procedure (TCLP)
7. If suspected contaminated soils are identified in a clean area of the site, sampling is required to determine soil type (IRP, AFFF)
8. Sampling frequency for soil analysis is 1 sample/400 CY of the planned excavation

8.2 Soil/Water/Permits General Guidance

- Clean soils excavated on project site can be used elsewhere within project site boundary
- Clean soils excavated on project site can be hauled to dedicated clean soil stockpiles with coordination
- Clean soils excavated on site can be brought to other sites with prior coordination
- **No soil is to be removed from Tyndall AFB property, clean or contaminated**
- Clean soils are clean unless show visible signs (or smell) of contamination
- Any contaminated equipment must be decontaminated prior to transporting equipment
- Soils of undetermined contamination must be temporarily staged on 10-mil poly containment barrier
- All imported soils must be certified clean with proper documentation provided by DoD approved lab
- Clean and contaminated soils may not be stockpiled together (comingled)
- All materials approved to leave the site (by Base Environmental CES/USACE) must have complete tracking documentation: Bill of Lading and/or Waste Manifest
- Never haul saturated soils with free water that may potentially escape from truck or vessel
- Potentially contaminated materials sampling must be performed by a qualified consultant
- Off-site soil disposal
    - Must stay on site until approved for off-site disposal
    - Must be covered, do not haul to an off-site stockpile location
    - Only material that tests as hazardous waste allowed to leave site

8.3 PFOA/PFOS Guidance

- All disturbed soil and water must be tested
    - Soil: if tests above 1.3 ppm, must be removed or treated
    - Water: if tests above 70 ppt, must be removed or treated
- In area of known AFFF release, must test soil and groundwater (if dewatering)
- Water that tests below the 70 ppt concentration may be percolated into the existing known plume per the approved dewatering plan.
- Any soils pending analytical results shall be staged and contained on poly sheeting and covered with poly sheeting

***Hazardous soils/water are not expected ***

- Groundwater (GW) greater than 70 ppt concentration must be treated, then returned to the existing plume boundary, Docs also say you can infiltrate anywhere on the base
- Dewatering sampling frequency: 1/10,000 gallons displaced (test for PFAS PFOA)
    - There is more recent guidance that has less restrictive sampling requirements. Contractor to work out with Project Team
- Use a flow meter to track pumped volume
- Groundwater return requirements
- 30 day notification required prior to starting excavation of contaminated material
- Must comply with OSHA 1910.120 Hazardous Waste Workers

9. SPILL PREVENTION AND CONTAINMENT PLAN

Is the Spill and Contamination Prevention available for the current scope of work?

☐ **NO**

☐ **YES**, include submittal number and point of contact person below:

Typically SPCC required if storing greater than 1320 gallons of fuel
Otherwise can address spill management in the EPP

Spill Plan must be available, maintained and updated when necessary, at project site.

10. MAINTENANCE OF HAZARDOUS MATERIAL SDS

Is the Hazardous and Non-Hazardous Materials List available for the current scope of work?

☐ **NO**

☐ **YES**, Include submittal number and point of contact person below:

HP will need to provide AF Forms 81, 82, and 83 as needed

Create and Maintain a Chemical Inventory List. Chemical Inventory List must be available, maintained and updated when necessary at project site. See AF forms 81, 82, and 83

11. DESCRIPTION OF CONTRACTOR'S ENVIRONMENTAL TRAINING PROGRAM

Reference the applicable safety and material handling documentation or protocols below:

The information shared in the ENVL MUM needs to be conveyed to the personnel in the field. They are the
People who will be handling soil and pumping water

12. NON-HAZARDOUS SOLID WASTE DISPOSAL PLAN

Is a Non-Hazardous Solid Waste Disposal Plan available for the current scope of work?

☐ **NO**

☐ **YES, Include submittal number and point of contact person below:**

NO SOIL LEAVES TYNDALL, DON'T MIX SOIL WITH VEGETATION, CONCRETE, WOOD, ASPHALT

☐ **Any off-site disposal of non-soil material anticipated?**
☐ **Any Recycled materials anticipated?**
☐ **Steel** ☐ **Concrete** ☐ **Other C&D**
☐ **Any off-site disposal shall be completely free of soils, contaminated or non-contaminated**
☐ **Maintain all disposal records for all types of material**
☐ **Submittal required for all anticipated disposal facilities**

13. REVIEW OF EPP, DEMOLITION, WASTE MANAGEMENT, HAZARDOUS & NON-HAZARDOUS WORK PLAN SUBMITTALS

- Environmental Protection Plan (01 57 19-3)
- Hazardous/Non-Hazardous Soil & Groundwater Work Plan (02 61 13-1)
- Demolition Plan (02 41 00-1.2)
- Waste Management Plan (01 74 19-1.1)

14. COC's: available from shared spreadsheet

15. ACTION ITEMS

[redacted]

16. ACKNOWLEDGEMENTS AND EXCEPTIONS

- **Signatures of Representatives**

NOTE: *"Applicable Contract Provisions" and discussions were not intended to be all-inclusive. The provisions and discussions were intended only to highlight important points only, and do not alter or modify any Contract requirement.*

Contractor Representative

Signature: _____

Name/Position: _____

Date: _____

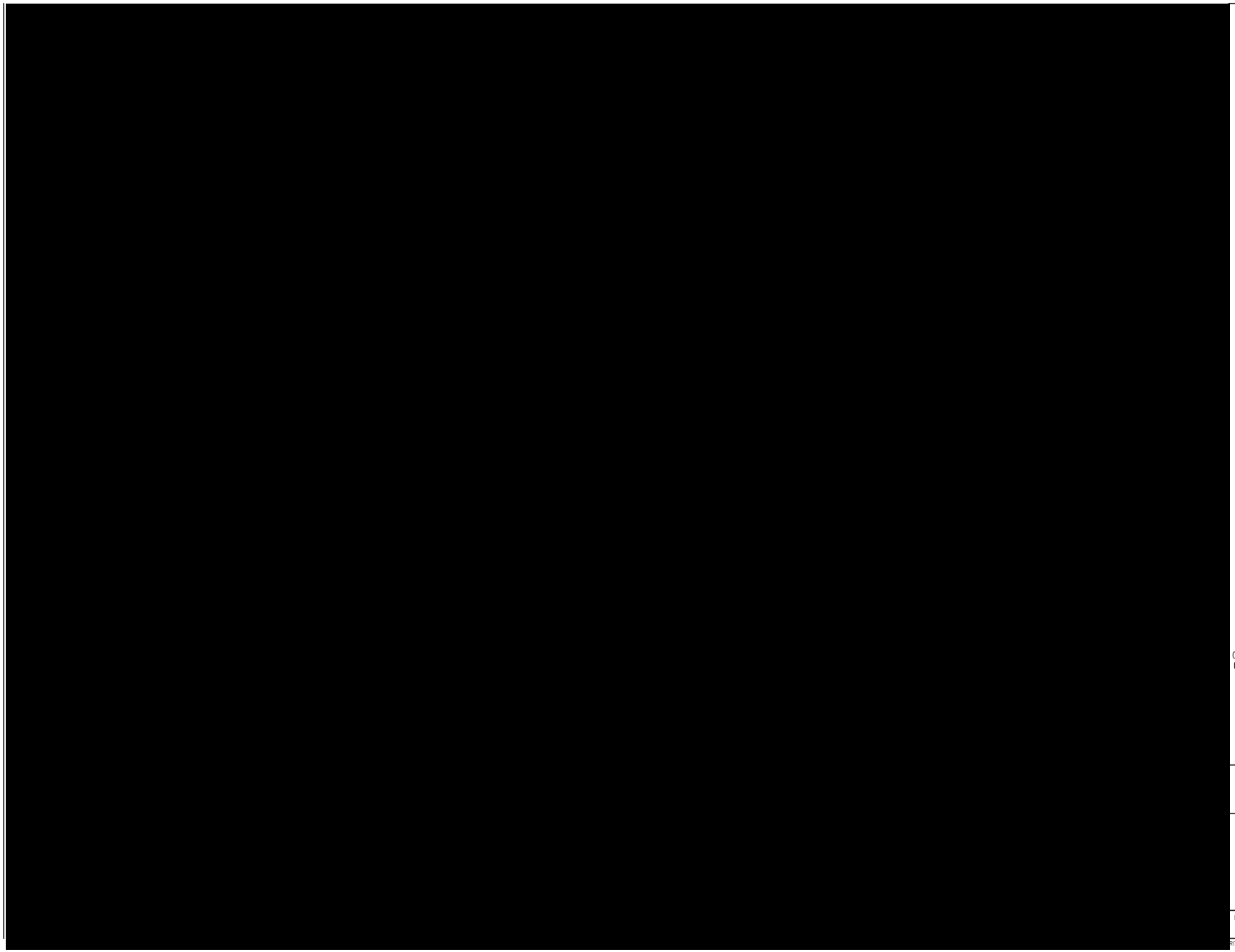
Exceptions taken (x): Yes ( ) No ( )
Please explain any exceptions taken on an attached sheet.

Signature of U.S. Army Corps of Engineers Representative

Signature: _____

Name/Position: _____

Date: _____



LEGEND

- OW217 ERP Site Boundary
- SS026/SS020 ERP Site Boundary
- SS015 ERP Site Boundary
- TU205 ERP Site Boundary

N

0 450 900

Feet

SOURCE:
Tyndall AFB, 2016

Coordinate System: NAD 1983 StatePlane Florida North FIPS 0903 Feet
Vertical Coordinate System: North American Vertical Datum 1988 Feet

WESTON SOLUTIONS

FIGURE 1-2
[redacted]
TYNDALL AFB, FLORIDA

DATE	PROJECT NO	SCALE
JANUARY 2019	20077.490.500	AS SHOWN

R:\TDSR\mxd\SS015\Figure 1-2[redacted] mxd 9:38:32 AM 1/18/2019 beckleyp

It's the Law!

Archaeological sites on Tyndall Air Force Base are protected from damage and destruction by the Archaeological Resources Protection Act, the American Antiquities Act, and many other laws and regulations. Failure to stop work and report an inadvertent discovery is illegal, and can lead to a ban on base access, contract loss, fines, and jail time.

Cultural Resources Program

The Tyndall Cultural Resources Program helps the base comply with the numerous laws and regulations that govern the preservation and management of archaeological sites, historic buildings, and historic cemeteries located on the base. The program reviews all construction projects conducted for Tyndall, and consults with six Native American tribes and the State of Florida on the effects of these undertakings. The program also surveys and documents the location of historic resources, monitors the condition of these properties, and provides training and educational outreach about their management and preservation.

TYNDALL AIR FORCE BASE

TRAINING FOR THE INADVERTENT DISCOVERY OF CULTURAL RESOURCES

CULTURAL RESOURCES PROGRAM
325th CIVIL ENGINEER SQUADRON

What is an INADVERTENT DISCOVERY?

An **INADVERTENT DISCOVERY** occurs when a project unearths evidence of past people or extinct animals. This evidence is called an **ARCHAEOLOGICAL SITE**. Archaeological sites can be found anywhere on base, above and below the ground.

A thick layer of shells may indicate an archaeological site.

Will I discover an ARCHAEOLOGICAL SITE?

Tyndall is required by law to search for and document archaeological sites before any projects occur. Projects are planned to avoid archaeological sites so discoveries are **RARE**.

How do I RECOGNIZE an inadvertent discovery?

Discovered materials are often thousands of years old, and can be hard to recognize. Signs that you may have encountered an archaeological site include

- **Unusual or abrupt changes in soil color, especially to rich black soil.**
- **Thick layers or scatters of seashells, angular rocks, or flat rock-like objects.**
- **Layers or scatters of broken dishes, old bottles, or bricks.**
- **Burned soil or ash.**
- **Large timbers or cut wood.**
- **Bones or teeth**

Need to report a discovery?

Tyndall Cultural Resources
Program Phone: 850-283-2713
Email: jose.cintron.1@us.af.mil

Need more information?

Inadvertent Discovery Training
(website link pending)

What should I do if I FIND something?

STOP all ground-disturbance and **REPORT** the discovery to your supervisor, contract representative, or unit commander. Your contact should immediately notify the Cultural Resources Program of the discovery.

An example of an abrupt change in soil color.

When can I RESUME work?

The Cultural Resources Program will send an archaeologist to view the discovery, and determine if it requires documentation.

Work can often resume **QUICKLY** outside of a perimeter set by the archaeologist.

AFFF Soil and Groundwater Sampling

Tyndall Air Force Base, Florida

April 2021

AFFF Soil and Groundwater Sampling

Tyndall Air Force Base, Florida

April 2021

Prepared By:
Arcadis U.S., Inc.
701 Town Center Drive, Suite 600
Newport News
Virginia 23606-4296
Phone: 757 873 8700
Fax:

Prepared For:
USACE – Mobile District
Contract No. W91278-D-0022
Delivery Order No. W9127820F0348

Our Ref:
30055726.0003

[redacted]

[redacted]
Program Manager

[redacted]

[redacted]
Technical Manager

[redacted]

[redacted]
Task Manager

[redacted]

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 3

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
	18-Mar-2022	W31XNJ12647034	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
ENDIST MOBILE CONTRACTING DIVISION 109 ST JOSEPH ST MOBILE AL 36602	W91278	**See Item 6**	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
TETRA TECH, INC. 3475 E FOOTHILL BLVD PASADENA CA 91107-6024		9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
	X	10A. MOD. OF CONTRACT/ORDER NO. W9127821F0424
	X	10B. DATED (SEE ITEM 13) 27-Sep-2021

CODE 078E8 FACILITY CODE

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer ☐ is extended, ☐ is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

☐ A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

☐ B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

☐ C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

X D. OTHER (Specify type of modification and authority)
FAR 52.432-1 Alt III Changes Fixed Price

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
Modification Control Number: k5ct9snb22969

The purpose of this modification is to exercise Option 16. All other terms and conditions remain unchanged.

IN CONSIDERATION OF THIS MODIFICATION AGREED TO HEREIN AS A COMPLETE EQUITABLE ADJUSTMENT FOR THE ABOVE CHANGES, THE CONTRACTOR HEREBY RELEASES THE GOVERNMENT FROM ANY AND ALL LIABILITY UNDER THIS MODIFICATION FOR FURTHER EQUITABLE ADJUSTMENTS ATTRIBUTABLE TO SUCH FACTORS OR CIRCUMSTANCES GIVING RISE TO THE PROPOSAL FOR ADJUSTMENT.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) TEL: EMAIL:	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION A - SOLICITATION/CONTRACT FORM

The total cost of this contract was increased by $6,350,545.17 from $5,837,603.95 to $12,188,149.12.

SECTION B - SUPPLIES OR SERVICES AND PRICES

CLIN 0016
The option status has changed from Option to Option Exercised.

SECTION F - DELIVERIES OR PERFORMANCE

The following Delivery Schedule item for CLIN 0016 has been changed from:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

To:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 18-MAR-2022 TO 17-MAR-2025	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

SECTION G - CONTRACT ADMINISTRATION DATA

Accounting and Appropriation

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was increased by $6,350,545.17 from $5,837,603.95 to $12,188,149.12.

CLIN 0016:

AB: 021 NA 2022 2022 2022 2020 000 0000 CCS: NA K5 2022 08 8028 49300812000 01076 2510 551DDG NA 551DDG (CIN 00000000000000000000000000000000) was increased by $6,350,545.17 from $0.00 to $6,350,545.17

The contract ACRN AB has been added.

The CIN 00000000000000000000000000000000 has been added.

(End of Summary of Changes)

The Lane Construction Corporation

ZONE 4.1
OVERALL DEWATERING PLAN
TYNDALL AFB, FLIGHT SIDE
TU205, OW217, SS026, SS015, AFFF

For Construction Activities:
Tyndall Air Force Base Design and Construction Site Development and Utilities Phase I & II

Panama City, Florida

US Army Corps of Engineers Mobile District

Solicitation No.: W91278-20-R-0007
Contract No.: W91278-22-C-0017

MARCH 2024 REV.3

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Abbreviations and Acronyms

AFB	Air Force Base
AFF	Aqueous Film Forming Foam
AST	Aboveground Storage Tank
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CVOCs	Chlorinated Volatile Organic Compounds
ESHGW	Estimated Seasonal High Groundwater
FDEP	Florida Department of environmental Protection
GCTLs	Groundwater Cleanup Target Level
HDD	Horizontal Directional Drilling
IRP	Installation Restoration Program
LNAPL	Light Non-Aqueous Phase Liquid
MH	Manhole
OU	Operable Unit
OWSs	Oil/Water Separators
PAHs	Polycyclic Aromatic Hydrocarbons
PFOS	Per-Fluorooctane Sulfinate
PFOA	Per-Fluorooctane Acid
POL	Petroleum, Oil, and Lubricants
SRI	Supplemental Remedial Investigation
TRPH	Total Recoverable Petroleum Hydrocarbons
UFP-QAPP	Uniform Federal Policy for Quality Assurance Project Plan
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tank

Appendices

Appendix A: Maps and Locations
Appendix B: Geotechnical Data
Appendix C: Figures and Specifications
Appendix D: Analytical Results

Introduction

Lane Construction Corporation (Lane) was awarded Contract No. W9127822C0017 (Zone 4.1), the Tyndall Air Force Base (AFB) Two Phase Design and Construction Site Development and Utilities Phase I & II (Project). The Project consists of design and construction of roadways, fencing, lighting, parking, water, wastewater, electrical, storm water, communications and gas throughout Tyndall AFB, Florida. The project includes all utilities, site improvements, pavements, detection/protection features, security enhancements and other supporting work necessary to make a complete and usable facility.

Tyndall Air Force Base has established several active Installation Restoration Program (IRP) and Aqueous Film Forming Foam (AFFF) study areas within the boundary of the following construction activities: SS015, SS026, OW217, TU205, FT017, FR038, SR170, SR179, LF006, SA181, OW047, PL 511, AFFF 1, AFFF 5, Tyndall Substation Arsenic Plume and the Arcadis Sampling Data. Associated maps have outlined areas of contamination and their correlated 500' buffer. Areas outside of these boundaries are assumed to be clean and shall be treated as such unless otherwise observed.

This Dewatering Plan has been prepared in accordance with the requirements of Paragraph 6.8.1, Section 01 10 10, Paragraph 3.3.3, Section 02 61 13, and the Installation Restoration Program and Aqueous Film Forming Foam Guidelines for Tyndall MILCON-rebuild.

This Plan is intended to cover all work associated with Zone 4.1 sanitary sewer, stormwater, firewater, and communications within contamination boundaries OW047, TU205, OW217, SS026, SS015, AFFF, and the associated 500' buffer. The dewatering system is designed to prevent loss of ground as water is removed, avoid inducing settlement or damage to existing facilities, completed work, or adjacent property, and relieve artesian pressures and resultant uplift of excavation bottom. A Groundwater Monitoring Plan and Settlement Monitoring Plan have been submitted under separate cover.

Work associated with GCEC electrical, or water will require additional coordination in order to utilize any procedure or discharge location described in this plan.

Project Description

Fast Track 3

[redacted]

Fast Track 4

[redacted]

Standard Design Package

The Standard Design Package will complete all remaining systems not delivered in the four Fast Track Packages. This will include the remaining electric distribution system network and equipment, electric switchyard, communications network components and connections, flood hardening design for the 1700 Area Lift Station (i.e., Final Lift Station), domestic and fire water distribution system components in the Support District, the planned Water Booster Pump Station Facility, stormwater management, final site grading, landscaping plans, roads, sidewalks, multi-modal paths, street and facility lighting systems, and other remaining items specified in the project requirements.

This dewatering plan has been developed using the groundwater analytical data provided in the Uniform Federal Policy for Quality Assurance Project Plan (UFP-QAPP), Supplemental Remedial Investigation (SRI) Work Plan approved by the U.S. Environmental Protection Agency (USEPA) and the Florida Department of environmental Protection (FDEP) on June 16, 2022. In addition to the analytical data provided Arcadis AFFF Soil and Groundwater Sampling Report for Tyndall Airforce Base dated February 2021. Untreated discharge will only occur in areas of similar or higher levels of contaminant concentration from the point of generation, or if located within the 500' buffer, as close to the point of generation as possible. Otherwise, all groundwater is intended to be treated through previously approved methods.

In accordance with the Installation Restoration Program and Aqueous Film Forming Foam Guidelines for Tyndall MILCON-Rebuild 08 November 2021, removal and/or treatment of any soil/water media will occur if tests for PFOS/PFOA above the EPA lifetime health advisory (LHA)/Air Force approved reference dose (RFd) standard of 2E-05 milligrams per kilograms-day (e.g., 70 ppt water or 1.30 mg/kg soil) occur. Any liquid concentration of PFOA/PFOS below the EPA lifetime health advisory concentration may be reinserted into the ground within the boundaries of Tyndall AFB.

Results from previous pilot studies for PFOS/PFOA will be utilized as part of this plan to determine treatment requirements. Sample results indicate that there are multiple locations that measure above 70ppt PFOS/PFOA and all water is intended to be treated. In addition, samples have been collected from IRP SS026 to analyze treatment success for other IRP contaminants of concern. All results have reported analytes below the detectable limit post treatment.

Dewatering Procedures

There will be three methods for dewatering depending on the existing conditions and utilities. The methods will include Well Point System, a Horizontal Trench Sock Drain, or a sump pump. Sock drain dewatering systems consist of perforated pipes installed with a specially designed trenching machine that lays the socks at a depth of around 18-20 feet. Wellpoint dewatering systems are the most popular dewatering method for excavations up to 18 feet deep. They consist of a shallow well, or a series of wells, placed at strategic locations around the site. Water is pumped to the surface through a connected pipeline. For either method, a 6-12" rotary wellpoint pump will be used. The 12" pump is capable of pumping at a maximum of 400cfm, however, only 100cfm (approximately 550GPM) will be pumped to prevent the sock from collapsing or clogging the well points. A sump will only be utilized if the groundwater infiltration is very low. A perforated sump will be installed at the lowest point of the excavation with a 2" pump to maintain a dry base.

Each system that has not already been installed or completed, will follow similar installation practices as previously approved. However, the intent of this plan is to treat all water regardless of the IRP or AFFF contaminants or concentrations. The dewatering method will be installed from manhole to manhole for both sanitary and stormwater work to minimize the area that is actively being dewatered. Work will be active in multiple locations across the flight line and a minimum of 2 systems will be running at any point in time. A system will consist of a section of well points, sock that extends from one manhole to the next in sequence, or a sump and a pump. Each active work area will have access to a discharge pipe that will convey the groundwater to a treatment system.

Each system is intended to run for 3-5 days to allow for installation, compaction, and testing of the site conditions to ensure the pipe is installed in compliance with the specifications. This duration may be affected by weather or unforeseen conditions and will be adjusted in the field. It is likely that in some locations, the groundwater will not infiltrate the excavation during the duration of the installation and only a sump pump will be needed to maintain a dry excavation. This will reduce the anticipated volume of discharge significantly. There may also be periods of time that no dewatering is taking place.

Wellpoint System:

- A wellpoint system consists of a series of closely spaced small diameter vertical water abstraction points (wellpoints) that are installed in the ground and connected via a manifold system (header system) to a special type of pump (wellpoint pump) to temporarily lower the groundwater level of an excavation site in advance of excavation operations in order to provide stable working conditions.
- A wellpoint pump is required to operate on wellpoint systems. The wellpoint pump must have the ability to produce high vacuum and handle large amounts of air and water simultaneously to successfully pull groundwater through a wellpoint system and transport it far enough away from the site to avoid recirculation. The pump must be able to operate continuously twenty-four hours a day without interruption for the entire duration of the project to keep the groundwater out of the excavation.
- Header valves are control valves installed in the header system for tuning (throttling) the flow of water and air from the wellpoints. Tuning is the procedure of balancing the water flow from the wellpoints so that each draws its maximum potential water yield without an excessive amount of air.
- Wellpoint spacing is based on several factors including aquifer conditions and overall wellpoint system design. Wellpoint spacing must be compatible with the spacing of the connection points on the header pipe. Typical wellpoint spacing is 3 feet.

Sock Drains:

- Sock dewatering systems are a series of fabric-wrapped perforated pipes that are installed horizontally in the ground using a specialized trenching machine and connected to a wellpoint pump to remove groundwater for construction excavation operations.
- A wellpoint pump is required to operate on sock drain systems. The wellpoint pump must have the ability to produce high vacuum and handle large amounts of air and water simultaneously to successfully pull groundwater through a sock drain system and transport it far enough away from the site to avoid recirculation. The pump must be able to operate continuously twenty-four hours a day without interruption for the entire duration of the project to keep the groundwater out of the excavation.

Sump System:

- A dewatering sump will be used in the case that groundwater infiltration is very low flow. This will consist of a perforated sump placed at the lowest area of the excavation. A 2” pump will be inside the sump and will run continuously until the area is backfilled and compacted.

Conveyance System

- The conveyance system will consist of a combination of PVC and discharge hoses. The pipe will be either be installed in a 2’ trench or along the surface. If located on the surface, it will be secured in place with stakes and wire to prevent excessive movement from flow changes. Hoses will be utilized for shorter distances and from the pump to the conveyance PVC pipe. Once installed the PVC will be tested using a low-pressure air test to check for leaks.

Inspection and Maintenance

1. Visual inspections of earthen embankments and discharge flumes or swales shall be performed to prevent washout, scouring, and embankment blowouts. Areas subject to erosion shall be grassed or covered with some type of erosion control material.

2. If used, sediments accumulated in sediment traps and basins shall be removed as necessary to maintain treatment efficiency. Sediments removed during the maintenance of a dewatering device shall be handled in accordance with the BMPs developed for the site.

3. Periodic cleaning of tanks and associated piping and equipment shall be performed based on visual inspection or reduced flow.

4. Filter bags shall be inspected for proper performance at a reasonable frequency based on amount of use. The bag shall be replaced when it no longer filters sediments or passes water at a reasonable rate.

5. Filters shall be operated and maintained in accordance with manufacturer's recommendation especially with respect to cleaning, backwashing, and replacing overused filter media to ensure an acceptable level of efficiency.

6. Maintain records of weekly inspections and maintenance activities required to maintain treatment efficiency.

7. Daily PVC inspections will occur while dewatering is active to check for leaks or malfunctions in the PVC pipe that is installed on the ground surface. Dewatering activity will be stopped immediately if a leak or malfunction is detected.

Scope of Work:

Sanitary Sewer:

[redacted]

Fire Water Lines:

[redacted]

Stormwater East Box Culvert:

The East stormwater box culvert system extends approximately 3,725 linear feet that ultimately will drain to the Zone 6 East Pond on the Flight Side. The East stormwater culvert installation will begin on the far east end of the project area at the transition to Zone 6. A 6'x6' Box culvert will be installed from east to west for approximately 1,670' to MH404 and transition to a 4'x4' box culvert for approximately 1,750' to MH273 and will transition to 36" RCP to terminate at MH272B and CB273C. The culvert will be approximately 16' deep at the east end and increases in elevation to approximately 11' deep at the west termination point. Installation is expected to occur at a rate of 32' per day. Dewatering is expected to occur for 2 months for the installation of the East box culvert. Dewatering will occur in sections of 100-200' at a time and well points will be decommissioned as the project area is backfilled to prevent unnecessary dewatering.

Stormwater West Box Culvert:

The West stormwater box culvert will tie into Zone 1 on the western point and run approximately 1,550LF to the east. The box culvert will be installed from west to east with approximately 860' of 6'x4' box culvert from TS.1 to TS.2 and will transition to approximately 315' of 48" RCP from TS.2 to MH26 and transition to approximately 105' of 36" RCP from MH26 to MH28 and transition to approximately 220' of 18" RCP from MH28 to the termination point at MH29. The culvert will be approximately 6' deep at the east end of the culvert and decrease in elevation to approximately 9' deep at the west tie-in point. Installation is expected to occur at a rate of 32' per day. Dewatering will occur in sections of 100-200' at a time and well points will be decommissioned as the project area is approved and backfilled to prevent unnecessary dewatering.

Stormwater RCP:

Additional stormwater RCP will be installed along the utility corridor and along new Alabama Ave. The stormwater conveyance system was designed to provide connection points to existing stormwater conveyance systems, requiring the removal and/or replacement of existing stormwater conveyance components. The average depth of the RCP will be between 5-8' and will vary in size from 18" to 36" RCP pipe. Installation is expected to occur at a rate of 32' of RCP plus a manhole structure per day. Dewatering will occur in sections of 100-200' at a time and well points will be approximately 10' deep. The well points will be decommissioned as the project area is approved and backfilled to prevent unnecessary dewatering.

Communications:

[redacted]

Dewatering Infiltration Ponds:

This Overall Plan is intended to streamline the dewatering discharge locations, reduce the number of infiltration ponds, and reduce the potential for unforeseen flooding or delay in installation for the Scope of Work described above.

There will be two infiltration ponds utilized from previously approved Dewatering Plans, Pond 546 (footprint of demolished Building 546) and Pond FT017. These locations have proven to infiltrate at a rate that can accommodate the volume of water produced from dewatering. The previously approved ponds, Pond A-E and Ponds OW047 will still be utilized as a contingency plan if maintenance or repairs need to be conducted on the conveyance or treatment system. An additional contingency pond is proposed between stormwater manholes CI297C.1 and CB.E8 to provide an infiltration area for OW217, Pond OW217 see Diagram A "Backup Infiltration Pond Locations".

All of the work proposed in the Zone 4.1 contract on the Flight Line is located within a similar depth, between 4-16', and runs linearly east to west. Dewatering methods as described previously will be installed no deeper than 2' below the required grade, approximately 18'. Based on the "Technical Data Summary Report and Updated Conceptual Site Model" for all IRP Zones dated July 2019, the Shallow Surficial Aquifer is defined in the general area of the flightline where a linear topographic high exists coincident with Highway 98 extending roughly parallel with the Gulf of Mexico. This topographic high creates a flow divide in the Shallow Surficial Aquifer that impacts the regional direction of groundwater flow. For the purpose of reporting contamination migration, the shallow surficial aquifer was informally recognized and ranges from a depth of 1 to 24' bgs, however, the Surficial Aquifer (shallow, intermediate, and deep) is generally recognized as a single hydrostratigraphic unit across the flightline. The dewatering activity is proposing to remove groundwater from the same depth of the surficial aquifer across the project and allowed to infiltrate at the same surficial aquifer.

In addition, according to this report, "*Across the flightline, groundwater flow in the shallow zone is generally toward the northeast except along the eastern end of the flightline at Site TU205 where flow is toward the east-southeas*t". The locations of the infiltration ponds are located in areas that the groundwater would naturally flow. It is unlikely that the increased volume within a concentrated area will infiltrate into the intermediate surficial aquifer due to low average seepage velocity within the Shallow Surficial Aquifer. Per the Technical Data Report, "*Groundwater seepage velocity estimates were calculated using the RI slug test results and site-specific hydraulic gradient data. Using the RI slug test results, the groundwater seepage velocity for the shallow zone ranged from 10.2 to 182 feet per year (ft/yr) with an average seepage velocity of 100 ft/yr based on the RI data.".* Based on this information, it is likely that the water will infiltrate and flow laterally along the confined layer within the shallow surficial aquifer.

In conclusion, the groundwater extracted at the locations and depths proposed will remain within the same aquifer post treatment through surface infiltration. In addition, due to the soil conditions consisting of loose sands and the temporary nature of the dewatering activity, groundwater mounding affects will be minimal.

Pond 546

A temporary pond within IRP Boundary SS026 was previously approved under "Dewatering Plan(FT3)_Sanitary", Pond 546. Pond 546 is located in the footprint of recently demolished Building 546.

Permeability with Pond 546 is around 33.7ft/day (Appendix B, Bore B-11). The initial groundwater depth is around 6.4' and the ESHGW depth is 5.2'. Pond 546 will be approximately 100'x300' and 5' berms with 2' cut. The berms will be wrapped with visqueen poly liner from the inside to the outside and buried for additional support. The pond will be accessible with the skid steer around the entire perimeter for maintenance, approximately 15' from the silt fence. The pond area will be surrounded by silt fence. Another pump will be installed at this pond to convey water to FT017 if the pond reaches 12" from the top of berm.

This pond has been constructed utilizing existing soil to create berms. These berms are approximately 10' wide at the base, 5' wide at the peak, and approximately 5' in height. The slopes are compacted and covered with polyethylene plastic liner from the toe of the slope to the top of berm. These berms are inspected daily to identify areas of seepage, erosion, or degradation. Based on the current discharge rate, the pond has not reached more than 16" from the top of berm. Based on the construction of the pond, it is anticipated that the berms will be stable up to 12" from top of berm.

Pond FT017

A temporary infiltration pond within IRP Boundary FT107 was previously approved under "Dewatering Plan (FT3)_Stormwater". This pond (Pond FT017) is located at the east end of the East stormwater culvert where Zone 6 will tie-in to the stormwater system. There are seven (7) monitoring wells near the proposed temporary infiltration pond layout. The pond will be built to avoid blocking access to these monitoring wells and to protect them from infiltration. The berms will be created utilizing the site's surface soil and additional clean soil from one of the four Regional Stormwater Ponds from the Support Side of the AFB. The box culvert will no longer be used to convey water to this pond. Instead, a separate pipe or hose will be installed to prevent comingling of stormwater and groundwater.

Permeability within Pond FT017 is between 32.7-17.9ft/day (Appendix B, Bore B-120 & B-121). The initial groundwater depth is between 5' and 3.2' and the ESHGW depth is between 3.5' and 1.7'. Pond FT017 will be approximately 60,000sf and a secondary pond may also be created as a contingency pond in the event of inclement weather for overflow that will be approximately 40,000sqft. These ponds will be constructed utilizing the same method as Pond 546. Existing soil will be used to create berms. These berms are approximately 10' wide at the base, 5' wide at the peak, and approximately 5' in height. The slopes are compacted and covered with polyethylene plastic liner from the toe of the slope to the top of berm. Based on the construction of the pond, it is anticipated that the berms will be stable up to 12" from top of berm. These berms will be inspected daily to identify areas of seepage, erosion, or degradation. Upon completion of the box culvert, these temporary ponds will be restored to their original state.

In order to manage the water, there will be 3 Systems constructed of 6” Schedule 40 PVC pipe or 6” discharge hose installed along the utility corridor within Zone 1, along the West Box Culvert, and within the East Box culvert. This will average a total of approximately 4,000 linear feet of temporary PVC conveyance pipe. All three system will allow the groundwater to be treated prior to being conveyed to an infiltration pond.

System 1 will be constructed through the utility corridor to minimize potential disturbance within Zone 1. The PVC pipe will be installed 2’ deep below the ground surface to allow traffic operations to continue within Zone 1. The PVC will have tie in points at every other manhole location to attach the dewatering pump discharge hose. The water will be pumped to a treatment system as described in the Treatment Plan located near Lift Station 1. Water will accumulate in a series of 4-6 Frac Tanks and be processed through the treatment system. From the treatment system, the water will be pumped to Pond 546.

System 2 will be constructed from Lift Station 1 towards the East to the end of the West Box Culvert and Sanitary Sewer to MH701S. This PVC will have tie in points every 100-200’ and be located between the sanitary and stormwater to allow both scopes of work to use the same discharge system. The water will be pumped to a treatment system as described in the Treatment Plan located on Miami Ave. Water will accumulate in a series of 2-4 Frac Tanks and be processed through the treatment system. From the treatment system, the water will be pumped to Building 546.

System 3 will be constructed from the East Box Culvert to the east end of the Zone 4.1 project limits. The PVC will be installed along the east box culvert 2’ deep and will have tie in points at each stormwater manhole location. The water will be pumped to the east to a treatment system as described in the Treatment Plan located at the FT017 Pond. Water will accumulate in a series of 4-6 Frac Tanks and be processed through the treatment system. From the treatment system the water will be pumped to the FT017 Pond.

A backup conveyance pipe will also be installed from Pond 546 that runs parallel to US Highway 98 to convey treated water to FT017 Pond. See Diagram A for System layout and proposed work. The pipes will be inspected weekly to ensure the connections do not need repair.

Contaminants of Concern:

There are six IRP boundaries that will be encountered throughout the installation of utilities for Zone 4.1, SS015, SS026, OW217, TU205, FT017, and OW047. The values shown in this chart are the highest concentrations collected for groundwater recorded Technical Data Summary Report and Updated Conceptual Site Model for Site SS015, SS026/SS020, OW217, TU205, and FT017. Concentrations reported for OW047 were recorded in the 2 June 2023 Revision 2, No Action Proposed Plan Site OW047.

Concentrations reported do not necessarily correspond to the location of the proposed work, See Diagram B for a map identifying the work limits in proximity to the monitoring wells and their concentrations for various contaminants.

COC	SS015	SS026	OW217	TU205	FT017	OW047
1, 2, 4 Trimethylbenzene	239	18.13	31.5	59.4	31	-
1, 3, 5 Trimethylbenzene (Mesitylene)	148	-	13.1	25.3	15	-
Benzene	33.5	51.29	-	-	47.4	-
Ethylbenzene	164.64	48.09	263	-	-	-
Isopropylbenzene	28.3	98.51	8.5	3.5	31	-
Napthalene	137	159.41	120	39.8	140	-
Petroleum Hydrocarbons	8100 J	-	-	10100	-	-
Xylenes, Total	1173.38	204.61	82.2	32.5	-	-
Dieldrin	1.5	-	-	-	0.045 J	-
P,P' - DDD	0.34	-	-	-	-	-
Chlordane	4.7	-	-	-	-	-
Sum Chlordane	5.87	-	-	-	-	-
Aluminum	3540	3710	-	-	-	358
Iron	1400	3204.91	-	-	-	320
Arsenic	24	14.1	-	-	-	-
Lead	27.3	-	42.6	-	-	-
Toluene	-	2173.47	40.7 B	-	-	-
Dibenz (A,H) Anthracene	-	0.019 J	-	0.035 B	-	-
Trichloroethylene (TCE)	-	231	11.4	33.2	-	-
2-Methylnaphthalene	-	37.46	-	-	-	-
Vinyl Chloride	-	45.8 J	10.1	21.9	9	-
Manganese	-	75.8	-	-	-	-
1, 1 Dichloroethane	-	-	65.5	-	-	-
CIS – 1, 2 - Dichoroethylene	-	-	796	81.7	-	-
Tetrachloroethylene	-	-	3.2	-	-	-
M, P – Xylene	-	-	79.4	-	-	-
TRHP	-	-	-	-	-	-
Benzo(a)pyrene	-	-	-	-	-	-
Cobalt	-	-	-	-	-	1.0 U
Vanadium	-	-	-	-	-	1.5 J
Aldrin	-	-	-	-	0.009	-
PFOS	-	-	-	-	0.3	-
Sum PFOA + PFOS	-	-	-	-	0.3	-

Treatment, Sampling, and Reporting:

All groundwater that is removed from the project area will be processed through a treatment system. The treatment system consists of an 8-bag filter pot and two HPAF-5000 vessels equipped with Filtrasorb 400 granular activated carbon (see attached specifications).

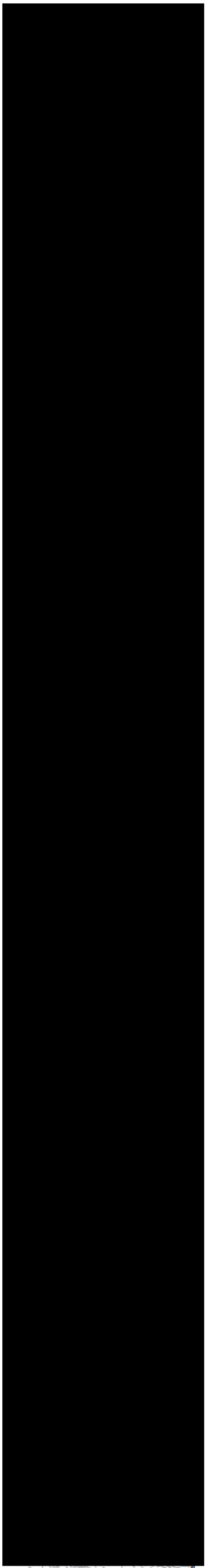
Upon startup of each system, the water will be sampled twice a week for the first two week of operation and be reduced to once every two weeks for the duration of the dewatering activity. The water will be analyzed for 8260 VOCs, 8270 SVOCs, 8081 Pesticides, FLPRO TRPH, 6010 Metals, and 537 PFAS/PFOA which will analyze all the known contaminants of concern listed above. The manufacturers expect a carbon filter to last approximately 10 months based on the treatment of the highest concentration of PFAS/PFOA (10,000ng/L) at a constant rate of 200gpm. The treatment system will not be running constantly at a rate of 200gpm, and the concentration of PFAS/PFOA varies greatly across the flightline. The lifespan of the carbon is anticipated to last 10 months but will be replaced sooner if sample results show a significant increase in any of the contaminants of concern.

Water samples are anticipated be analyzed and reported within 5-7 business days of receipt for VOCs, SVOCs, FLPRO, Pesticides, and Metals. It takes approximately 3 weeks for the DoD ELAP certified lab to analyze and report PFAS/PFOA EPA-537. In the event that the sample results are above the FDEP GCTLs, the pumps will be turned off immediately and the carbon will be replaced. Replacement carbon filters will be delivered and installed within 48 hours. After carbon replacement, the water will be sampled twice a week for two weeks and return to once every two weeks. Sample results will be provided to USACE as soon as they are received.

Shallow Surficial Aquifer Exceedances within 125' Proposed Work

COC	SS026	SS015	OW217	TU205	FT017
1, 2, 4 – Trimethylbenzene	N/A	239ug/L	31.5ug/L	N/A	31 ug/L
1, 3, 5 – Trimethylbenzene (Mesitylene)	N/A	148ug/L	13.1ug/L	N/A	15ug/L
Isopropylbenzene (Cumene)	N/A	28.3ug/L	1.1ug/L	13.2ug/L	2.8ug/L
Napthalene	N/A	137ug/L	58.3ug/L	93.4ug/L	56ug/L
Tetrachloroethylene (PCE)	N/A	N/A	3.2ug/L	N/A	N/A
Trichloroethylene (TCE)	41.4ug/L	N/A	11.4ug/L	33.2ug/L	N/A
CIS–1,2 Dichloroethylene	N/A	N/A	N/A	81.7, 72.3 ug/L	N/A
Vinyl Chloride	N/A	N/A	N/A	21.9ug/L	N/A
Aldrin	N/A	N/A	N/A	N/A	0.009ug/L
Benzene	N/A	33.5ug/L	N/A	N/A	3.1ug/L
Perfluorooctane (PFOS)	N/A	N/A	N/A	N/A	0.3ug/L
Ethylbenzene	N/A	63.6ug/L	N/A	N/A	N/A
Petroleum Hydrocarbons	N/A	8100 J ug/L	N/A	N/A	N/A
Xylenes	N/A	1173.38ug/L	N/A	N/A	N/A
Chlordane	N/A	4.7ug/L	N/A	N/A	N/A
Dieldrin	N/A	1.5ug/L	N/A	N/A	N/A
Sum Chlordane	N/A	5.87ugLL	N/A	N/A	N/A
Aluminum	1940ug/L	3540ug/L	N/A	N/A	N/A
Iron	8650ug/L	1400ug/L	N/A	N/A	N/A
) Anthracene	0.019 J ug/L	N/A	N/A	N/A	N/A
	14.1 B ug/L	N/A	N/A	N/A	N/A

Diagram A



AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 16

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
P00003	28-Sep-2022	SEE SCHEDULE	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
ENDIST MOBILE CONTRACTING DIVISION 109 ST JOSEPH ST MOBILE AL 36602	W91278	**See Item 6**	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
TETRA TECH, INC. 3475 EAST FOOTHILL BOULEVARD PASADENA CA 91107-6024		9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
	X	10A. MOD. OF CONTRACT/ORDER NO. W9127821F0424
	X	10B. DATED (SEE ITEM 13) 27-Sep-2021
CODE 078E8	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer ☐ is extended, ☐ is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

See Schedule

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

☐ A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

☐ B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

X C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
FAR 52.243-4 Changes

☐ D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Modification Control Number: k5ct9dlm222128

a. This modification is hereby determined to be in-scope.

b. The purpose of this modification is to change the scope of work per PFAS testing, reporting and guideline changes, and to exericse option 2.12-Optional Site 1 Delineation in accordance with attached Revised SOW and contractor's revised proposal dated 2 September, 2022. Please see attached Revised SOW & Statement of Revisions for further modification changes detail.

c. The contract completion date remians unchanged by this modification.

d. As a result of this modification, the overall contract value is increased by $3,251,434.35.

In consideration of this modification agreed to herein as a complete equitable adjustment for the above changes, the contractor hereby releases the Government from any and all liability under this modification for further equitable adjustments attributable to such factors or circumstances giving rise to the proposal for adjustment.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
[redacted], Senior Vice President	[redacted] **Contracting Officer USACE Mobile District** TEL: [redacted] EMAIL: [redacted]

15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
[redacted] ign)	9/26/22	BY [redacted] (Signature of Contracting Officer)	**28 Sep 2022**

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

SECTION A - SOLICITATION/CONTRACT FORM

The total cost of this contract was increased by $3,251,434.35 from $12,188,149.12 to $15,439,583.47.

SECTION B - SUPPLIES OR SERVICES AND PRICES

CLIN 0003

The CLIN description has changed from Option 1.2 to Option 1.2 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $80,625.00 from $80,625.00 to $0.00.

CLIN 0005

The CLIN description has changed from Option 1.4 to Option 1.4 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $203,123.62 from $203,123.62 to $0.00.

CLIN 0007

The CLIN description has changed from Option 1.6 to Option 1.6 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $402,902.69 from $402,902.69 to $0.00.

CLIN 0009

The CLIN description has changed from Option 1.8 to Option 1.8 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $489,906.82 from $489,906.82 to $0.00.

CLIN 0010

The CLIN description has changed from Option 1.9 to Option 1.9 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $43,350.30 from $43,350.30 to $0.00.

CLIN 0011

The CLIN description has changed from Option 1.10 to Option 1.10 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $32,404.86 from $32,404.86 to $0.00.

CLIN 0012

The CLIN description has changed from Option 1.11 to Option 1.11 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $65,962.43 from $65,962.43 to $0.00.

CLIN 0013

The CLIN description has changed from Option 1.12 to Option 1.12 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $219,494.68 from $219,494.68 to $0.00.

CLIN 0015

The CLIN description has changed from Option 1.14 to Option 1.14 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $340,084.49 from $340,084.49 to $0.00.

CLIN 0020

The CLIN description has changed from Option 4.4 to Option 4.4 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $363,632.75 from $363,632.75 to $0.00.

CLIN 0024

The CLIN description has changed from Option 4.8 to Option 4.8 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $446,265.56 from $446,265.56 to $0.00.

CLIN 0025

The CLIN description has changed from Option 4.9 to Option 4.9 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $63,857.37 from $63,857.37 to $0.00.

CLIN 0027

The CLIN description has changed from Option 4.11 to Option 4.11 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $81,600.08 from $81,600.08 to $0.00.

CLIN 0028

The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”MIPR# F2MUAA2049GW02 Am1 & F2MUAA2249GW01PR&C# W31XNJ22612690
.

The unit price amount has increased by $117,638.84 from $345,440.02 to $463,078.86.
The option status has changed from Option to Option Exercised.
The total cost of this line item has increased by $117,638.84 from $345,440.02 to $463,078.86.

CLIN 0029

The CLIN description has changed from Option 4.13 to Option 4.13 DELETED.
The CLIN extended description has changed from:

The period of performance for this Task Order is 36 Months from TO Award (27-SEP-2021 -- 26-SEP-2024)See attached Appendix A for all requirements in this Task Order.“Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor’s own risk.”

To:

Deleted per attached Revised SOW and Statement of Revisions.
.

The pricing detail quantity has decreased by 1.00 from 1.00 to 0.00.
The total cost of this line item has decreased by $409,671.63 from $409,671.63 to $0.00.

CLIN 0030 is added as follows:

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0030		1	Job	$1,267,822.87	$1,267,822.87

Base Homestead RI Addtnl SOW
FFP
Additional SOW for Base Award Homestead RI, funded by a different PR&C.
Please see attached Revised SOW and Statement of Revisions for full details.

MIPR# F2MUAA2049GW02 Am1 & F2MUAA2249GW01
PR&C# W31XNJ22612690

Notes: Period of Performance remains unchanged.

Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor's own risk.
FOB: Destination
PURCHASE REQUEST NUMBER: W31XNJ22612690
PSC CD: C211

MAX NET AMT	$1,267,822.87
ACRN AD	$1,267,822.87

CIN: W31XNJ226126900001

CLIN 0031 is added as follows:

ITEM NO	SUPPLIES/SERVICES	MAX QUANTITY	UNIT	UNIT PRICE	MAX AMOUNT
0031		1	Job	$1,520,532.62	$1,520,532.62

Option TAFB RI Addtnl SOW
FFP
Additional SOW for Option Tyndall Air Force Base (TAFB)I, funded by a different PR&C. Please see attached Revised SOW and Statement of Revisions for full details.

MIPR# F2MUAA2049GW02 Am1 & F2MUAA2249GW01
PR&C# W31XNJ22612690

Notes: Period of Performance remains unchanged.

Only a warranted Contracting Officer (either a Contracting Officer or an Administrative Contracting Officer (ACO)), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. If an individual other than the Contracting Officer attempts to make changes to the terms and conditions of this contract, you shall not proceed with the change and shall immediately notify the Contracting Officer. Proceeding with any work not authorized by the Contracting Officer will be at the Contractor's own risk.
FOB: Destination
PURCHASE REQUEST NUMBER: W31XNJ22612690
PSC CD: C211

MAX NET AMT	$1,520,532.62
ACRN AC	$1,520,532.62

CIN: W31XNJ226126900002

SECTION E - INSPECTION AND ACCEPTANCE

The following Acceptance/Inspection Schedule was added for CLIN 0030:

INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government

The following Acceptance/Inspection Schedule was added for CLIN 0031:

INSPECT AT	INSPECT BY	ACCEPT AT	ACCEPT BY
ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	N/A	ENVIRON & HTRW DESIGN SE P. O. BOX 2288 109 ST. JOSEPH STREET MOBILE, AL 36628-0001	Government

SECTION F - DELIVERIES OR PERFORMANCE

The following Delivery Schedule for CLIN 0003 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0005 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0007 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0009 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE

POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0010 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0011 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0012 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0013 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE

POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0015 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0020 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0024 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0025 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0027 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule Item has been deleted from CLIN 0028:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule item has been added to CLIN 0028:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
26-SEP-2023	1	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0029 has been deleted:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
POP 27-SEP-2021 TO 26-SEP-2024	N/A	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0030 has been added:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
26-SEP-2024	1	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

The following Delivery Schedule for CLIN 0031 has been added:

DELIVERY DATE	QUANTITY	SHIP TO ADDRESS	DODAAC / CAGE
26-SEP-2024	1	ENGINEERING DIVISION [redacted] P O BOX 2288 109 ST. JOSEPH STREET MOBILE AL 36628 [redacted] FOB: Destination	W91278

SECTION G - CONTRACT ADMINISTRATION DATA

Accounting and Appropriation

Summary for the Payment Office

As a result of this modification, the total funded amount for this document was increased by $3,251,434.35 from $12,188,149.12 to $15,439,583.47.

CLIN 0028:

AC: 21 NA 2022 2022 2022 2020 000 0000 CCS: NA K5 2022 08 8028 49300812000 01076 2510 551DDG NA 551DDG (CIN W31XNJ226126900003) was increased by $463,078.86 from $0.00 to $463,078.86

The contract ACRN AC has been added.

The CIN W31XNJ226126900003 has been added.

CLIN 0030:
Funding on CLIN 0030 is initiated as follows:

ACRN: AD

CIN: W31XNJ226126900001

Acctng Data: 21 NA 2022 2022 2022 2020 000 0000 CCS: NA K5 2022 08 8028 49300812000 01076 2510 56786F NA 56786F

Increase: $1,267,822.87

Total: $1,267,822.87

CLIN 0031:
Funding on CLIN 0031 is initiated as follows:

ACRN: AC

CIN: W31XNJ226126900002

Acctng Data: 21 NA 2022 2022 2022 2020 000 0000 CCS: NA K5 2022 08 8028 49300812000 01076 2510 551DDG NA 551DDG

Increase: $1,520,532.62

Total: $1,520,532.62

SECTION J - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACHMENTS

The below Table of Contents has been added

Exhibit/Attachment Table of Contents

DOCUMENT TYPE	DESCRIPTION	PAGES	DATE
Attachment 1	SOW Statement of Revisions		21-SEP-2022
Attachment 2	SOW Appendix A Revised		21-SEP-2022

(End of Summary of Changes)

STATEMENT OF REVISIONS

PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS), PHASE I REMEDIAL INVESTIGATION (RI) FOR HOMESTEAD ARB AND TYNDALL AFB, FLORIDA
RFP NO. W91278-20-D-0026-0005
TASK ORDER NO. W9127821F0424, MODIFICATION P00002

CHANGE IN TASK ORDER OBLIGATION:

To be determined (TBD)

TOTAL TASK ORDER AMOUNT (Including this modification):

Initial Task Order	$	5,837,603.95
Modification 01	$	0.00
Modification 02	$	6,350,545.17
Modification 03	$	TBD
Total Task Order	$	TBD (including all modifications)

CHANGES:

Additions are shown on the attached Appendix A with ***bold, underlined, italicized*** text. Deletions are shown with ~~strikethrough~~ text.

Update the 4th paragraph of item 1.0 Scope and Purpose as follows.

This SOW includes base work to delineate nature and extent, and options for additional tasks that might be required to complete full lateral and vertical delineation. The baseline Human Health and Ecological Risk Assessments components of the RI's will be performed under a separate contract~~, however, under this contract the AE is responsible for collecting data appropriate for use in future risk assessments~~. To the extent practicable, data collected to delineate nature and extent for this Phase I RI should also be usable for risk assessment purposes.

Update item h under the 7th paragraph of item 1.0 Scope and Purpose as follows.

h. ~~Update~~ **Support updating** the CERCLA administrative record (AR) and information repository with applicable work products and reports.

Update the table under item 2.4 as follows.

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	Date of Publication
Air Force Instruction (AFI) 32-7020, Environmental Restoration Program	11 March 2020
Air Force Memorandum: SAF/IE Policy on per Fluorinated Compounds (PFCs) of Concern	11 August 2016
Argonne National Laboratory Draft PFAS Ecological Screening Values	Spring 2020

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	Date of Publication
Assistant Secretary of Defense Memorandum, Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program	~~October 2019~~ 6 July 2022
Assistant Secretary of Defense Memorandum, Establishing a Consistent Methodology for the Analysis of Per- and PolyFluoroalkyl Substances in Media Other than Drinking Water	~~November 2019~~ 7 December 2021
ASTM Standard Guide for Developing Conceptual Site Models for Contaminated Sites, ASTM E1689 95	May 2014
Department of Defense (DoD), Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, version 5.3, or most current	~~2019~~ V5.4 or most current
Department of Defense, General Data Validation Guidelines, Environmental Data Quality Workgroup, most current version	04 November 2019
Department of Defense Instruction (DoDI) Number 4715.18, Emerging Chemicals of Concern	4 September 2019
DoDI 4715.15 Environmental Quality Systems, Publication April 17, 2017 Change 3	8 July 2019
DoD Manual, 4715.20. Defense Environmental Restoration Program Management (Incorporating Change 1, August 31, 2018)	9 March 2012
EPA EcoUpdate Series http://www.epa.gov.oswer.riskassessment/ecoup	1991-2008
EPA Guidelines for Ecological Risk Assessment	1998
EPA Interim Final Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments	1997
EPA Risk Assessment Guidance (RAGS) https://www.epa.gov/risk/risk-assessment-guidance-superfund-rags-part	NA
EPA RSL Calculator for Risk Assessment https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search	NA
FDEP Contaminated Site Cleanup Criteria F.C.A. 62-780	02 Feb 2017
ITRC PFAS Technical Guidance https://pfas-1.itrcweb.org/	17 April 2020
OSWER Directive 9272.0-17: Implementation of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) at Federal Facility Hazardous Waste Sites	June 7, 2005
USEPA Draft Method 1633 and Revised Errata Sheets	2022
Perfluoroalkyl and PolyFluoroalkyl Substances (PFAS) Methods and guidance for sampling and analyzing water and other environmental media (EPA/600/F-17/022h)	January 2020
USEPA Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites	December 2002
USEPA Drinking Water Health Advisory for PFOA, EPA 822-R-16-005, Office of Water	May 2016
USEPA Drinking Water Health Advisory for PFOS, EPA 822-R-16-004, Office of Water	May 2016
USEPA Exposure Factors Handbook: 2011 Edition	September 2011
USEPA Fact Sheet – PFOA & PFOS Drinking Water Health Advisories, USEPA 800-F-16-003	May 2016
USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA	October 1988

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	Date of Publication
USEPA Guidance for Conducting Remedial Investigations https://www.epa.gov/superfund/superfund-remedial-investigationfeasibility-study-site-characterization	Various dates
USEPA Guidance for Data Usability in Risk Assessment (Parts A and B)	December 1991 and May 1992
USEPA Guidelines for Carcinogen Risk Assessment	March 2005
USEPA Guidelines for Exposure Assessment	May 1992
USEPA Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors	February 2014
USEPA Human Health Toxicity Values in Superfund Risk Assessments	March 2005
USEPA Office of Land and Emergency Management Memorandum regarding Interim Recommendations to Address Groundwater Contaminated with perFluooroctanoic Acid and perFluorooctanesulfonate, Directive No. 9283.1-47	December 2019
USEPA ProUCL Version 5.1 Technical Guidance Statistical Software for Environmental Applications for Data Sets with and without non-detect Observations	November 2015
USEPA Regional Screening Levels https://www.epa.gov/risk/regional-screening-levels-rsls	Various dates
USEPA Risk Characterization Program	March 1995
USEPA Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions	9 April 1991
USEPA Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	March 2005
USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites	December 16, 2002

Update item 5.4.3 as follows.

The AE shall host project scoping meetings during project plan development to discuss and confirm the sampling plan and Quality Assurance Project Plan (UFP-QAPP) data quality objectives (DQO). The first 2 meetings will be held with the AF and USACE, and a final meeting will include the AF, USACE, and Regulator(s). **Scoping meeting variations may be approved by the PM/COR and AF RPMs.** The individual installation may need to increase the Internal and/or Scoping Meetings with the Regulator based on project complexity and/or expected Regulator interaction. Project scoping meetings shall be performed using web sharing program such as MicroSoft® Teams, WebEx, or similar. Conferences are expected to last approximately 2 to 4 hours each depending on the complexity of the project. Appropriate figures, tables, and draft UFP-QAPP worksheets shall be used to depict the details of the proposed sampling plan.

Update the 2nd paragraph of item 6.1 as follows.

The AE shall conduct audits, administer an AFCEC-approved performance evaluation sample program, or participate in the AFCEC program, verify and validate data, and perform corrective actions in accordance with the programmatic UFP-QAPP/WP. Data verification, data validation, data qualification schema, and data usability assessment methodology shall be described in the UFP-QAPP/WP, and performed by an independent, qualified, and experienced data validator in accordance with DoD General

Data Validation Guidelines and any applicable Modules. The AE can perform the required data validation, but the validators should be independent of contractors collecting the data (e.g., shouldn't be the project chemist). Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data for each sample delivery group~~, including DoD QSM, Table B15 requirements~~.

Update item 6.2 as shown below.

All laboratory services shall be in accordance with the analytical requirements described below and be conducted in accordance with the approved UFP-QAPP/WP. The UFP-QAPP/WP shall include SOPs for field sampling and laboratory analytical procedures. Samples shall not be collected or submitted for analysis until the UFP-QAPP/WP and addenda have received both Government and regulatory agency approvals of the final document. **The laboratory and reporting analyte list shall be presented in the UFP-QAPP/WP; the government may require modifications to this list as determined to be appropriate.**

PFAS analysis for all matrices (i.e., groundwater, surface water, soil, and sediment) shall be performed by a DoD ELAP accredited laboratory using **EPA Draft Method 1633 (including any current EPA errata sheets and revisiosn)** ~~a liquid chromatography tandem mass spectrometry (LC/MS/MS) method that is on the laboratory's DoD ELAP scope of accreditation and is compliant with the requirements in the DoD QSM (version 5.3 or most current) for Environmental Laboratories, Table B-15. All PFAS analytes in Table 6.4 must be reported~~. **All tareget analytes listed in the medthod used for analysis must be reported.** All compounds to be reported must be on the laboratory's DoD ELAP scope of accreditation. The DoD QSM allows for commercial PFAS standards that are available as salts providing the measured mass is corrected to the neutral acid concentration. Results shall be reported as the neutral acid with appropriate CAS number. The preferred nomenclature of the target analyte for reporting purposes will be the conjugate acid (i.e., sulfonic acid instead of sulfonate). Laboratories should be capable of converting concentrations from the conjugate base to the conjugate acid based on the molecular weight, as necessary based on stock standards purchased. As data is referenced in project reports, the text shall refer to the base conjugates (i.e., sulfonate instead of sulfonic acid) with associated concentrations displayed as the acid conjugate, with a note to clarify the differences. If analytes that are not listed in the DoD QSM are requested, laboratory in-house control limits must be approved by USACE and AFCEC.

Table 2: PFAS Analyte List		
Chemical	**CASRN**	**Acronym**
4:2 Fluorotelomer sulfonic acid	757124-72-4	4:2 FTS
6:2 Fluorotelomer sulfonic acid	27619-97-2	6:2 FTS
8:2 Fluorotelomer sulfonic acid	39108-34-4	8:2 FTS
N-ethyl perFluorooctanesulfonamidoacetic acid	2991-50-6	NEtFOSAA
N-methyl perFluorooctanesulfonamidoacetic acid	2355-31-9	NMeFOSAA
PerFluorobutanesulfonic acid	375-73-5	PFBS
PerFluorobutanoic acid	375-22-4	PFBA
PerFluorodecanesulfonic acid	335-77-3	PFDS
PerFluorodecanoic acid	335-76-2	PFDA
PerFluorododecanoic acid	307-55-1	PFDoA
PerFluoroheptanoic acid	375-85-9	PFHpA
PerFluoroheptanesulfonic acid	375-92-8	PFHpS
PerFluorohexanesulfonic acid	355-46-4	PFHxS
PerFluorohexanoic acid	307-24-4	PFHxA
PerFluorononanoic acid	375-95-1	PFNA
PerFluorononanesulfonic acid	68259-12-1	PFNS
PerFluorooctanesulfonamide	754-91-6	PFOSA
PerFluorooctanesulfonic acid	1763-23-1	PFOS
PerFluorooctanoic acid	335-67-1	PFOA
PerFluoropentanoic acid	2706-90-3	PFPA
PerFluoropentanesulfonic acid	2706-91-4	PFPS
PerFluorotetradecanoic acid	376-06-7	PFTeDA
PerFluorotridecanoic acid	72629-94-8	PFTriDA
PerFluoroundecanoic acid	2058-94-8	PFUnA

New or improved PFAS analytical methods are likely to come into existence in the near future. Prior to use for PFAS analysis, the laboratory must be DoD ELAP accredited, have the method and reported analytes on the laboratory's DoD ELAP scope of accreditation, and be in compliance with the version of the DoD QSM to which the laboratory is accredited.

There are no soil extraction methods in EPA publication, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, also known as SW-846. The laboratory shall process and analyze soil or sediment according to DoD QSM Table B-15. The AE should evaluate laboratory standard operating procedures for industry standard expectations. The entire soil or sediment sample received by the laboratory must be homogenized prior to subsampling.

Update the 1st paragraph of item 6.2.4 as shown below.

The AE shall be responsible for assessing the environmental data's quality by performing data validation against criteria established within the analytical method, the DoD QSM, the DoD General Data Validation Guidelines, and the UFP QAPP/WP. Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data, including DoD QSM, Table B15 requirements.

Update table 4 under item 7.3 as shown below.

Table 4: Planned Submittal Recipients		
A	**USACE** **Project Manager/COR** [redacted] CESAM-PM-I(C) Programs and Project Management Interagency and Environmental Branch PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]	**USACE Technical Manager** [redacted] CESAM-ENGE Environmental & HTRW Section PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]
B	**AFCEC/CZRE** **Project Manager** [redacted] Restoration Program Manager, CZRE 2261 Hughes Ave., Bldg 1650 JBSA Lackland, TX 78236 [redacted] Courier delivery (FedEx, UPS, DHL) 3515 S. General McMullen San Antonio, TX 78226-9853	
C	**AFCEC BASE RPMs**: **Homestead ARB, FL** [redacted] **Environmental Restoration Project Manager** ~~Restoration Program Lead~~ **AFCEC/CZOE** **29350 Westover Avenue, Bldg. 232** **Homestead ARB, FL 33039** ~~1224 Jupiter St~~ ~~Patrick SFB, FL 32925~~ [redacted]	**Tyndall AFB, FL** [redacted] Environmental Restoration Project Manager Tyndall AFB, Air Force Civil Engineer Center USAF AFMC AFCEC/CZOE [redacted] Phone: [redacted]
D/E	FDEP/EPA Regulators, and DERM in some instances. TBD by the Government	

Update item 9.5 as shown below.

Homestead ARB, FL (HARB)
[redacted]
Environmental Restoration Project Manager
~~Restoration Program Lead~~
AFCEC/CZOE
29350 Westover Avenue, Bldg. 232
Homestead ARB, FL 33039
~~1224 Jupiter St~~
[redacted]

Add item q to the list under item 1.1.2 Tyndall AFB, FL under II PART B – TECHNICAL REQUIREMENT as shown below.

q. SS046P: Area 7 Subscale Drone Crash Site Response (exercised as Optional Delineation task)

Add the following to the end of the first paragraph under item 1.2 under II PART B – TECHNICAL REQUIREMENT as shown below.

Variations in delineation requirements may be approved by the PM/COR and AF RPMs.

Update table 5 under item 1.2 under II PART B – TECHNICAL REQUIREMENT as shown below.

Table 5: ASD Screening Values								
Chemical	Carcinogenic Slope Factor - Oral (SF) (mg/kg-day)$^{-1}$	Non-Carcinogenic Reference Dose (RfD) (mg/kg-day)	Residential Screening Levels					
			Tap Water (µg/L)			Soil (mg/Kg)		
			HQ=0.1	ILCR= IE-06	ILCR= IE-04	HQ=0.1	ILCR= IE-06	ILCR= IE-04
PFOS	NA	~~2.00E-05~~ **2.00E-06**	~~0.040~~ **0.004**	NA	NA	~~0.13~~ **0.013**	NA	NA
PFOA	7.00E-02	~~2.00E-05~~ **3.00E-06**	~~0.040~~ **0.006**	1.1	111	~~0.13~~ **0.019**	7.8	775
PFBS	NA	3.00E-04	~~0.602~~ **0.601**	NA	NA	1.9	NA	NA
PFNA	**NA**	**3.00E-06**	**0.006**	**NA**	**NA**	**0.019**	**NA**	**NA**
PFHxS	**NA**	**2.00E-05**	**0.039**	**NA**	**NA**	**0.13**	**NA**	**NA**
HFPO-DA	**NA**	**3.00E-06**	**0.006**	**NA**	**NA**	**0.023**	**NA**	**NA**

Update the 2nd paragraph of item 2.0 under II PART B – TECHNICAL REQUIREMENT as shown below.

The Phase I RI planning shall include DQO project scoping sessions to review the existing site information and define project DQOs. The first 2 scoping sessions will include only USACE and AF stakeholders and the remaining sessions shall include USACE, AF, and regulatory stakeholders. **Planning meeting variations may be approved by the PM/COR and AF RPMs.** The AE shall follow guidance in the UFP-QAPP and document the project work plan using the UFP-QAPP worksheets for stakeholder review and approval.

Update item 2.3 under II PART B – TECHNICAL REQUIREMENT as shown below.

The AE shall install groundwater monitoring wells at or near PFAS release locations (on and/or off Installation) identified by stakeholders during scoping sessions. The actual monitoring well surface completion requirements will be determined during work plan preparation but the AE shall assume 2-inch diameter, Schedule 40 or 80 PVC (schedule 80 is required for wells > 50ft bgs or if the AE deems necessary given the local geological conditions), and completed at the surface with flush-mounted well boxes. The AF will be responsible for obtaining access agreements needed to install monitoring wells on non-AF property. Each monitoring well must be constructed, installed, and developed per governing state regulations for well installation. Governing State is defined as the state in which the installation is located. Monitoring wells shall be installed following all applicable State laws. **Well depths identified in**

Appendix A1 are estimates. Well depths and screen intervals shall be appropriate for evaluation of groundwater contamination.

The AE shall include a description of the decision process logic for placing and completing step-out sampling (all media) in the UFP-QAPP WP.

The AE shall collect all surface and subsurface soil samples in accordance with F.A.C. 62-780 for all locations during sampling events so that the sampling results may be used for decision making purposes later. Samples shall be tested for PFAS on a standard turnaround.

Groundwater monitoring well installation at off-installation locations cannot take place until offsite access agreements have been completed by the AF and USACE.

If PFAS contamination is suspected or known in more than 1 discrete water-bearing zone, the AE shall screen each water-bearing zone separately. Soil core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations.

The AE shall not drill through confining materials while performing subsurface investigations and monitoring well installations**, unless approved by the Government**. If natural confining materials (e.g., clay) 2 feet in thickness or engineered confining materials (e.g., geosynthetic liners) are encountered during drilling activities, the AE shall immediately halt drilling activities and contact the USACE and/or AF Project Geologists for guidance.

The AE shall document all subsurface soils during well installation by a qualified and experienced Geologist working under the direction of licensed Professional Geologist licensed in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The AE shall develop all newly installed monitoring wells using a surge and pump procedure. Well development shall be in accordance with local, state, and federal requirements. All groundwater removed will be treated or disposed of in accordance with the approved WMP. Wells should be developed in order of those anticipated to be least contaminated to most contaminated, and equipment shall be properly decontaminated in-between wells. Pre- and post- development photographs are required.

Update item 2.8 under II PART B – TECHNICAL REQUIREMENT as shown below.

One UFP-QAPP**/WP** for each installation (total of 2 UFP-QAPP**/WP**s) shall define the exact procedure for a single Basewide Synoptic Groundwater Gauging event for up to 120 wells. The AE will gauge depth to groundwater on the designated wells and use the data to develop a potentiometric groundwater map depicting groundwater flow.

Update the 3rd item in the list under item 2.11 under II PART B – TECHNICAL REQUIREMENT as shown below.

- Analytical data tables for that includes all ~~24~~ **analyzed** PFAS compounds.

Add the following to the end of item 3.0 Optional Tasks under II PART B – TECHNICAL REQUIREMENT as shown below.

Optional task awarded after September 2022 do not include updates associated with EPA Draft Method 1633 or the May 2022 EPA Residential Screening Levels (RSLs). The need for updating those option tasks will be determined prior to award of those optional tasks.

Delete the following items under item Appendix B – Installation-Specific Optional Tasks, 1.0 HARB Options.

1.2 Option 002 DPT (soil borings) and Sampling II
1.4 Option 004 Groundwater Sampling and Analysis II
1.6 Option 006 DPT and Groundwater Sampling II for Groundwater Screening
1.8 Option 008 Monitoring Well Installation, Sampling II
1.9 Option 009 Surface Water Sampling
1.10 Option 010 Sediment Sampling
1.11 Option 011 Surface Water and Sediment Co-located Sampling
1.12 Option 012 Lysimeter Installation and Porewater Sampling
1.14 Option 014 Optional Site 2 Delineation

Delete the following items under item Appendix B – Installation-Specific Optional Tasks, 1.0 TAFB Options.

2.4 Option 004 Groundwater Sampling and Analysis II
2.8 Option 008 Monitoring Well Installation, Sampling II
2.9 Option 009 Surface Water Sampling
2.11 Option 011 Lysimeter Installation and Porewater Sampling
2.13 Option 013 Optional Site 2 Delineation

Update the table under Appendix D

Prohibited Items	Acceptable Items
Field Equipment	
Teflon® containing materials	High-density polyethylene (HDPE) materials
Low density polyethylene (LDPE)	Polyvinyl chloride (PVC) or acetate liners
Aluminum foil	Silicon tubing
Waterproof field books	Loose paper (non-waterproof)
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
	Sharpies®, pens
Post-It Notes	
Field Clothing and Personal Protective Equipment (PPE)	
New cotton clothing or synthetic water resistant, waterproof, or stain- treated clothing, clothing containing Gore-Tex™	Well-laundered clothing, defined as clothing that has been washed 6 or more times after purchase, made of natural fibers (preferably cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore-Tex™	Boots made with polyurethane and polyvinyl chloride (PVC)
Tyvek®	Cotton Clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	Sunscreens - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are "free" or "natural" Insect Repellents - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics Sunscreen and insect repellant - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion
Sample Containers	
LDPE or glass containers	HDPE or polypropylene

Prohibited Items	Acceptable Items
Teflon®-lined caps	Unlined polypropylene caps
Rain Events	
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior to and following sampling activities
Equipment Decontamination	
Decon 90	Alconox® and/or Liquinox®
Water from an on-site well	PFAS-free water from a tested source **(following the most current PFAS-free guidance/definition)**
Food Considerations	
All food and drink, with exceptions noted on the right	Bottled water and hydration drinks (i.e., Gatorade® and Powerade®) to be brought and consumed only in the staging area

STATEMENT OF WORK

Per- and PolyFluoroalkyl Substances (PFAS)
Phase I Remedial Investigation (RI)

For

Homestead ARB, Florida
Tyndall AFB, Florida

US Army Corps of Engineers (USACE) - Mobile District
Contract: TBD
Task Order: TBD

~~31 August 2020~~ August 2022

[redacted]

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I. GENERAL REQUIREMENTS

1.0 SCOPE AND PURPOSE

The goals and purpose of this Contract are to accomplish two (2) separate RIs at two (2) different AF installations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that characterizes environmental conditions and defines the nature and extent of per- and PolyFluoroalkyl substances (PFAS) contaminants.

The U.S. Army Corps of Engineers (USACE), Mobile District has been designated as the service center to conduct Phase I RI's at Homestead ARB, FL (HARB) and Tyndall AFB, FL (TAFB) for the Air Force Civil Engineering Center (AFCEC). This Statement of Work (SOW) defines requirements for services in support of the AFCEC environmental program area to conduct a Phase I RI at the aforementioned Air Force (AF) installations. The PFAS Phase I Remdial Investigations are being conducted as the subsequent investigative task following the previously completed Site Investigations (SI), which were completed under a similarly grouped contract.

The Phase I RI will consist of site characterization efforts to include lateral and vertical extent of PFAS contamination in all impacted media resulting from past aqueous film-forming foam (AFFF) releases and the update or development of a Conceptual Site Model (CSM). Based on the CSM resulting from Phase I, subsequent RI efforts will consist of any additional tasks such as but not limited to quantifying human health and ecological risks, preparing the corresponding baseline risk assessment reports, and evaluating remedial alternatives. The Phase I RI shall be designed to minimize future work in subsequent phases.

This SOW includes base work to delineate nature and extent, and options for additional tasks that might be required to complete full lateral and vertical delineation. The baseline Human Health and Ecological Risk Assessments components of the RI's will be performed under a separate contract~~, however, under this contract the AE is responsible for collecting data appropriate for use in future risk assessments~~. To the extent practicable, data collected to delineate nature and extent for this Phase I RI should also be usable for risk assessment purposes.

Services conducted under this contract for the Phase I RI shall be sufficient to:

Develop a comprehensive understanding of the vertical and lateral extent of PFAS contamination in soil, groundwater, sediment, and surface water, as applicable, resulting from past PFAS use,
Determine the source-strength of residual soil contamination within unsaturated source zones, and
Update or develop a comprehensive CSM to include identifying potential exposure pathways and recommend sample requirements for follow-on RI efforts.

The AE is expected to complete activities such as:

a. Develop and update plans documenting the methods and procedures that will be used to conduct the 2 RI's including defining the nature and extent of PFAS contamination.
b. Collect and analyze geologic, geophysical, hydrogeological, chemical, physical, and hydrologic data, as well as appropriate environmental samples such as groundwater, soil, surface water, sediment, and drinking water.
c. Manage and dispose of investigation derived waste (IDW) and other waste generated during the execution of the investigation activities.
d. Develop and/or refine the CSM using validated environmental data to describe hydrogeological conditions and identify migration pathways and potential receptors.
e. Perform a source strength assessment of PFAS-impacted vadose zone sources.

f. Prepare a Phase I RI report for each installation in accordance with appropriate USEPA guidance.
g. Support meetings such as public, stakeholder, and regulatory interface.
h. ~~Update~~ **Support updating** the CERCLA administrative record (AR) and information repository with applicable work products and reports.

The AE shall furnish all services, materials, supplies, plans, labor, studies, management, travel, and other resources as required to successfully complete the Phase I RI as specified in this SOW. The AE shall conduct all field and office activities required to successfully complete the Phase I RI as required under the CERCLA. Required activities include project management, scoping, records review, generation of planning documents, update or generation of a Conceptual Site Model (CSM), source area investigation, groundwater plume delineation through the installation and sampling of monitoring wells, migration-to-groundwater investigation through the installation and sampling of lysimeters, where appropriate, or if technically impracticable, use of other techniques to evaluate potential continued leaching from source areas; evaluation of PFAS impact to surface water and sediment; data validation and interpretation; and generation of reports including tables, figures, and analyses. The CSM may be updated from the Site Inspection (SI) CSM or developed using existing data and data collected during the Phase I RI, as needed, and shall include PFAS release locations installation-wide, comingling of contamination, interaction with legacy contamination, geologic and hydrogeological conditions, and migration in the environment. This includes understanding the role and interaction of the geologic units, groundwater-bearing units, and surface water, as well as any man-made structures that may affect contaminant migration. Human Health and Ecological Risk Assessments will not be performed as part of the Phase I RI. The AE shall be responsible for additional activities in support of this contract such as assisting the Installations and/or AFCEC with public relations and access agreements.

The AE shall be responsible for obtaining and maintaining all registrations and certifications required by the various federal, state, and local regulatory agencies, and any other registrations, certifications, licenses, permits, warrants, or other credentials or permissions required to perform the required tasks. All work shall be conducted in a professional manner by credentialed members of architectural, planning, science, and engineering professions such as toxicologist, ecologist, hydrologist, geologist, chemist, architect, landscape architect, environmental engineer and scientist, planner, cost estimator, Computer Assisted Design and Drafting technician, publication writers/editor, technical writer, graphic artist, and Geographic Information System (GIS) analyst. These individuals are expected to possess and maintain the knowledge and experience to accomplish the specified tasks.

Generally, a credentialed professional (a) is licensed (e.g., registered professional engineer or geologist) to practice in the state where an installation/facility is located and (b) commands the necessary expertise, in terms of knowledge and experience, to undertake the specified task. An environmental professional's specific expertise may also be evinced through certification such as a Certified Hazardous Materials Manager (CHHM), Qualified Environmental Professional, or Certified Industrial Hygienist (CIH).

This contract will be awarded as a Firm-Fixed Price Contract to execute the SOW requirements and achieve a final Phase I RI for each of the aforementioned AF installations. The AE shall provide necessary and authorized resources to perform this work to applicable engineering, safety, and construction standards, in the timeliest manner possible, and with optimal cost containment.

This SOW includes the requirements and standards expected of the AE to complete the Phase I requirements for each site. Upon contract award, this SOW is legally binding upon the AE and the U.S. Government.

NOTE: For purposes of this contract, the term "Government" includes the AF and USACE. While regulators are a governmental entity, they are also a third party over whom the AF has no control and, as such, will be referred to as "Regulators."

2.0 AUTHORITIES, RESPONSIBILITIES, AND GOVERNING GUIDANCE

2.1 Authorized Service Center (USACE – Mobile District)

The Contracting Officer (KO), USACE – Mobile District has fully designated responsibility for execution of this contract on behalf of the AF. In turn, the KO has designated the Contracting Officer's Representative (COR) as the official Technical Manager (TM) with approval authority on all technical and contractual matters. This function will be executed by the Project Manager (PM) and/or COR as determined by the USACE.

The PM/COR does not have the authority to direct the AE on contractual changes outside the approved contract; however, the PM/COR has authority to ensure the elements of the contract, SOW, etc. are fully executed. The PM/COR will ensure AE compliance with the contract through surveillance, routine meetings, and evaluation of reports. The KO is the official line of communication with the AE concerning legal and contractual matters. The KO is the only person with authority to negotiate and enter contracts and to obligate funds.

2.2 Responsibilities

The AF has established its requirements in the Solicitation and this SOW. The implementation of this Contract requires cooperation between the AE, the Installation Restoration Program Managers (RPMs), the AFCEC Program Manager (PgM), and the USACE – Mobile District in order to execute this SOW. Roles and responsibilities include:

The AF RPMs shall:

- Ensure AF requirements relating to execution of RIs for PFAS compounds are fully met
- Facilitate regulatory interactions to achieve regulatory acceptance/concurrence
- Coordinate access for AE's services at the project sites
- Ensure review of deliverables by AF Subject Matter Experts (SMEs) and Legal
- Facilitate the processing of AE's site access/badges with base agencies
- Provide guidance to the AE on the dig permit process with base agencies
- In coordination with the base Public Affairs Representative and Base Commander, respond to inquiries from a variety of sources to include congressional inquiries, public inquiries, media inquiries, and other federal government inquiries, as appropriate.

The AFCEC Program Manager (PgM) shall:

- Plan, program, budget, and execute funding for this contract and out-years
- When needed, coordinate with the AF RPMs to respond to inquiries from a variety of sources to include congressional inquiries, public inquiries, media inquiries, and other federal government inquiries, as appropriate.

The USACE-Mobile District shall:

- Be responsible for executing the contract and overseeing the technical and administrative aspects of the contract
- Ensure AE compliance with contractual requirements, monitor and manage AE performance including, PMP, IMS, etc.
- Respond to inquiries from all the AF Installations and AFCEC, and

- Assist the AF installations and AFCEC in planning, programming, budget, and execution of funding for this contract and out-years.

The AE shall:

- Adhere to the terms of the contract and execute the SOW to complete the Phase I RIs for each installation;
- Ensure high quality technical performance and end products;
- Manage project risk and proactively communicate with stakeholders regarding issues and remedies;
- Accurately and promptly manage, track and report contract performance;
- Provide support to the USACE and AF in response to inquiries from a variety of sources to include congressional inquiries, media inquiries, and other federal government inquiries;
- Ensure protection of human health and the environment during contract performance;
- Meet all applicable regulatory requirements associated with environmental restoration during contract performance; and
- Directly supervise all subcontractors, including but not limited to, technical, quality, health, and safety, etc.

2.3 Regulatory Agency

The RI of environmental contamination by PFAS compounds is authorized under CERCLA (42 USC § 9601(33)) as a release of "pollutants or contaminants" that "may present an imminent and substantial danger to the public health or welfare." Interaction with regulatory agencies is expected. The AF RPM serves as the sole point of contact between the AE and the regulatory agencies, and will be present for all meetings, teleconferences, etc. The AE shall discuss all issues that require coordination or communication with regulatory agencies with the AF RPM and PM/COR before regulatory agencies are contacted. Any contact with the regulatory agencies will be initiated by the AF RPM, and an AF Team member will be present for all meetings, teleconferences, etc. The AE or subcontractors shall not communicate directly with a regulatory authority regarding this task order without the explicit authorization of the AF RPM.

2.4 Applicable Documents and Governing Guidance

The AE shall conduct this project in accordance with CERCLA and as amended by the Superfund Amendments and Reauthorization Act (SARA) and appropriate Resource Conservation and Recovery Act (RCRA) guidance as it pertains to the Installation's regulatory requirements. Work performed shall follow the requirements of the National Oil and Hazardous Substances Contingency Plan (NCP). In addition, all work performed under this contract shall follow the guidance and policy outlined in Management Guidance for the Defense Environmental Restoration Program, (Office of the Deputy Under Secretary of Defense, Sept 2001, or most recent version) and all applicable guidance documents. All definitions not specifically addressed in section 4 shall be defined as referenced in Management Guidance for the Defense Environmental Restoration Program, (Office of the Deputy Under Secretary of Defense, Sept 2001, or most recent version).

The AE shall identify and comply with all applicable Federal, State, and local statutes; AF/Military/ instructions, manuals, handbooks, regulations, guidance, and policy letters; Executive Orders (EOs); American Petroleum Institute (API) Codes; National Association of Corrosions Engineers (NACE); National Fire Protection Association (NFPA); Steel Structures and Painting Counsel (SSPC); National Electrical Code (NEC); Uniform Fire Code (UFC); and International Building Code (IBC) including all changes and amendments in effect on the date of issuance of this Contract . It is the AE's responsibility to identify and comply with all applicable requirements. In addition, the AE shall refer to the current versions of the Department of Defense (DoD) Policy and Guidelines for Acquisitions Involving

Environmental Sampling or Testing and the United States AF Construction Management Implementation Guide.

The AE shall identify and comply with all applicable documents including but not limited to, Preliminary Assessments, Site Investigations/Inspections, Records of Decision (RODs), ROD Amendments, Statements of Basis (SoBs), Explanation of Significant Differences (ESDs), RCRA Permits, FFA, SMP, and subsequent modifications, and other Decision Documents.

The AE is solely responsible for reviewing all publicly available information and forming their independent, professional conclusions/interpretation of site conditions and requirements to meet the objectives of this contract. The information provided in this SOW is not intended as a substitute for complete analysis of technical data available, nor is it intended to be a guide on how the AE should address achievement of the AF's objectives.

The AE shall conduct PFAS activities in accordance with all guidelines and references identified in Table 1 and any additional PFAS guidance, regulations, or requirements available at the time of this contract. As policies are refined and updated, the AE shall be responsible for accommodating those updates. Where conflicts appear to occur between the RFP and applicable regulations, the AE shall abide by the stricter of the requirements, and when in doubt, shall be responsible for contacting the USACE during the RFI period so clarity can be provided.

Table 1: Guidance Documents, References, and Technical Resources

Reference Publication	Date of Publication
Air Force Instruction (AFI) 32-7020, Environmental Restoration Program	11 March 2020
Air Force Memorandum: SAF/IE Policy on per Fluorinated Compounds (PFCs) of Concern	11 August 2016
Argonne National Laboratory Draft PFAS Ecological Screening Values	Spring 2020
Assistant Secretary of Defense Memorandum, Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program	~~October 2019~~ **6 July 2022**
Assistant Secretary of Defense Memorandum, Establishing a Consistent Methodology for the Analysis of Per- and PolyFluoroalkyl Substances in Media Other than Drinking Water	~~November 2019~~ **7 December 2021**
ASTM Standard Guide for Developing Conceptual Site Models for Contaminated Sites, ASTM E1689 95	May 2014
Department of Defense (DoD), Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, version 5.3, or most current version	~~2019~~ **V5.4 or most current**
Department of Defense, General Data Validation Guidelines, Environmental Data Quality Workgroup, most current version	04 November 2019
Department of Defense Instruction (DoDI) Number 4715.18, Emerging Chemicals of Concern	4 September 2019
DoDI 4715.15 Environmental Quality Systems, Publication April 17, 2017 Change 3	8 July 2019
DoD Manual, 4715.20. Defense Environmental Restoration Program Management (Incorporating Change 1, August 31, 2018)	9 March 2012
EPA EcoUpdate Series http://www.epa.gov.oswer.riskassessment/ecoup	1991-2008
EPA Guidelines for Ecological Risk Assessment	1998
EPA Interim Final Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments	1997

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	**Date of Publication**
EPA Risk Assessment Guidance (RAGS) https://www.epa.gov/risk/risk-assessment-guidance-superfund-rags-part	NA
EPA RSL Calculator for Risk Assessment https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search	NA
FDEP Contaminated Site Cleanup Criteria F.C.A. 62-780	02 Feb 2017
ITRC PFAS Technical Guidance https://pfas-1.itrcweb.org/	17 April 2020
OSWER Directive 9272.0-17: Implementation of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) at Federal Facility Hazardous Waste Sites	June 7, 2005
USEPA Draft Method 1633 and Revised Errata Sheets	**2022**
Perfluoroalkyl and PolyFluoroalkyl Substances (PFAS) Methods and guidance for sampling and analyzing water and other environmental media (EPA/600/F-17/022h)	January 2020
USEPA Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites	December 2002
USEPA Drinking Water Health Advisory for PFOA, EPA 822-R-16-005, Office of Water	May 2016
USEPA Drinking Water Health Advisory for PFOS, EPA 822-R-16-004, Office of Water	May 2016
USEPA Exposure Factors Handbook: 2011 Edition	September 2011
USEPA Fact Sheet – PFOA & PFOS Drinking Water Health Advisories, USEPA 800-F-16-003	May 2016
USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA	October 1988
USEPA Guidance for Conducting Remedial Investigations https://www.epa.gov/superfund/superfund-remedial-investigationfeasibility-study-site-characterization	Various dates
USEPA Guidance for Data Usability in Risk Assessment (Parts A and B)	December 1991 and May 1992
USEPA Guidelines for Carcinogen Risk Assessment	March 2005
USEPA Guidelines for Exposure Assessment	May 1992
USEPA Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors	February 2014
USEPA Human Health Toxicity Values in Superfund Risk Assessments	March 2005
USEPA Office of Land and Emergency Management Memorandum regarding Interim Recommendations to Address Groundwater Contaminated with perFluooroctanoic Acid and perFluorooctanesulfonate, Directive No. 9283.1-47	December 2019
USEPA ProUCL Version 5.1 Technical Guidance Statistical Software for Environmental Applications for Data Sets with and without non-detect Observations	November 2015
USEPA Regional Screening Levels https://www.epa.gov/risk/regional-screening-levels-rsls	Various dates

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	**Date of Publication**
USEPA Risk Characterization Program	March 1995
USEPA Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions	9 April 1991
USEPA Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	March 2005
USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites	December 16, 2002

3.0 GOVERNMENT-FURNISHED INFORMATION, EQUIPMENT, AND PROPERTY

3.1 Services

The Government (USACE, AF Installations, and/or AFCEC) will provide coordination for access to the base and work sites and for badging of field staff. The Government will facilitate coordination with other AEs to exchange information and to organize field efforts. The Government will also coordinate access to other locations on and off the installations.

3.2 Facilities

The Government will not provide any facilities. The Government may provide a lay down area for AE's/subcontractor's equipment if requested. AE or subcontractor damage to any Government infrastructure shall be repaired or replaced at no cost to the Government.

3.3 Utilities

The Government will not provide any utilities.

3.4 Equipment

The Government will not provide equipment.

3.5 Materials

The Government will not provide materials.

4.0 GENERAL DEFINITIONS as Described in the DERP Manual

4.1 Remedial Investigation

As defined in 40 CFR § 300.430(d), CERCLA

The AF has developed an approach to characterize the nature and extent of PFAS contamination generally following the CERCLA Remedial Investigation process. The Phase I RI consist of 5 major components: 1) Site Characterization, 2) Conceptual Site Model (CSM), 3) Human Health Risk Assessment, 4) Ecological Risk Assessment, and 5) Final Report. The AF plans to utilize a phased RI approach as the PFAS science emerges and regulations are updated. The first phase will consist of Site Characterization, CSM, and a Phase I RI report. Work plans, reports, and other document requirements are presented in Section 7. The Phase II RI will include the HHRA, ERA, and a Phase II RI report. The Phase II RI will be

executed under a separate contract. Although the scope of work for this contract does not include completion of the HHRA or ERA, the AE is responsible for collecting data of sufficient quantity and quality in order to minimize or eliminate any future data gap sampling to address HHRA and ERA needs.

a. Site Characterization: In this component, the lateral and vertical extent of PFAS (e.g. PFOS, PFOA, and PFBS) contamination is determined. The site characterization effort shall be conducted by the AE to provide a holistic understanding of the delineation of contamination in environment (e.g. soil, groundwater, surface water, sediment, etc.). Delineation of contamination shall include all applicable media; groundwater, surface water, soil, and sediment. The statement of work and site-specific details for each site at each installation is presented in Appendix A.
b. Conceptual Site Model (CSM): – The conceptual site model shall encompass PFAS release locations installation-wide to acquire a holistic understanding of the PFAS release, comingling of contamination interaction with legacy contamination, geologic and hydrogeological conditions, and migration in the environment. Conceptual site model development may include data collection on and off AF property.
c. Human Health Risk Assessment: - Not included in this SOW.
d. Ecological Risk Assessment: - Not included in this SOW.
e. Phase I RI Report: This shall be a comprehensive RI report following CERCLA guidance detailing components of the investigation excluding the risk assessment and FS.

4.2 Facility

Defined in section 9601 of CERCLA

4.3 Site

In general, the "Site" is the location where a contaminant release has occurred and includes the lateral and vertical extent of contamination including; source of contamination and areas where contamination has migrated or has the potential to migrate in soil, sediments, surface water, or groundwater, prior to initiation of this contract. The "Site" will be defined for all locations to be addressed under this SOW.

5.0 MANAGEMENT, PLANNING, AND REPORTING

The AE shall implement a full range of construction and engineering activities as required to meet objectives of this contract and in accordance with all applicable installation, regulatory, and site requirements. The AE shall supply all labor, equipment, and materials necessary to accomplish the work. The AE shall perform management and planning functions, including performance measurement and fund status reporting.

Requirements include efficient management of the contract including the submission of accurate, on-time, quality contract deliverables and timely identification and solution of impediments to successful project execution. Technical requirements include early involvement in the process to allow for the development of the most cost-effective and technically sound approach or solution. The Government will rely on the AE's expertise in recognizing and addressing problematic issues and successful execution of this contract. The AE shall perform all work in accordance with Federal, State, and local statutes and regulations. Remedies shall conform to environmental permits, decision document requirements, or other legal requirements and regulatory approval or concurrence.

The AE shall work closely with the USACE PM/COR to ensure effective communication is maintained to execute the contract in accordance with this SOW and other contract requirements. Project management coordination shall include, but not limited to, contract option subCLIN reviews to confirm the contract

option modification is in alignment with the IMS, progress reviews, and other issues identified by the USACE PM/COR.

5.1 Project Management

5.1.1 Project Management Plan (PMP)

The AE shall develop and maintain a detailed PMP for each installation. The PMP shall include the Technical and Management Approach, Quality Control procedures, and Integrated Master Schedule (IMS). The PMP shall specify the project's resources and tasks corresponding to the SOW Contract Line Item Numbers (CLINs) for this contract as required for the planning, execution, control, and completion of contract requirements, and shall follow guidance documents. At a minimum, the PMP shall include the following sections:

- Description of the technical approach, the project organization, personnel and management, the project's resources and project tasks corresponding to the subCLINs for this contract,
- Technical approach for achieving the POs in accordance with the SOW;
- Contract cost/schedule baseline;
- Organization and integration of the project team (including an organization chart identifying the names of personnel and their involvement in the contract);
- Schedule management, project controls, and change management;
- Transitional activities;
- Risk management;
- Communication management;
- Quality management;
- Health and Safety management;
- Subcontractor and resource management; and
- Security management.

The AE PMP shall be consistent with USACE ER 5-1-11 (USACE Business Practices) and standard industry practice, i.e., PMP guidance. Clarification and approval of PMP content and the level of detail required to address the program shall be provided by the PM/COR.

The PMP shall include a Work Breakdown Structure (WBS) and WBS Dictionary. In addition, the WBS shall demonstrate a comprehensive decomposition of each work package/PO deliverable and exhibit a clear and concise correlation between the SOW, IMS and subCLIN structure. Decomposition of the SOW into discrete work packages at the lowest reasonable level shall be demonstrated in the WBS and WBS Dictionary.

The PMP shall also include a Milestone Payment Schedule/Plan that identifies the tangible elements to be tracked and monitored for invoicing and change control. The Milestone Payment Schedule/Plan shall be coordinated and approved by the PM/COR.

The first draft of the PMP shall be due within thirty (30) calendar days of Contract award (or a more aggressive schedule if agreed upon by the COR and the AE). The draft PMP and subsequent revisions shall be subject to USACE and AF review and approval. Response to comments and changes shown in redline/strikeout shall be provided within 14 calendar days, and the final PMP shall be due within seven calendar days of USACE and AF approval of responses to comments. A one-time payment milestone will be established for USACE approval of the final PMP through the PM/COR. The PMP shall be maintained throughout the duration of the contract and updated as necessary and has required by the PM/COR.

The PMP shall include the following aspect-specific plans:

- Quality Management Plan – detailing the quality management aspects of the task order including document quality, data quality, personnel qualifications, and other aspects of program quality

management. The quality management plan shall include standard operating procedures for all quality-related tasks.

- Schedule Management Plan - defining how the project schedule is managed throughout the project lifecycle. The plan provides guidance and sets expectations for project schedule policies and procedures for planning, developing, managing, executing, and controlling the project schedule.
- Communication Management Plan – organizing and documenting the process, types, and expectations of effective communication for this task order, including stakeholder and project team communication requirements. The communications management plan shall include a comprehensive organizational chart including lines of responsibility, authority, and lines of communication for the task order.
- Subcontract Management Plan – detailing how the AE will manage all subcontracted activities, including laboratories, drillers, and professional services subcontracts that may be used for technical/management support. The subcontract management plan shall detail the means and methods used by the AE to provide subcontractor oversight and monitoring, inspections, audits, and other means of quality control throughout the task order. The Subcontract Management Plan shall detail how the AE shall always directly supervise work performed by subcontractors, including but not limited to management and safety oversight of all fieldwork.
- Project Controls Plan – This plan outlines how the schedule and budget will be managed throughout the project, including integrated chance control to monitor and document changes to the baseline schedule, and monitor and control use and expenditure of project resources. Since this task order is designed to allow resources to be reallocated and moved as needed across sites in order to achieve the site-specific horizontal and vertical delineation of PFAS contamination, this plan will document how resources will be tracked, controlled, monitored, and reported.
- Waste Management Plan – This plan will document the handling, storage, characterization, profiling, and final disposition of all generated waste, including investigation derived waste. The plan will address both PFAS and other potential contaminants that may be present at each site.
- Additional Plans – The PM/COR may require additional planning documentation and/or documentation for the PMP as project issues and complexities arise.

5.1.2 Project Information Repository

The AE shall maintain a web-based document repository for all Phase I RI-related documents, including but not limited to:

- Information on meetings including meeting agendas and meeting minutes
- Documents submitted, including but not limited to work plans, planning documents, reports, data, studies, invoices, presentations
- Sub-CLIN details
- IMS
- Monthly AE's Progress, Status, and Management Reports (CPSMRs)
- Current topics associated with the contract
- Basic stats/objectives
- Stakeholder POC contact information
- Calendar of events/meetings/milestones
- Analytical results/reports
- 3D conceptual models
- Links to Administrative Record/Information Repository records
- Links to associated appropriate reference documents
- State and Federal policy guidance

- Key performance indicator metrics tracking

The AE shall present a documentation repository format and template for PM/COR review and approval (e.g., the repository shall be logically organized by task/Site, CLIN and subCLIN, and phase of work). The AE shall include a Document Repository O&M procedure (included in the PMP) detailing how the AE will ensure information in the repository is correct, current, and complete. The AE shall present AF and the USACE with a proposed repository format, outline, and design for approval. The COR/PM may require corrections and/or modifications of the repository throughout the Contract. Information assurance requirements for DoD information systems and/or data storage must meet the technical security requirements of the DoD/AF environment and is the responsibility of the service provider to meet the mandates defined in DoDI 8510.01 dated 28 July 2017. Responsibility for procedural and administrative security is shared between the service provider and the supported entity contracting for the service and must meet the Defense Information System Agency Best Security Practices.

The repository is intended to be a single access point repository for all contract-related documentation. The repository shall be accessible to stakeholders during the life of the contract, and the AE shall implement security measures to ensure/control access to appropriate parties. The AE shall provide email notifications to the AFCEC PM, AF RPM, and USACE PM/COR when information is included/modified in the repository. At close-out, all repository documents will be transferred to DVD or other digital media (per the PM/COR) and copies delivered to AF and USACE. Periodic format adjustments during the life of the contract may be required to ensure consistency and will be provided by the COR. Stakeholders will be provided with appropriate security password restrictions.

The AE shall create and maintain a Master Document List (MDL) that includes all documents, whether the document is a deliverable or not, prepared during this contract. The AE shall maintain the project documents for the duration of this contract and transfer custody to the Government within 90 calendar days prior to POP expiration.

5.1.3 Integrated Master Schedule (IMS)

The AE shall maintain a detailed baseline and working IMS for each installation that facilitates the management of the project work and provides the capability for project performance tracking and early identification of potential schedule impacts using Gantt charts and Critical Path Method analyses. The IMS shall:

- Identify work items based on the subCLIN structure
- Include both negotiated baseline dates and current schedule projections
- Identify all sites associated with each milestone/task
- List percent complete for each line item and a rollup percent complete for each milestone
- Accurately reflect program progress and provide realistic forecast projections.

The IMS shall be prepared following approved AF/USACE guidance and shall present a realistic sequence and timing of all activities and documents necessary to execute the SOW within the POP and complete a final Phase I RI report. The IMS shall be organized by WBS, aligned with the CLIN structure, and include, but is not limited to, the following columns in the prescribed order shown below, or as required by the PM/COR:

- Installation name
- Site number and identification
- CLIN or subCLIN
- WBS Element number
- Task description
- Task duration

- Start and finish dates
- Baseline start and finish dates
- Percent complete; and
- Logic, Predecessors, and successors

The WBS work package detail shall be further broken down into discrete manageable tasks in the IMS with activities at the detailed execution level. The IMS shall be realistic and include the appropriate work calendar, logic, and durations to complete the work under this contract. Sites associated with each milestone/task must be noted in the IMS. The PM/COR or AF RPM may require additional detail in the IMS.

The AE shall submit the baseline IMS for approval within 10 business days following contract award and update the schedule monthly thereafter for submittal with the monthly CPSMR. The IMSs shall be submitted in native and PDF formats to the Project Repository and in accordance with instructions from the PM/COR. The COR/PM may require corrections and/or modifications to the IMS throughout the Contract POP.

The schedule shall be provided to the AFCEC PM, AF RPM, and USACE COR/PM in electronic format consistent/compatible with DoD software, currently Microsoft™ Project, and in portable document file (.pdf). Certain versions of the IMS may be required to be submitted in Excel table format as well. Updated and revised schedules shall be submitted to the USACE COR/PM with monthly status reports with changes clearly identified by the AE. A copy of the proposed project schedule shall be provided with the proposal in MS Project format, or equivalent and shall be evaluated as part of the proposal review process.

5.2 Cost and Status Reporting

5.2.1 AE's Progress, Status, and Management Report

The AE shall prepare and submit a monthly CPSMR by the 15th working day of each month to the USACE PM, AF RPM, and AFCEC PM summarizing contract progress through the end of the previous month. The CPSMR shall be used to review and evaluate the overall progress of the project, along with any existing or potential problem areas. Additional cost/schedule status reporting detail may be required by the PM/COR. The CPSMR shall be presented by CLIN/subCLIN and shall include graphics, charts, and/or tables to clearly communicate the information presented in the CPSMR. The CPSMR shall also be used to indicate whether efforts for each site are on target for completing the Phase I RI in accordance with the SOW within the POP. The report shall be prepared in a format coordinated with the COR and shall be prepared and submitted in an electronic format to the AE's document repository and via electronic mail.

The CPSMR shall include a summary of the events that occurred during the reporting period, discussion of performance, identification of problems, proposed solutions, corrective actions taken, outstanding issues, and payments made to date. Failure to submit timely and complete monthly progress reports may result in payment withholding. Each report shall include the following information and formats at a minimum:

- Completed tasks in the previous month including a list of meetings held during the reporting period;
- Status update of the Milestone Payment Schedule/Plan
- Statused IMS
- Monthly cost performance data including planned value, actual cost, un-invoiced progress, cost/schedule variance, and other parameters as requested by the COR/PM.

- Address problems encountered in completing the various tasks and any changes in scope or direction from the program baseline, including actual or potential schedule and cost impacts;
- Upcoming tasks for the next two months;
- Regulatory meetings (completed or upcoming);
- Project the estimated cost at completion, in accordance with the Contract, if the Project Price is expected to be exceeded;
- Other pertinent information necessary to provide the AF RPM and AFCEC PM information necessary to monitor the project success.

These requirements shall apply unless the COR/PM provides the AE with specific written alternative instructions. Monthly reports shall be signed and dated by the senior project manager designated for the project.

5.2.2 Invoicing, Direction, and Responsibility

While submitting an invoice each month is not required, the AE shall submit no more than 1 invoice each month. All invoices shall be submitted using form ENG-93, which may be modified with COR/PM approval to better reflect the invoicing structure for this contract.

Partial payments, as authorized by the COR will be made monthly for the amount and value of the work and services performed by the AE in accordance with the General Provision of the task order. An updated progress chart/submittal and technical project status summary shall be submitted monthly to the technical manager at the time of each payment estimate (ENG Form 93).

A copy of the electronic ENG Form 93 may be found at the following website http://www.publications.usace.army.mil/USACEPublications/EngineerForms.aspx. The electronic copy of an ENG Form 93 shall be prepared by the AE, and shall be submitted via e-mail to EN-TS, at E-mail address: SAMAE-ENGFORM93@usace.army.mil. Please CC the Technical Manager (TM) and COR. The Mobile District Project Manager for this work is [redacted] and Technical Manager is [redacted].

All required information must be filled in correctly by the AE, and the form must have a true electronic signature of an officer of the company. Cut and pasted images of signatures will not be accepted as electronic signatures. The estimate will be verified by the COR utilizing the progress report submitted by the AE and independent analyses of progress. The AE must submit the ENG form 93 and any supporting documentation in a separate PDF file, with the file name that includes the contract number, the delivery order number, the task order number and the invoice number, followed by an underscore ENG93.pdf. See the following example: W91278-15-D-0038 (W9127817F0088) 0013-02_ENG93.pdf. When submitting for final payment, include a Release of Claims Statement with, or on the ENG 93, the following statement is acceptable:

"The work under the above numbered task order having been completed and finally accepted, I hereby release the United States of America, its officers and agents from all claims whatsoever arising under or by virtue of this contract upon payment of a balance due of $_____."

"Directions"
The A-E shall accept technical directions only from the Mobile District Procuring Contracting Officer (PCO) or the Authorized Representative of the Contracting Officer (COR). Requests or desires of the users, using agency, or other Government employees made directly to the A-E will be immediately brought to the attention of the COR and PCO. Only a warranted Procuring Contracting Officer (PCO),

acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. Any changes to the project affecting scope, delivery, price, or other terms and conditions must be authorized in writing by the PCO. Proceeding with any change not authorized by the KO shall be at the Contractor's own risk.

5.3 Environmental Resources Program Information Management System (ERPIMS) Data Management

Comply with the Environmental Resources Program Information Management System (ERPIMS) data deliverable requirements for all field-derived data/information supported by ERPIMS data structure including, but not limited to, sampling data, relevant QA/QC data, lithology, groundwater, monitoring well location, well installation, well maintenance, and/or abandonment information.

After receipt of the contract, the AE shall submit an ERPIMS Data Submission Schedule within 30 days of award to establish the projected framework for ERPIMS data submissions. The AE shall record and enter field and laboratory data and submit this data as specified in the latest ERPIMS Data Loading Handbook (DLH) using the latest version of the ERPIMS software utility (ERPTools).

ERPIMS data submissions are required within 90 calendar days of sample collection unless a written waiver or extension is obtained from the KO in coordination with AF. The AE shall be responsible for the accuracy and completeness of all data submitted. The AE shall ensure that any required corrections are accomplished within both the contract POP and before funding expiration. The preferred procedure is for laboratories to use ERPTools to input/submit chemistry data for initial validation, import, and submission by the AE. ERPTools training is available to the AE and laboratory contractors. All milestones that include analytical sampling shall include successful ERPIMS loading of all relevant ERPIMS data elements into the production database as a minimum acceptance criterion.

The AFCEC website (https://www.afcec.af.mil/What-We-Do/Environment/Restoration/ERPIMS.aspx) offers the latest DLH, ERPTools client software, ERPIMS policy, ERPIMS Help Desk contact information, data submission requirements, ERPTools training schedules, and more. Data submissions shall be error-free, pass all validation checks and fully comply with the ERPIMS DLH. The AE shall ensure that any required corrections are accomplished within both this contract POP and before funding expiration. The preferred procedure is for laboratories to use ERPTools to input/submit chemistry data for initial validation, import, and submission by the AE. ERPTools training is available to the AE and laboratory contractors.

5.4 Meetings, Conferences, and Telecommunications

For each of the AF installations, it is expected that meeting participation and facilitation will include: (1) Several project scoping meetings, separate for each installation (number to be determined); (2) Monthly project status updates via teleconference with the COR, AF POCs, and technical support; (3) At a minimum, two (2) project status teleconferences per year with the Regulators; (4) A varying number of RAB meetings per year depending on the installation (see section 5.4.5) and (5) Public Meetings or Hearings. The frequency of the various meetings may change based on the status of the environmental restoration program at each installation. The USACE and AF will be present for all technical and public meetings with the regulatory agencies; however, the AE shall coordinate the meetings, provide logistical support (e.g., facilities, audio/visual), present materials, and lead technical discussions. The AE shall clearly identify themselves as "AEs" in all situations involving stakeholders. The AE shall prepare, and submit for USACE and AF review and concurrence, any presentation materials proposed for use at meetings.

The AE shall attend the meetings described below. For each meeting except the RAB and Public Meetings/Hearings, the AE shall submit an agenda at least 5 business days in advance to the USACE and AF for review and comment. The final agenda shall be provided at least 24 hours prior to the meeting. Within 1 week of each meeting completion, the AE shall submit meeting minutes to the USACE PM/COR, AF RPM, and AFCEC PgM which shall include a list of meeting attendees with email addresses and telephone numbers, a summary (not a transcript) of key issues discussed and their disposition, a list of action items, and any other pertinent information discussed at the meeting. Copies of the final meeting minutes shall be submitted and distributed to the USACE PM/COR, AF RPM, AFCEC PgM, and any additional meeting attendees. Meeting agenda and meetings minutes can be submitted electronically and shall be uploaded to the information repository.

The AE shall function as an integral team member in support of the AF mission, to include the sharing of information with other AF and USACE AEs and AF personnel, and cooperation with communities, regulators, and other government entities.

5.4.1 Kickoff Meetings

The AE shall coordinate a post-award 'kick-off' meeting for each installation within 30 days of award meeting with the Government (USACE and AF) to review the project requirements, PMP, IMS, and other project requirements as determined by the COR/PM. The Government kick-off meeting shall include a comprehensive review of the PMP and site-specific approaches, IMS tasks, durations, and alignment of WBS and IMS.

Following the Government kick-off meetings and all document modifications resulting from the kick-off, the AE shall attend and support the post-award kick-off meetings with the regulators, USACE and AF to introduce technical approaches, schedules, etc. The intent of this meeting is to present the SOW requirements and a high-level approach to address these requirements, provide the deliverable schedule to regulatory agencies, and solicit feedback regarding the Phase I requirements and proposed approach to facilitate concurrence and buy-in when technical scoping sessions are performed.

5.4.2 Progress Meetings and Teleconferences

The AE will participate in telephone status meetings with USACE and AF. These meetings are anticipated to occur monthly, but depending on the amount of field activity, these could occur on a bi-weekly or weekly basis. The purpose of the telephone meetings is to ensure that all issues for work underway are addressed. Telephone conferences are usually less than one hour in length. Project progress teleconferences with regulators are anticipated to occur two times per year, usually less than 2 hours in length.

5.4.3 Project Scoping Meetings

The AE shall host project scoping meetings during project plan development to discuss and confirm the sampling plan and Quality Assurance Project Plan (UFP-QAPP) data quality objectives (DQO). The first 2 meetings will be held with the AF and USACE, and a final meeting will include the AF, USACE, and Regulator(s). **Scoping meeting variations may be approved by the PM/COR and AF RPMs.** The individual installation may need to increase the Internal and/or Scoping Meetings with the Regulator based on project complexity and/or expected Regulator interaction. Project scoping meetings shall be performed using web sharing program such as MicroSoft® Teams, WebEx, or similar. Conferences are expected to last approximately 2 to 4 hours each depending on the complexity of the project. Appropriate figures, tables, and draft UFP-QAPP worksheets shall be used to depict the details of the proposed sampling plan.

5.4.4 Project Management Review Meetings

The AE shall coordinate one PMR meeting or teleconference for each installation each year with the USACE and AF. The AE shall be responsible for ensuring that the attendees are selected to provide the necessary level of expertise required by the purpose and scope of the meetings.

5.4.5 Restoration Advisory Board (RAB) Meetings

The number of RAB meetings per year varies by installation as follows:

- HARB: Currently none, but that may change during this contract (assume 2x/year)
- TAFB: 2 RAB meetings/year

The AE should anticipate presentation of one or two select work topics to be determined by the AF RPM for each RAB. Presentations for the RAB shall be submitted at least 2 weeks in advance, or on an alternate schedule designated by the COR/PM, for USACE and AF review and comment. It is anticipated that all RAB meetings will be held at or near each Installation and the AE will be required to travel to the Base to attend.

5.4.6 Public Meetings and Hearings

The AE shall attend teleconferences when necessary, and support the AF RPM to provide updates and briefs to the assigned Public Affairs Officer (PAO) to ensure the PAO is fully aware of all ongoing activities, public outreach status, compliance with applicable regulations, and potential issues that might impact the AF and its public image in accordance with Clause H029, Implementation of Disclosure of Information.

Examples of types of Public Affairs requirements include the presentation of technical information and logistical support (e.g., advertising, audio-visual, handouts, report(s), recordings, verbatim transcripts, poster boards, slides, synopses, etc.) for events and/or meetings in support of the government's position. All reports and other information generated under this contract shall become the property of the Government, and distribution to any other source by the AE is prohibited unless authorized by the COR/PM.

The AE must utilize staff trained in public affairs to complement the technical staff on the project. These trained staff must attend all meetings with the public along with the appropriate technical staff. The credentials of the trained staff must be submitted to and approved by the USACE COR/PM in advance of any meeting with the public. The minimum acceptable credentials of the trained staff will demonstrate effective communications experience and experience in building relationships with the stakeholders involved in cleanup activities or similar efforts.

The AE may be tasked to research, coordinate and provide responses for short-notice internal and external requests for information such as congressional inquiries and media requests as requested by the PAO or other applicable action officers. These inquiries may require the AE to provide the USACE and/or AF factual and responsive information within one working day of the request.

5.5 Proprietary Information

All material gathered and/or developed in the performance of the tasks listed in this SOW shall be the property of the AF installation and shall only be used by the AE and their subcontractors for the execution of this SOW. Additionally, all documents shall be delivered to the government with unlimited rights and without restrictions. The AE is not authorized any other use or distribution of said material without the specific written permission of the COR/PM. After completion of the project, all materials shall be returned to AFCEC and USACE-Mobile District.

5.6 Record Keeping

The AE shall create and maintain in 1 location written (in bound, numbered logbooks and/or field forms) and electronic records (i.e., laboratory analytical data records, data logger, etc.) sufficient to recreate each sampling, analytical, testing, and monitoring event. The AE shall maintain records of all activities outlined in the appropriate portion of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP)/Work Plan (WP) supporting the generation of these sampling and analysis records. The AE shall also retain written calculations using information obtained from sampling, analysis monitoring and testing activities, to include all raw data. The AE shall make these records available to the government upon request. The AE shall retain records for a minimum of 5 years.

All field documentation shall be recorded in bound, numbered logbooks. Field logbooks shall have numbered pages and shall include a complete record of all field activities. If multiple field logbooks are required, each shall be numbered and specifically identified to indicate dates and sites where used. Field documentation shall be recorded at the time of fieldwork, i.e., details may not be added after the fact. All information required to fully recreate all sampling and investigation events shall be documented in the field logbook. Use of field forms may augment but not replace the detail required in the field logbook. Field logbook/field form entries must be legible. Digital field documentation may be used only with COR/PM review and approval, and only if the digital documentation methodology is securely recorded and includes an unalterable date and time stamp.

5.7 On-Installation Access and Site Access Badges

Standard work hours are typically 0800 to 1700 Monday through Friday but may vary per installation. Additional work hours and/or weekend work may be proposed by the AE and is contingent upon approval by the Government. Some work locations require an AF escort, an airfield driving permit, a line badge, etc. and work access restrictions may vary during the performance of this contract; therefore, all fieldwork shall be coordinated with and approved by the installation on which the work is being performed (see Part B, Technical Requirements, Site Specific Information). The AE shall conduct a weekly fieldwork planning meeting with each installation and present a schedule of site-specific tasks planned for that week. The Installations will review the schedule and identify locations with additional access or escort restrictions. The AE may be required to modify the planned work schedule as directed by the installations.

The AE shall obtain and monitor assigned security badges (used by both AE and subcontractor personnel) for the duration of this contract. All security badges and/or passes shall be returned to the AF point-of-contact (POC) or AF Security upon expiration of the badge, upon completion of the project, or when possession of the badge is no longer necessary (e.g., AE transition of personnel from the project).

5.8 GIS/GeoBase Spatial Data (Mapping) Requirements

In furtherance of the environmental construction or restoration effort, the AE shall provide geospatial data and map(s) of Installation features (historical, existing, or planned) altered or constructed as required to achieve the POs of this contract.

Source data and product data remain the property of the United States government. The AE may be required to explain and demonstrate the company's process for protecting all geospatial data, including but not limited to, geometry, attributes, metadata, topologies, and relational database schemas and operations used in association with this SOW. Further information about security and nondisclosure requirements should be obtained from the Installation Geospatial Integration Office (GIO).

The AE shall provide data to update the GIS and/or computer-aided design and drafting (CADD) files as required to achieve the POs of this contract. Source data and product data remain the property of the United States Government.

All products associated with this contract that provide a map representation of the location of installation features (historical, existing, or planned) including installation maps, site plans, area development plans, walls-out as-built depictions, or other related overhead (plan) views of an Installation (partial or entire) must adhere to the following requirements. (NOTE: This requirement does not currently involve walls-in facility floor plans or interior renderings.)

All maps and associated data must comply with the latest AF version of SDSFIE available from the SDSFIE Web site: http://www.sdsfieonline.org/ or contact the AFCEC GIO at AFCEC.GIO.WorkFLow@us.af.mil or (210) 925-4620. These data will be organized using the current version of the standard approved by the Headquarters Air Force GeoBase Office as the functional lead for Installation mapping and visualization. The SDSFIE will determine file and feature class identification and definition, attribution, and valid domain values. When any geospatial information collected as a result of the contract includes information identified in the Common Installation Picture (CIP) or recognized Mission Data Set (MDS), the AE will deliver data consistent with the established requirements for the data and will ensure functionality with the receiving system. The AE shall also consult with each Installation POC and/or Installation GIO office to ensure CADD and GIS data is compatible with each Installation's requirements.

Information must be collected at no less than 1:1200 scale. Spatial data will meet or exceed National Map Accuracy Standards at those scales. Metadata will be provided and will use Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM) for organization.

As a requirement of this contract, the AE shall provide to the Government all shape files, file geodatabases, map exchange files (MXDs), and Geospatial data accumulated as a result of investigation recorded on compact discs (CDs) and also electronically. Geospatial data must be delivered in a geo-referenced GIS format (feature-based file structures with one-to-one cardinality between spatial records and attribute records) which would include Environmental Systems Research Institute's (ESRI) shapefile and geodatabase formats. All attribute data as specifically outlined in the contract must be included either in the GIS data file or as a separate table with a SDSFIE key variable that may be used to relationally join the separate table with the GIS data file. All geospatial data must be delivered in the North American Datum 1983 (NAD83) projection, State Plane Coordinate System, using feet or metric coordinate units. For all locations within the Restricted Area, Universal Transverse Mercator (UTM) coordinates must also be provided. Further guidance on mapping units, coordinate systems, and projections is available from the Installation GIO.

Mapping- or Survey-Grade Global Positioning Systems (GPS) or comparable traditional survey methods will be used to collect geospatial data. The use of mapping- or survey-grade GPS will depend on the precision requirements of the product data. These requirements will be specified later in this SOW for all contract activities where geospatial data are involved. In the case of contracts involving utility construction, location and attribute data will be obtained at the time of excavation. Further information about precision requirements should be obtained from the Installation Execution Support (GeoBase) Office.

The AE shall be required to sign a non-disclosure agreement attesting to the same before source data are released. Further information about security and non-disclosure requirements should be obtained from the Installation GIO. Some installation map data, source and/or product, may be considered by the Government to be "sensitive, but unclassified." The intent of this clause is to prevent intentional or unintentional dissemination of "sensitive, but unclassified" information to include unauthorized access to the source and product data by any entity wishing to do harm to the AF or United States Government while the data resides on the AE's computer network. The AE is not authorized to release this information to any third party without the explicit consent of the AFCEC GIO (AFCEC/CPAB) or its involved installation. All source information must be returned to the Government POC or destroyed upon completion of this project.

Documentation of information destruction shall be documented and provided to the Installation POC. Special requirements for handling classified map data, if applicable, will be addressed elsewhere in this SOW. The AE is required to follow MD 11042.1 regarding Safeguarding Sensitive but Unclassified (For Official Use Only) information dated 5 January 2005.All final site data collected shall be in a geospatial data standard nomenclature. The data will be submitted to AFCEC, the installation, and USACE for inclusion on their database. The AE shall work to ensure all data have been validated and is accurate. The AE shall not establish new geographic information system (GIS) systems. In furtherance of the environmental construction or restoration effort, the AE shall provide geospatial data and map(s) of installation features (historical, existing, or planned) altered or constructed as required to meet the objectives of this contract.

Source data and product data remain the property of the U.S. Government. The AE may be required to explain and demonstrate the company's process for protecting all geospatial data, including but not limited to, geometry, attributes, metadata, topologies, and relational database schemas and operations used in association with this SOW. Further information about security and nondisclosure requirements should be obtained from the Installation GIO. The AE shall also ensure that GIS data are submitted in a format compatible with the AF GeoBase program, as outlined in the AF GeoBase Strategic Plan.

5.8.1 Metadata Requirements

The National Spatial Data Infrastructure (NSDI) encompasses policies, standards, and procedures for organizations in the United States to cooperatively produce and share geospatial data. The Federal Geographic Data Committee (FGDC) has assumed leadership in the evolution of the NSDI in cooperation with the Department of Defense and other federal agencies, state and local governments, academia, and the private sector. The FGDC has developed standards for collecting common information describing the content, quality, condition, and other characteristics of map and imagery data. These standards are collectively known as the “Content Standards for Digital Geospatial Metadata”. Executive Order 12906 "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," requires all federal agencies to use the FGDC Standard to document all geospatial data that they produce (beginning in 1995). Products Requiring Metadata Collection.

The AE will collect and report metadata on all delivered products, including intermediate products such as breaklines, etc. Information concerning FGDC’s “Content Standards for Digital Geospatial Metadata” is available on the Internet at: http://www.fgdc.gov/standards/standards_publications/index_html.

The FGDC’s “Draft Content Standards for Digital Orthoimagery” product can be found on the Internet at: http://www.fgdc.gov/standards/projects/FGDC-standardsprojects/ orthoimagery/ orth_299.pdf

5.8.2 Required Metadata Format and Data Elements.

Metadata will be submitted in an ArcXML based format capable of being utilized by ESRI’s ArcGIS and at a minimum will include the following data elements:

- Identification Information
- Contact Information
- Time Period
- Data Quality
- General Information
- Attribute Accuracy
- Positional Accuracy
- Source Information
- Process Steps
- Spatial Reference
- General Information

- Horizontal Coordinate System
- Vertical Coordinate System
- Metadata Reference
- Metadata Date

5.9 Notification Requirements

The AE is required to notify the USACE KO, PM, COR and AF RPM of critical issues that may affect the contract performance. For issues that affect human health, safety and the environment, the AE shall verbally notify the PM/COR and AF POCs immediately and follow-up with email notification no later than 8 hours after occurrence.

Based on issue severity, the KO, PM/COR, and/or AF RPM may require the AE to "pause" work activities until more information is gathered. A work "pause" is not an official "stop-work," but is a suspension of activities that may exacerbate the issue.

The types of issues that require notification include, but are not limited to, health/safety risks and actual occurrences (e.g., breach of energized power lines), spills, Notices of Violation (NOVs) (received or anticipated), changes in critical personnel, and finding unanticipated unexploded ordnance (UXO), discarded military munitions, munitions constituents present in high enough concentrations to pose an explosive hazard, or chemical warfare material (CWM). The AE shall follow the 3Rs principal of Recognize, Retreat and Report if Munitions and Explosives of Concern (MEC) are encountered or suspect to have been encountered. The AE shall provide the KO with written notices, via email, of the incident occurrence and a follow-up notice of the incident resolution. Field activities shall not continue until clearance is received from the AF RPM and USACE KO. On critical issues, verbal notification should be made immediately, followed by written notification as soon as practical.

5.10 Permits

The AE shall develop, coordinate, apply and pay fees for, comply with, and/or modify all federal, state, local, and other applicable permits, right-of-entry agreements, easements, licenses, and certificates required to meet the objectives of this contract. The AE shall maintain a library of these documents at the AE's site office as well as the corporate facility handling each contract. The AE shall comply with all applicable permit conditions. It is expected that this effort will include activities such as:

a. Maintaining all needed permissions and clearance to areas such as RI areas, as these areas may be on active airfield, other secured areas, public water well locations, or private property. For private property the AE activities shall be at the direction of the government. Prior to work being performed on private property, the government will obtain permissions for site access; in some instances this could take up to 8 weeks or more.
b. Determining and obtaining all required site-specific training needed to access and work on sites.
c. Coordinating and scheduling work and other access with the AF RPM or a local representative with the current property owners.
d. Preparing Federal Aviation Administration obstruction clearance permits for work within the active airfield.
e. Supporting coordination with authorities for access at cultural and natural resource areas.
f. Providing metes and bound survey(s) as required to establish easements on the property utilizing a registered land surveyor.

5.11 Photo Documentation

The AE shall prepare digital photographic documentation, as required to meet the objectives of this contract. The AE shall include dated photographic documentation of site(s) and building(s) under investigation, field activities, and sample locations. The AE shall upload all photographs to the AE's

web-based repository. Photography of any kind must be coordinated in advance through the USACE COR and AF RPM. All photographs must be digitally dated. Photo documentation shall be included in daily reports, CPSMRs, etc.

All of the AF installations prohibit photography of the flightline, aircraft, and in other sensitive areas. Prior approval for photographs on all instllations is required and visual inspection of the photos after the photos are taken by AF installation personnel is required prior to use or dissemination.

5.12 Off-Installation, Remote and/or Austere Sites

The AE will be required to perform work as specified at off-installation, and possibly remote and/or austere locations. The AE shall be responsible for all personnel, security, supplies, equipment, and infrastructure (including, but not limited to, potable water, utility systems, housing, dining, transportation, and medical care) when there are no facilities and services available. This may occasionally include providing these facilities and services to a limited number of government personnel or other AE personnel present or visiting to oversee or assess the work.

If off-base RI work is conducted on private property, the AE will be responsible for protecting Personally Identifiable Information (PII) and will coordinate with the AF/USACE on how to incorporate into the required RI reports.

5.13 General Requirements for Field Activities

The AE shall comply with all applicable federal, state, and any other applicable regulations concerning safety during site characterization and remedial activities, including, but not limited to, drilling, sampling, construction, and remediation and operations activities. All AF, USACE, and AE employees shall be authorized to stop fieldwork that is being conducted in an unsafe manner until the deficiency is properly addressed to ensure worker safety.

All activities requiring AE access to the Installations (e.g., drilling operations, sample collections, well development and testing, surveying, demolition, construction, operations, and maintenance, etc.) or affecting other installation activities shall be coordinated with appropriate installation personnel before implementation. Work will be implemented in a manner that minimizes disruption of the installation's mission(s) and operations.

The AE shall coordinate worksite activities with all applicable AF and USACE personnel to ensure the protection of human health and the environment; the prevention of damage to property, utilities, materials, supplies, and equipment; and the avoidance of work interruptions. The AE shall provide physical security to work areas by furnishing security equipment and personnel. The AE shall perform emergency response to situations arising from project activities. The AE shall perform emergency repairs to facilities, systems, improvements, or utilities damaged while executing contract requirements made to either AF property or to public or private off-base properties. The AE shall comply with all local, state, federal and military law and guidance covering security activities. The AE must comply with Occupational Safety and Health Administration (OSHA) safety and health regulations, USACE EM-385-1-1, and all local safety office requirements. The AE is required to provide copies of any OSHA report(s) submitted during the duration of the contract the KO and AF RPM.

For environmental services, all on-site workers (AE and subcontractor) performing hazardous operations, including working with hazardous materials, must have completed the OSHA 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) training and/or other applicable training, plus annual refresher courses. The AE shall maintain documentation supporting training records and have the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) on site and available for workers, USACE, AF, and/or regulatory review.

The AE shall be responsible for any damage caused to property of the United States (Federal property) by the activities of the AE or their subcontractors under this contract and shall exercise due diligence in the protection of all property located on the premises against fire or damage from any and all other causes. Any property of the United States damaged or destroyed by the AE or subcontractors incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the AE to a condition satisfactory to the USACE COR or reimbursement is made by the AE sufficient to restore or replace the property to a condition satisfactory to the USACE COR in accordance with FAR Clause 52.245-2.

5.14 Environment, Safety & Health

The AE shall prepare a HSP for each installation to comply with AF, USACE, Occupational Safety and Health Administration (OSHA), USEPA, federal, state, and local health and safety regulations and guidance, including EM 385-1-1 and ER 385-1-92. In accordance with EM 385-1-1, the HSP will consist of a Site-Specific Safety and Health Plan (SSHP) and Accident Prevention Plan (APP). Fully utilize any existing related HSP, tailored specifically to the current effort. The AE shall maintain written certification that the approved HSP has been reviewed with all personnel that work at the project site prior to their mobilization. The AE and all subcontractors are required to comply with the approved HSP (including SSHP and APP). The Government can shut down operations due to non-compliance or occurrence of a safety incident without cost to the Government until safety issues are resolved.

Prior to the start of any fieldwork, the USACE COR/PM, AF RPM, and Mobile District Safety Office must accept the AE's APP/SSHP. In addition, the USACE COR/PM must accept any changes to the APP/SSHP prior to commencing work covered by the changes. The APP/SSHP shall be included as an appendix or attachment to the UFP-QAPP/WP. The AE shall provide comprehensive Health and Safety oversight of all field activities.

5.15 Quality Management Plan

The AE shall develop and implement a Quality Management Plan (QMP) for each installation that addresses all aspects of the contract, including but not limited to, document quality, schedule updates, fieldwork, field documentation, etc. The AE shall conduct audits of all field efforts and shall provide the COR/PM and AF RPM with a report summarizing each field effort, issues identified, and corrective actions. The QMP shall include procedures for audits, root cause analysis, lessons learned, etc.

The AE shall develop and implement a Quality Program that addresses the work and processes to be completed under this contract, including applicable procedures required to support standard quality practices for document quality, field work, readiness reviews, lessons learned, root-cause analysis, and all other tasks related to overall contract execution. The goal and purpose of the Quality Program is to ensure work under this contract be of the highest quality to support technically sound decisions consistent with applicable Government and regulatory requirements, and to ensure all tasks include appropriate technical and safety authorization and controls. The AE QMP shall include details on how technical plans and reports will be produced in a quality and consistent manner and shall either contain or directly reference a style guide for all documents.

Quality Program documentation may be included as attachment to the PMP or as a stand-alone document.

6.0 QUALITY AND CHEMISTRY REQUIREMENTS

6.1 Quality Assurance/Quality Control

The AE shall develop project specific DQOs to ensure data of adequate quality are collected to support project decisions. DQOs shall be developed in consensus with the restoration project team and in accordance with the UFP-QAPP/WP and USEPA QA/G4, Guidance on Systematic Planning Using the

Data Quality Objective Process (most recent version) and documented in the UFP-QAPP/WP. The DQOs shall be thorough and comprehensive and shall address all aspects of the DQO process. A UFP-QAPP/WP for each installation shall be prepared in accordance with the DQO process as described in EPA QC/G4 and UFP-QAPP guidance using the Optimized UFP-QAPP Worksheets, March 2012. Compliance with the DQO requirements will be confirmed by the USACE and AF and the AE shall be required to correct any deficiencies noted prior to UFP-QAPP/WP completion. The AE shall ensure that all requirements specified in the UFP-QAPP/WP are met. If not met, the AE may be required to re-accomplish sampling at the AE's expense. All laboratory services shall be conducted in accordance with the approved project UFP-QAPP/WP. Samples shall not be submitted for analysis until the Final UFP-QAPP/WP is approved.

The AE shall conduct audits, administer an AFCEC-approved performance evaluation sample program, or participate in the AFCEC program, verify and validate data, and perform corrective actions in accordance with the programmatic UFP-QAPP/WP. Data verification, data validation, data qualification schema, and data usability assessment methodology shall be described in the UFP-QAPP/WP, and performed by an independent, qualified, and experienced data validator in accordance with DoD General Data Validation Guidelines and any applicable Modules. The AE can perform the required data validation, but the validators should be independent of contractors collecting the data (e.g., shouldn't be the project chemist). Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data for each sample delivery group~~, including DoD QSM, Table B15 requirements~~.

The data validation standard operating procedure shall be included in the UFP-QAPP/WP. Significant deviations from project requirements discovered during data validation shall be communicated with the AF and USACE project chemists and PM/COR as part of the data validation process. A data validation report shall be prepared and shall sufficiently document the data validation procedure and provide a clear understanding of the representativeness of the data. The results of the data validation shall be summarized in the associated technical report with supporting data validation reports included in an appendix. A data usability assessment of the validated data shall be performed. The results of the data usability assessment shall be included in the technical report, and shall identify the limitations of the data, and the effect qualified results have on the decisions being made for the project.

6.2 Chemistry Requirements

The AE shall be responsible for the quality of all required chemistry services performed. The AE shall ensure that all chemistry-related tasks are conducted in accordance with the programmatic UFP-QAPP WP. The AE shall identify a Project Chemist as key personnel in the UFP-QAPP. The Project Chemist will act as a POC on all chemistry-related issues and shall be responsible for ensuring that all Data Quality Objectives (DQOs) are met. Data quality includes analytical and non-analytical data, measurements, and all other types of data/information collected to support achievement of the Phase I RI.

6.2.1 Laboratory Selection

The AE shall select 2 laboratories, a primary and a back-up, with analytical capabilities sufficient for the methods specified in the UFP-QAPP/WP with adequate throughput capacity to handle the project's analytical workload during all field activities. The AE shall ensure that each laboratory is accredited under the DoD Environmental Laboratory Accreditation Program (ELAP) to DoD QSM, version 5.3 or newer, and meets all federal requirements. Laboratories shall also possess any current registrations or certifications required by the state where the work is being performed. DOD ELAP accredited laboratories can be found here: https://www.denix.osd.mil/edqw/accreditation/accreditedlabs/

The AE may establish an on-site laboratory at the project site if determined necessary by the AE. However, on-site test laboratories shall also be accredited under the DoD ELAP and meet all state and federal requirements, including state certification, where appropriate.

During laboratory selection, it is recommended the AE confirm sampling container types, sizes, and initial volume requirements; standards containing both branched and linear isomers are used, when commercially available; chemical derivation of the ion transitions; and reagent or ultra-pure water used in the laboratory is confirmed to be free of PFAS.

6.2.2 Analytical Requirements

All laboratory services shall be in accordance with the analytical requirements described below and be conducted in accordance with the approved UFP-QAPP/WP. The UFP-QAPP/WP shall include SOPs for field sampling and laboratory analytical procedures. Samples shall not be collected or submitted for analysis until the UFP-QAPP/WP and addenda have received both Government and regulatory agency approvals of the final document. **The laboratory and reporting analyte list shall be presented in the UFP-QAPP/WP; the government may require modifications to this list as determined to be appropriate.**

PFAS analysis for all matrices (i.e., groundwater, surface water, soil, and sediment) shall be performed by a DoD ELAP accredited laboratory using **EPA Draft Method 1633 (including any current EPA errata sheets and revisiosn)** ~~a liquid chromatography tandem mass spectrometry (LC/MS/MS) method that is on the laboratory's DoD ELAP scope of accreditation and is compliant with the requirements in the DoD QSM (version 5.3 or most current) for Environmental Laboratories, Table B-15. All PFAS analytes in Table 6.4 must be reported~~. **All tareget analytes listed in the medthod used for analysis must be reported.** All compounds to be reported must be on the laboratory's DoD ELAP scope of accreditation. The DoD QSM allows for commercial PFAS standards that are available as salts providing the measured mass is corrected to the neutral acid concentration. Results shall be reported as the neutral acid with appropriate CAS number. The preferred nomenclature of the target analyte for reporting purposes will be the conjugate acid (i.e., sulfonic acid instead of sulfonate). Laboratories should be capable of converting concentrations from the conjugate base to the conjugate acid based on the molecular weight, as necessary based on stock standards purchased. As data is referenced in project reports, the text shall refer to the base conjugates (i.e., sulfonate instead of sulfonic acid) with associated concentrations displayed as the acid conjugate, with a note to clarify the differences. If analytes that are not listed in the DoD QSM are requested, laboratory in-house control limits must be approved by USACE and AFCEC.

Table 2: PFAS Analyte List		
Chemical	CASRN	Acronym
4:2 Fluorotelomer sulfonic acid	757124-72-4	4:2 FTS
6:2 Fluorotelomer sulfonic acid	27619-97-2	6:2 FTS
8:2 Fluorotelomer sulfonic acid	39108-34-4	8:2 FTS
N-ethyl perFluorooctanesulfonamidoacetic acid	2991-50-6	NEtFOSAA
N-methyl perFluorooctanesulfonamidoacetic acid	2355-31-9	NMeFOSAA
PerFluorobutanesulfonic acid	375-73-5	PFBS
PerFluorobutanoic acid	375-22-4	PFBA
PerFluorodecanesulfonic acid	335-77-3	PFDS
PerFluorodecanoic acid	335-76-2	PFDA
PerFluorododecanoic acid	307-55-1	PFDoA
PerFluoroheptanoic acid	375-85-9	PFHpA
PerFluoroheptanesulfonic acid	375-92-8	PFHpS
PerFluorohexanesulfonic acid	355-46-4	PFHxS
PerFluorohexanoic acid	307-24-4	PFHxA
PerFluorononanoic acid	375-95-1	PFNA
PerFluorononanesulfonic acid	68259-12-1	PFNS
PerFluorooctanesulfonamide	754-91-6	PFOSA
PerFluorooctanesulfonic acid	1763-23-1	PFOS
PerFluorooctanoic acid	335-67-1	PFOA
PerFluoropentanoic acid	2706-90-3	PFPA
PerFluoropentanesulfonic acid	2706-91-4	PFPS
PerFluorotetradecanoic acid	376-06-7	PFTeDA
PerFluorotridecanoic acid	72629-94-8	PFTriDA
PerFluoroundecanoic acid	2058-94-8	PFUnA

New or improved PFAS analytical methods are likely to come into existence in the near future. Prior to use for PFAS analysis, the laboratory must be DoD ELAP accredited, have the method and reported analytes on the laboratory's DoD ELAP scope of accreditation, and be in compliance with the version of the DoD QSM to which the laboratory is accredited.

There are no soil extraction methods in EPA publication, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, also known as SW-846. The laboratory shall process and analyze soil or sediment according to DoD QSM Table B-15. The AE should evaluate laboratory standard operating procedures for industry standard expectations. The entire soil or sediment sample received by the laboratory must be homogenized prior to subsampling.

6.2.3 Analytical Data Management

The AE shall ensure that all hard copy and electronic data deliverables supplied by the laboratory are complete and adequate to support the quality and usability of the data. Stage 4 data packages shall be submitted to the USACE and AFCEC. Data packages shall include all information required to re-create the analysis, including correspondence with the laboratory regarding exceeding quality assurance/quality control (QA/QC) measurements and documentation of corrective actions. The AE shall meet ERPIMS data deliverable requirements as currently required by AFCEC. Stage 4 laboratory reports in accordance with the QSM shall be provided to include QA/QC results, chromatographs, and manual integrations completed during analysis.

6.2.4 Data Validation

The AE shall be responsible for assessing the environmental data's quality by performing data validation against criteria established within the analytical method, the DoD QSM, the DoD General Data Validation Guidelines, and the UFP QAPP/WP. Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data~~, including DoD QSM, Table B15 requirements~~.

A data validation report shall be prepared and shall sufficiently document the data validation procedure and provide a clear understanding of the representativeness of the data. The results of the data validation shall be summarized in the associated technical report with supporting data validation reports included in an appendix. A data usability assessment of the validated data shall be performed. The results of the data usability assessment shall be included in the technical report, and shall identify the limitations of the data, and the effect qualified results have on the decisions being made for the project.

7.0 PLANS AND REPORTS

7.1 Technical Plans and Reports

The AE shall provide technical plans and reports, as well as various other deliverables. The AE shall complete these documents according to the most appropriate industry standard.

The deliverables required under this contract shall demonstrate SOW compliance and milestones attainment. Most of these documents must be submitted for initial USACE and AF review followed by submittal to the regulatory agency. The AE must confirm the number of copies required for delivery to all relevant parties as depicted in the table presented in Section 7 of this SOW. The protocols described in the Attachments to this SOW, as well as relevant and appropriate USEPA and AF guidance should be used in development of these plans as applicable. Collection methods for all sample media, water levels, water quality parameters, sample collection and handling, and analytical methods will be included in all project work plans and required reports. The AE may utilize existing plans in their entirety or prepare updates, revisions, or addenda to the existing plans, as appropriate, in lieu of developing new plans.

7.1.1 Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP) Work Plans (WPs)

Since this task order is specific to Air Force bases in Florida and will be executed under the same regulatory framework and requirements, the AE may elect to prepare a Programmatic UFP-QAPP that addresses aspects and details common to all locations, and then prepare base/location-specific UFP-QAPP/WPs that contain the site-specific detail and reference the Programmatic UFP-QAPP. The AE may also elect to prepare comprehensive all-inclusive and site-specific UFP-QAPP/WPs for each base RI.

The UFP-QAPP/WP(s) for this contract, to include a Draft, Draft Final, and Final version for USACE, AF, and Regulatory review and approval. The AE must implement, maintain, and comply with the approved programmatic UFP-QAPP/WP and its installation-specific addenda.

The UFP-QAPP/WP shall be written in the format specified in the Intergovernmental Data Quality Task Force Optimized UFP-QAPP Worksheets (March 2012), the EPA Guidance on Systematic Planning Using the DQOs Process, February 2006, and in accordance with other applicable USEPA and DoD guidance documents. The UFP-QAPP/WP shall include, as appendices, the APP/SSHP prepared in accordance with EM 385-1-1 and an Investigation-Derived Waste (IDW) Management Plan in accordance with this SOW and all federal and state regulations as appendices.

7.1.2 Health and Safety Plan (HSP) and Accident Prevention Plan (APP)

Prepare a HSP and APP for each installation to comply with Air Force, OSHA, USEPA, state, and local health and safety regulations regarding the proposed work effort. The AE shall fully utilize any existing, related HSP or APP tailored specifically to the current effort. The AE shall maintain written certification that the approved HSP and APP have been reviewed with all personnel that work at the project site prior to their mobilization.

7.1.3 Phase I RI Report

The AE shall prepare and submit a Phase I RI Report (for each installation) for USACE, AF, and Regulator review and approval to include a summary of results of field investigation activities to characterize the site, sources of contamination, nature and extent of contamination, fate and transport of contaminants, site CSMs, and exposure CSMs, which includes potential exposure pathways and human and ecological receptors, and other requirements for a CERCLA RI report, excluding a Feasibility Study and Risk Assessment. The report format and content will be in accordance with EPA Guidance (EPA 1988) except for risk assessment components not included in the scope of the Phase I RI. The Phase I RI Report shall include all required supporting materials (e.g., bore logs, waste manifests, supporting calculations, etc.) and analytical information (e.g., required data validation and usability reports, data packages, etc.). A separate Phase I RI report shall be prepared for each base, i.e., two separate reports.

7.2 Deliverable Submission Cycle

Major deliverables are defined as any document that must be submitted to the Regulatory Agency. All major deliverables specified in this SOW shall be submitted in 3 phases unless otherwise stated. Submission requirements including number of copies, distribution, and submission schedule are stated in this SOW; however, actual document version names, distributin, and other details will be determined by the specific requirements of each installation and will be verified by the PM/COR.

Typically, the first submission shall be considered a preliminary/draft document and shall be submitted for Government-only review. The AE shall respond to each comment in writing and shall make the appropriate revisions to the draft document. The preliminary/draft UFP-QAPP/WP and preliminary/draft Phase I RI Report may require up to a 90-day review by the Government. This includes a 30-day review by the project delivery team (PDT), revisions by the AE, and a 60-day review by the USACE Environmental and Munitions Center of Expertise (EM CX), if required. The revised preliminary/draft will be submitted as a draft-final document for regulatory review. The AE shall again respond to each Regulator comment in writing and shall make the appropriate revisions to the draft-final document. Responses to all regulatory agency comments and any associated revised document shall be reviewed by the Government before submittal to the agencies. Should a review meeting be scheduled, the minutes of the meeting shall contain the written record of the comments and responses provided by the AE. The revised draft-final document shall be submitted as the final document. However, these submittal requirements should in no way be construed to limit the number of version submittals required for the AE to obtain USACE, AF, and/or Regulatory approval. All iterations will require Government review and response to comments or approval. The actual naming of document versions will be determined by each installation.

The AE shall submit all plans, reports, and other deliverable documents in three versions as appropriate for that specific document and as required by the Government. Additional document versions may be required, e.g., Preliminary Draft at the request of the Government. Submittals shall be in electronic format; however, hard copies may be required at the request of the Government or as specified in this SOW. Document submittals shall include both native file formats (e.g., MS Word, MS Project, etc.) and pdf. Unless otherwise specified, final document versions shall be submitted in both digital and hard copy. Multiple versions of documents may be generated by the AE including:

- Preliminary-Draft Documents – Preliminary-Draft documents are internal documents that are submitted for USACE and AF review and approval. In all respects, preliminary-draft documents shall be complete; substantively correct and consistent with applicable laws, regulations, Department of Defense/USACE/AF policies; in proper format; and free of grammatical and typographical errors. All draft documents shall be thoroughly screened through in-house peer/technical review during this phase of the review process. Preliminary-draft documents shall not be submitted to regulatory agencies for review.
- Draft-Final Documents – In general, draft-final documents have undergone USACE and AF review, incorporation of government review comments, and are submitted to the appropriate regulatory agencies for review. A second version of the draft-final document incorporating initial regulatory comments and resubmitted for regulatory agency review may also be required prior to the submittal of the final document. Responses to all regulatory agency comments and any associated revised document shall be reviewed by the Government before submittal to the agencies. Note that some documents may initially be submitted to the regulatory agencies as final with any comments being incorporated into subsequent documents as appropriate (e.g., system status reports, monitoring reports, "data dumps").
- Final Documents – Final documents are the version of the document that has successfully incorporated all review comments and has received USACE, AF and regulatory concurrence and written approval. At least 1 electronic copy of the final document consisting of original productivity software files and all quality control data, drawings, and GIS-type information, shall be provided to the USACE and AF. Electronic copies should be compatible with the current USACE and/or AF Microsoft™ Office Suite and GIS software versions. All figures shall be delivered in original application files GIS format as described in this SOW. In addition, an electronic version of the final document shall be submitted in a single portable document file (.pdf) format approved by the USACE and AF complete with electronic bookmarks.

7.3 Deliverables and Recipients

The planned deliverables for this contract are listed in Table 3 and shall be included in the AE's IMS. This deliverables list details the types and number of documents that are required to achieve the specific site objectives and will be transmitted to the regulatory agents, the Information Repository, and the Administrative Record file. The AE shall ensure that publicly released documents exclude Personally Identifiable Information (PII) and Freedom of Information Act (FOIA) – Exemption 6 personal privacy information. Planned submittal recipients are listed in Table 3.

Table 3: Document Name/Type	A	B	C	D	E
Draft and Final PMP	1 digital 1 hard copy	1 digital	1 digital	---	---
Draft Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	1 digital	1 digital	1 digital	---	---
Draft Final Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	1 digital	1 digital	1 digital	2 CDs 2 hard copies	2 CDs 2 hard copies
Final Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	2 CDs 2 hard copies	2 CDs 2 hard copies	2 CDs	2 CDs 2 hard copies	2 CDs 2 hard copies
Analytical Data – EDD and Hard Copy	1 digital	1 digital	1 digital	---	---

Note: Primary submittal format will be digital; however, the Government may request hard copies, or DVDs as needed. Digital includes pdf and native files emailed to recipient and posted in the repository.

Planned submittal recipients are listed below. However, it should be noted that that there may be different FDEP or EPA regulators for each installation. Hard copies should not be needed for each (unless documents are installation-specific), but electronic distribution should include all appropriate regulatory stakeholders. Should AE files be too large to be readily downloaded on-line via DOD Safe and other means, DVDs may be required. Additionally, at Homestead the county (DERM) is also copied on submittals.

Table 4: Planned Submittal Recipients		
A	**USACE** **Project Manager/COR** [redacted] CESAM-PM-I(C) Programs and Project Management Interagency and Environmental Branch PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]	**USACE Technical Manager** [redacted] CESAM-ENGE Environmental & HTRW Section PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]
B	**AFCEC/CZRE** **Project Manager** [redacted] Restoration Program Manager, CZRE 2261 Hughes Ave., Bldg 1650 JBSA Lackland, TX 78236 [redacted] Courier delivery (FedEx, UPS, DHL) 3515 S. General McMullen San Antonio, TX 78226-9853	
C	**AFCEC BASE RPMs**: **Homestead ARB, FL** [redacted] **Environmental Restoration Project Manager**	**Tyndall AFB, FL** [redacted] Environmental Restoration Project Manager Tyndall AFB, Air Force Civil Engineer Center

Table 4: Planned Submittal Recipients		
	~~Restoration Program Lead~~ **AFCEC/CZOE** **29350 Westover Avenue, Bldg. 232** **Homestead ARB, FL 33039** ~~1224 Jupiter St~~ ~~Patrick SFB, FL 32925~~ [redacted]	USAF AFMC AFCEC/CZOE [redacted] Phone: [redacted]
D/E	FDEP/EPA Regulators, and DERM in some instances. TBD by the Government	

7.3.1 USACE Project Delivery Team (PDT)

The USACE - Mobile District has reviewed the requirements for this project and has assembled a PDT of scientists and engineers with a skill set commensurate with the project complexity. Additional PDT members may be added as needed to address specific project needs. The PDT for this Contract includes the following personnel:

a) PM/COR: [redacted] CESAM-PM-I(c)

b) Technical Manager: [redacted] CESAM-EN-GE

c) Project Geologist: [redacted] CESAM-EN-GE

d) Project Geologist: [redacted] CESAM-EN-GE

e) Project Chemist: [redacted] CESAM-EN-GE

f) Project Env. Eng: [redacted] CESAM-EN-GE

g) Project Risk Assessor: TBD CESAM-EN-GE

7.3.2 Responses to Comments

The AE shall submit written responses for all written comments generated during the review of project deliverables. Copies of the comment responses shall be provided for all participants in the review process for each deliverable. Wherever practical, the minutes of review meetings may be used as the vehicle to provide the written response.

8.0 SITE WORK

The AE shall perform site preparation, incidental characterization and field investigation, conservation, and waste handling as required to meet the objectives of this contract.

8.1 Conservation

Activities shall be planned and implemented in a manner that protects existing site utilities, structures, surface features, service operations, monitoring and other types of wells, and the general site environment. This includes the protection of trees, shrubs, and other vegetation not in the affected zone from dust damage, soil compaction, and physical contact with machines and equipment. If appropriate, the AE shall conserve uncontaminated topsoil by removal, storage, or redistribution. All reasonable

measures shall be taken to minimize and suppress fugitive emissions of dust, vapors, and other site materials during site work. All fill materials shall be tested, confirmed, and verified to be non-contaminated. The AE shall conduct all operations and activities with the intent of reducing the amount of pollution generated. Specific areas to be focused on are generation of solid waste, use of hazardous materials, use of ozone depleting chemicals, generation of hazardous waste, and use of energy and water. During site work the AE shall plan, construct, operate, maintain, optimize, and decommission systems necessary to control storm water run-on and run-off; and transport surface water drainage to a treatment plant, discharge location, or any other appropriate destination.

8.2 Demobilization

The AE shall decontaminate equipment and facilities, decommission facilities as necessary, and restore the site. The AE shall remove any temporary facilities and implement erosion control measures such as seeding, mulch, sod placement, and erosion control fabrics; restore roads, structures, and utilities; and plant trees, shrubbery, grasses, and other vegetation. The AE shall document and report on activities and train government personnel to perform required maintenance, as requested.

8.3 Site Characterization

The AE shall perform field investigation and sampling/analysis that characterizes environmental conditions, in accordance with approved DQOs, as required to achieve the POs of this project. The AE shall identify specific site characterization activities proposed to achieve the POs.

8.4 Site Preparation

The AE shall perform site work as necessary to prepare sites for field activities. Security and access controls shall be implemented to prevent unauthorized entry to sites and to protect wildlife from site exposure. The AE shall survey existing utilities to determine adequacy and need for modifications to support site activities. The AE shall perform all necessary installation coordination to gain approvals for, and shall construct connections or new systems for electrical power, water, sewer, gas distribution, telephone, and other utilities, as required, to meet the objectives of this contract.

8.5 Waste Management

Aqueous and solid IDW may be generated during activities at the Installations. A Waste Management Plan (WMP) for each installation shall be provided as an attachment to each installation UFP-QAPP that shall address the handling, storage, and disposal requirements for IDW. The AE shall have a comprehensive knowledge of the management and disposal of all wastes that will potentially be generated and require disposal as well as the regulatory requirements for the state in which the work shall be performed. The AE shall be responsible for handling, transportation, and disposal of all AE-generated wastes to permitted off-site treatment, storage and/or disposal facilities within 90 days from waste generation, in accordance with the IDW procedures in operation at each AF installation. IDW generated off AF property shall be containerized, sampled, analyzed, and properly disposed. Handling, transport, and disposal of these materials shall be performed in accordance with requirements mandated by all applicable federal, state, and local regulations. The AE shall provide all hazardous materials used and hazardous waste disposal documentation to the USACE COR/PM and/or AF RPM, to ensure appropriate and efficient tracking of the AE's hazardous material purchases, inventories, use, and releases as required by the Emergency Planning and Community Right-to-Know Act (EPCRA), Executive Orders, or any installation reporting requirements.

The AE shall also comply with federal, state, and local requirements for any task involving the transportation and disposal of hazardous wastes and/or contaminated materials. This includes 40 Code of Federal Regulations (CFR) 260, 49 CFR 172, 173, 178, 179 and all other applicable local, state, and

federal transportation regulations. The WMP will address the disposal requirements for IDW. It also is necessary to comply with the regulations regarding listed hazardous waste at the Installation and the AE must ensure that there is a generator identification number. After IDW disposal, IDW documentation of shipping and recycling/disposal shall be provided as an appendix to the RI Report.

The AE shall remove, render inert, destroy, recycle, and dispose of hazardous wastes and materials and provide all hazardous materials use and hazardous waste disposal documentation to the USACE COR/PM and AF RPM or designated alternate. An AF representative for each installation will sign all waste manifests and other transportation/disposal-required documents. The AE shall perform associated characterization and profiling work as required. Soil and groundwater IDW shall be containerized and stored as approved by the Government in accordance with all applicable guidance and requirements.

9.0 POINTS OF CONTACT (POCS)

9.1 USACE PM/COR:

[redacted]
U.S. Army Corps of Engineers
CESAM-PM-I(c)
109 Saint Joseph Street
Mobile, Alabama 36602
[redacted]

9.2 USACE Technical Manager:

[redacted]
CESAM-ENGE
Environmental & HTRW Section
PO Box 2288, Mobile, AL 36628
109 Saint Joseph St. Mobile, AL 36602
[redacted]

9.3 USACE KO:

[redacted]
Environmental Section Chief
U.S. Army Corps of Engineers, Mobile District
Office: [redacted]
Mobile: [redacted]
Email: [redacted]
Web: [redacted]

9.4 AFCEC PgM:

AFCEC/PgM: [redacted]
Bldg 171, 2261 Hughes Ave, Ste 155
Lackland AFB, TX 78236-9853
[redacted]

9.5 AFCEC RPMs:

Homestead ARB, FL (HARB)
[redacted]
Environmental Restoration Project Manager
~~Restoration Program Lead~~
AFCEC/CZOE
29350 Westover Avenue, Bldg. 232
Homestead ARB, FL 33039
~~1224 Jupiter St~~
~~Patrick SFB, FL 32925~~
[redacted]

Tyndall AFB, FL (TAFB)
[redacted]
Environmental Restoration Project Manager
Tyndall AFB, Air Force Civil Engineer Center
USAF AFMC AFCEC/CZOE
[redacted]
Phone:
Cell: [redacted]

10.0 ADDITIONAL REQUIREMENTS

10.1 News Releases

Neither the AE nor the AE's personnel shall give out any news releases or conduct media interviews concerning the work performed under this SOW. All media inquiries should be directed to the designated AF installation Public Affairs representative.

10.2 Community Relations

Community relations activities will be the responsibility of each AF installation. The AE shall support those activities, such as public meetings, in coordination with the AF, by providing necessary existing technical information to the AF installation. The AE shall not discuss the program with anyone that does not have an official "need to know" for the purpose of task completion. The AE shall not provide any press releases relating to this work without express written authorization from the AF installation and AFCEC.

10.3 Regulatory Interface

The AF has authority for all regulatory interactions pursued on behalf of the AF. All interactions with regulatory agencies must be coordinated through the AF. The AF RPM (or his/her designee) will be present for all meetings with the Regulatory Agency and will be included in the review of all documents or other materials that may be presented to the Regulatory Agency. All written communication with the regulator will be through the AF RPM. Distribution of project work plans, reports, and other information shall be coordinated through and directed by the AF RPMs and submitted with the AF RPM copied on the communication.

10.4 Program Completion Requirements

The AE shall collaborate with the AF and USACE COR/PM on development of a discrete, measurable basis for verifying completion of each task or activity planned through program completion. This basis will be used to acquire the AF and USACE concurrence that task completion has occurred, and

contractual obligations have been satisfied. At the conclusion of all assigned work, the AE shall submit project documentation as directed by the KO. Project completion forms shall be sent to the KO no later than 4 months after completion of all work or the expiration of the contract POP.

10.5 Identification of Unrelated Contamination

If, during the course of site activities, the AE discovers contamination that appears to be unrelated to the existing sites being investigated under this SOW, the AE shall notify the USACE KO in writing within 3 business days of discovery and copy the USACE PM, AF RPM, and AFCEC PgM.

10.6 Other Provisions

AE shall notify the USACE COR/PM, AF RPM, and AFCEC PgM in writing within 3 business days of becoming aware of the occurrence of an event described below:

a. AE or any agent or subcontractor receives notice of violation (NOV) of any governmental enactment, requirement, or authorization, which relates to the performance of the SOW;
b. Permits, licenses, or other governmental authorizations relating to implementation of the SOW are revoked or denied;
c. Litigation is commenced or threatened concerning or impacting the SOW or any sites;
d. Any other condition occurs or is threatened to occur which may have a materially adverse effect on the timely performance of the SOW, or the timely performance of any duties the AE or the installation may have under any applicable law, regulation, ordinance, order, decree or plan;
e. The installation personnel are interfering or wrongfully preventing AE from performing its material duties and obligations under this SOW to such an extent that the AE's costs, schedule, and/or quality are being adversely impacted.

10.7 Key Personnel

The AE and subcontractor personnel shall be experienced and competent in the tasks for which they are responsible and currently possess any required certifications, registrations, or licenses required under federal, state, and/or local laws and regulations. The AE shall be limited to utilizing the key personnel and subcontractors identified in the AE's technical proposal unless the KO approval prior to the substitutions is obtained during the performance execution of the SOW. The AE shall obtain the KO's written consent before making any substitutions for key personnel or subcontractors by submitting in writing to the KO the reasons for the substitutions and submit the qualifications of the new persons or subcontractors. The AE shall provide the same level of detail on credentials and qualifications on the key personnel or subcontractor as was required by the solicitation. The key personnel or subcontractors that are proposed as substitutes must possess equal or greater qualifications than the individuals or subcontractors who were accepted at the award of the contract. The minimum required personnel qualifications are as follows, but not limited to:

10.7.1 Project Manager (PM)

The PM is the AE POC responsible for implementing work specified in the SOW. The PM shall evaluate the requirements of the contract and shall develop and implement a plan to meet those requirements. The PM shall have in-depth, relevant experience and proven ability to provide effective and efficient management and implementation of the efforts as outlined in the SOW. The PM must demonstrate availability to meet the requirements of the SOW through multiple means of communications, meetings, and required activities. The PM shall be competent, experienced, and knowledgeable in the field of investigation and remediation of Hazardous, Toxic, and Radioactive Waste (HTRW) sites. The PM shall be responsible for the day-to-day coordination with stakeholders and must be an employee of the AE.

The PM must have, at a minimum, the following qualifications:

- Bachelor's degree from an accredited school in a technically related field such as: engineering, geology, environmental science (15 years as a PM meeting the requirements below can be substituted for a bachelor's degree).
- Professional registration in Florida.
- A minimum of 10 years managing HTRW projects.
- Experience managing a HTRW project that included sampling for PFAS at AF installations in Florida.
- Working knowledge of applicable federal, state, and local laws, regulations, and guidance pertinent to this project.

10.7.2 Project Geologist

The AE shall designate a Project Geologist who is knowledgeable in the field of investigation and remediation of HTRW and has experience investigating PFAS. This individual shall be trained and have experienced as a geologist to ensure activities, to include plan development, field activities, report writing, designs, etc. are of the quality to meet project objectives. The geologist should have experience in surface and subsurface soil, ground-water, surface water, sediment, etc. sampling techniques, as well as aspects of obtaining all types of samples through various drilling and sampling techniques, along with appropriate documentation procedures. The Project Geologist will be responsible for all geologic interpretation and will either perform or directly oversee staff performing geologic work. The senior geologist must have, at a minimum, the following qualifications:

- Bachelor's degree in geology or geological engineering from an accredited 4-year program.
- Professional Geologist in Florida.
- A minimum of 10 years specialized experience in HTRW projects.
- Experience investigating PFAS at AF installations in Florida.

10.7.3 Senior Project Chemist

The Senior Project Chemist shall be responsible for the development of the UFP-QAPP chemistry worksheets, along with the PDT to establish the project DQO following the USEPA seven step DQO process. The Senior Project Chemist shall have direct experience with PFAS. The Senior Project Chemist must meet provisions of Section 7.2 of the DoD Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing, November 2007 by performing the following minimum functions:

- Provides coordination and quality assurance surveillance of laboratory services
- Approves project-specific Method Quality Objectives and Data Quality Indicators that will meet the project specific performance standards;
- Verifies appropriateness of sampling and analytical methods and laboratory quality systems;
- Verifies laboratory qualifications and makes recommendations for laboratory selection;
- Coordinates with the laboratory during contract execution;
- Notifies the Government Quality Assurance Manager of any problems or nonconformance issues;
- Directs the performance of data review and validation, per contract specifications; and Monitors corrective action, as needed.
- The Senior Project Chemist shall have, at a minimum, the following qualifications:
- Bachelor's degree in chemistry.
- A minimum of 5 years of directly related environmental chemistry experience in HTRW projects.
- Experience with analysis for PFAS.

10.7.4 AE Quality Control Supervisor (CQCS)

The CQCS shall be responsible for developing, maintaining, and ensuring implementation of the environmental quality program. This responsibility includes oversight of activities, periodic reviews of the processes being implemented, evaluation of any recommendations made by the project team over the course of the project regarding use of these processes, and continuous improvement evaluations of the quality program. The CQCS is also responsible for providing support to the project team in ensuring that the quality of products and services provided to the Government is in accordance with the terms and conditions of the contract.

The CQCS shall, at a minimum, the following qualifications:

- The individual proposed as the CQCS shall have a minimum of five (5) years working QA/QC experience in the chemical/hazardous waste investigation/remediation field, including PFAS projects; and can address overall quality management, quality control/assurance, quality auditing, or process improvement.
- The individual proposed as the CQCS shall have formal education or training in technically related field such as geophysics, environmental engineering, environmental science, geology, environmental chemistry, or other.

10.7.5 Senior Site Manager(s)

The Senior Site Manager(s) shall be the AE personnel responsible for providing full, direct, on-site oversight and supervision of field activities conducted by the AE and subcontractor personnel. The Senior Site Manager is expected to be onsite at all times during field activities to directly supervise all personnel and subcontractors, and shall be responsible for implementing specific work under this contract, i.e., approved work plans, safety plans, quality plans, etc. The Senior Site Manager(s) shall be the primary onsite point-of-contact for the contract to the Government for on-site activities, site visit interaction, and QASP surveillances. Based on the management structure proposed by the Offeror, one or more Senior Site Manager may be assigned to this contract.

A Senior Site Manager shall have, as a minimum, the following qualifications:

- Bachelor's degree from an accredited school in a technically related field such as: engineering, environmental science, geology, hydrology, chemistry, industrial hygiene or other science or engineering-related discipline.
- Professional registration, where required by discipline, i.e., Florida PE or PG.
- A minimum of seven (7) years' experience performing field management duties similar to those described for this Key Personnel position, with a minimum of five (5) years' experience managing environmental investigation/remediation projects at the field operational level in the state of Florida.

OR

- A minimum of ten (10) years' experience as a Senior Site Manager, with a minimum of five (5) years' experience managing environmental or traditional projects at the field operational level in the state of Florida.
- Working knowledge of applicable federal, state, and local laws, regulations, and guidance.

11.0 VETERAN'S EMPLOYMENT

Emphasis for U.S. Army Corps of Engineers Contracts

In addition to complying with the requirements outlined in FAR Part 22.13, FAR Provision 52.222-38, FAR Clause 52.222-35, FAR Clause 52.222-37, DFARS 222.13 and Department of Labor regulations, U.S. Army Corps of Engineers (USACE) AEs and subcontractors at all tiers are encouraged to promote the training and employment of U.S. veterans while performing under a USACE contract. While no set-aside, evaluation preference, or incentive applies to the solicitation or performance under the resultant TO, USACE AEs are encouraged to seek out highly qualified veterans to perform services under this TO. The following resources are available to assist USACE AEs in their outreach efforts:

- Federal Veteran employment information at https://www.fedshirevets.gov
- Department of Labor Veterans Employment Assistance http://www.dol.gov/vets/
- Department of Veterans Affairs–VOW to Hire Heroes Act http://benefits.va.gov/vow/
- Army Wounded Warrior Program – http://wtc.army.mil/modules/employers/index.html
- U.S. Chamber of Commerce Foundation–Hiring Our Heroes
- https://www.uschamberfoundation.org/hiring-our-heroes
- Guide to Hiring Veterans – Reference Material https://obamawhitehouse.archives.gov/blog/2012/04/10/white-house-business-councils-guidehiringveterans

12.0 SUSTAINABILITY REQUIREMENTS

Green Procurement is the purchase of environmentally preferable products and services and is known as sustainable acquisitions and Green Procurement. Practicing Green Procurement takes into consideration economic facets, environmental considerations, and resource efficiency.
Here are some of the benefits of Green Procurement:

- Prevents pollution and reduces environmental impact
- Increases energy independence
- Protects and conserves natural resources
- Minimizes waste
- Supports new markets and job creation
- Supports the USACE Campaign Plan and Sustainability Plan Goals
- Saves $$ by reducing waste
- It is a Federal mandate!

Some Mandatory Environmental Initiatives are as follows:

- Energy Star
- Federal Energy Management Program (FEMP)-Designated Products
- WaterSense
- BioPreferred/Biobased
- Environmentally Preferable Purchasing (EPP)
- Electronic Product Environmental Assessment Tool (EPEAT)
- Significant New Alternatives Policy (SNAP)
- Recovered Materials

FAR Part 23 requires Federal agencies to ensure that 95% of new contract actions require products that are:

- Energy-efficient
- Biobased
- Non-ozone depleting
- Water-efficient
- Environmentally preferable
- Made with recovered materials

The AE shall review and follow scope, purpose, applicability, and policy of FAR Part 23 and FAR 52.223-4 requirements, as they pertain to their specific contract/TO requirements to meet sustainability acquisitions or Green procurement initiatives. Some examples of sustainability achievements are:

- Car-pooling to meeting from local offices
- Doubled-sided documents using recycled paper
- Submittal of documents through electronic methods
- Use of energy-efficient products
- Use of non-toxic or low-toxic products
- Reconditioned or remanufactured supplies or materials

II. PART B - TECHNICAL REQUIREMENTS

1.0 SITE SPECIFIC INFORMATION

1.1 Installation Location, Characteristics, and Description

Information about regional/local geology, topography, and hydrogeology for HARB and TAFB is available in various investigation reports located in the AF Administrative Record (https://ar.afcec-cloud.af.mil/Search.aspx), and/or also with the installation RPMs listed in section 9.5.

The AE is responsible for locating and acquiring, either via the AR or the individual installation RPMs, previous site investigation reports with the necessary information required to accomplish the contract objectives successfully.

1.1.1 Homestead ARB, FL

Some investigative document examples are as follows:

- Final Preliminary Assessment Report for PerFluorinated Compounds at Homestead Air Reserve Base, Florida, HydroGeologic, Inc. Aug 2015.
- Final Site Inspections Report of Fire Fighting Foam Usage at Homestead Air Reserve Base, Aerostar SES, LLC. 12 Mar 2019.
- Final Remedial Investigation/Feasibility Study for Area of Concern 3 (OU-34), HydroGeologic, Inc. 17 Dec 2020. (This is a relatively recent CERLCA RI/FS that has been fully approved—although it is not directly relevant to PFAS sites.)

HARB Installation Overview

Homestead Air Reserve Base consists of almost 2,000 acres. The base, activated as Homestead Army Airfield in 1942, originally encompassed only approximately 1,200 acres. In 1953, it was re-designated as Homestead AFB (HAFB) and as the mission expanded, the size of the base grew to almost 3,000 acres. On 24 August 1992, HAFB was devastated by Hurricane Andrew. As a result of the destruction caused by the hurricane, the DOD Base Realignment and Closure (BRAC) Commission recommended HAFB for realignment in 1993. In 1994, two-thirds of the property (2,086 acres) was transferred to the Air Force

Base Conversion Agency (AFBCA). The remaining one-third of the property (852 acres) was transferred to the Air Force Reserve Command (AFRC) as an Air Reserve Station (ARS), with the 482nd Reserve Fighter Wing as the host unit.

In 2003, Homestead ARS was officially re-designated as Homestead ARB under AFRC. The 1,965 acres that comprise HARB are referred to as the cantonment area. The growth of the cantonment area from the original 852 acres to the current acreage is a result of the AF maintaining ownership of the airfield along with other areas that were originally proposed to be transferred. (HARS became HARB as a direct result of maintaining ownership of the Airfield). The Air Force Real Property Agency (AFRPA), formerly known as the Air Force Base Conversion Agency (AFBCA), transferred the remaining property that was within the confines of the Homestead AFB, but outside of the cantonment area, to the US Department of Labor, Department of Homeland Security, Florida Army National Guard, and Miami-Dade County.

Homestead Air Reserve Base is located near the southern end of the Florida peninsula, about 25 miles south of Miami, Florida in Miami-Dade County. The base is located between two national parks, Everglades National Park to the west and Biscayne National Park to the east. Biscayne Bay, an estuary classified as an Outstanding Florida Water body, is two miles directly east of the base. The climate is subtropical with a very low elevation and flat topography. The groundwater table is shallow (average 5 feet below ground surface [bgs]) and limestone bedrock is present at or near ground surface in some locations. The Biscayne Aquifer consists of a heterogeneous karst and unconfined system with a slightly alkaline substrate that produces a buffering capacity.

The 482nd Fighter Wing (482 FW) is the host unit of Homestead ARB and supports contingency and training operations of US Southern Command (SOUTHCOM) and a number of tenant units including Headquarters Special Operations Command South (SOCSOUTH), US Coast Guard Maritime Safety and Security Team (MSST), and an air and maritime unit of US Customs and Border Protection. In addition, Homestead ARB is home to the most active North American Aerospace Defense Command (NORAD) alert site in the continental United States, operated by a detachment of F-15 fighter interceptors from the 125th Fighter Wing (FW), Florida Air National Guard (FANG).

Remediation activities at Homestead Air Reserve Base are being conducted pursuant to the CERCLA, as amended by the SARA, and NCP requirements; RCRA; Florida Administrative Code (FAC) Chapter 62-780. Regulatory oversight is provided by the USEPA and FDEP. The USEPA is the lead regulatory authority for CERCLA operable units (OUs). FDEP coordinates on CERCLA activities. The Miami-Dade County Department of Environmental Resources Management (DERM) also participates on the "Base Cleanup Team" (BCT) and generally works in coordination with FDEP. Their comments on CERCLA OU documentation are "for consideration", as would be any comment from a member of the public.

Homestead Air Reserve Base was placed on the National Priorities List (NPL) in 1990. A Federal Facilities Agreement (FFA) was signed in 1991 by the AF, USEPA, and FDEP, which excluded petroleum sites. A consent agreement was signed by the FDEP and the AF in 1991 for petroleum sites. The installation also has a RCRA Corrective Action Permit. Since RCRA authority was granted to FDEP in 2001, the RCRA Corrective Permit falls under FDEP's regulatory purview. The HARB RCRA Permit addresses corrective action requirements only and is managed by the Restoration Program. The permit (2438-HH-002) was issued to HARB on 16 Sep 2016 and is re-issued every 10 years (current permit expires 09 Feb 2026). FDEP's corrective action decision-making process is governed by FAC 62-780.

Note that the CERCLA and RCRA programs at Homestead include both HARB (Active) and former HAFB (BRAC) sites. BRAC sites are addressed under a separate AF cleanup program and are not included under this contract. However, from a regulatory perspective, all sites (BRAC and HARB) are managed under the same Federal Facility ID (FL7 570 024 037) and are considered to be one program. The same regulators govern both the BRAC and HARB cleanup programs via the BCT. Generally, both

AF restoration programs (Active and BRAC) submit separate independent documentation (e.g., a Five-Year Review for the HARB sites and a separate Five-Year Review for the BRAC sites).

For access to Homestead Air Reserve Base, the AE employees and any Sub-AEs will need to pass a background check to obtain a base entry badge. This process may take up to two weeks. In addition, the AE will need to have a CAC for escorting privileges (e.g., equipment deliveries, etc.). Access to Sites located in proximity to the airfield/ramp/flightline will require additional coordination with the Airfield Manager. To drive around Perimeter Road (around the airfield) to work outside of the Controlled Movement Area (CMA), the driver must possess an airfield driver's license. If the Contractor uses a Company Vehicle it must have clear signage with company name and must obtain a Privately Owned Vehicle (POV) pass from the Airfield Manager's office. Access may be limited depending on mission requirements and maintaining radio contact with the control tower is required when working in the area. These sites, including Site SS15A and FT005 (OU-1), are considered "Restricted Access Areas" and require Flightline Driver's Course and Airfield Manager Coordination each occurrence prior to work activities. In addition, the person acting as an escort to these restricted areas will require a Line Badge.

Sites for Investigation in this SOW:

a.	FT004P-SUB:	FIRE PROTECTION TRAINING AREA 3 (OU-8)
b.	FT005P-SUB:	FIRE PROTECTION TRAINING AREA 2 (OU-1)
c.	SS051P:	HANGARS 194 – AFFF AREA 3
d.	SS052P:	HANGARS 193, 200, AND BUILDING 217 – AFFF AREA 3
e.	DA053P:	CURRENT FIRE STATION – AFFF AREA 5
f.	DA054P:	PLANE CRASH AREA – AFFF AREA 6
g.	SS055P:	FIRE TRUCK TANK RELEASE – AFFF AREA 9
h.	DA056P:	F-16 Aborted Take-off Location
i.	SA652P-SUB:	OU-11T: Outfall Canal Terr. / Sewage Treat./Incin.
j.	SS15AP-SUB:	APRON AREA – includes HANGAR 877 – AFFF AREA 4, APRON FUEL SUPPRESSION AREA – AFFF AREA 7, and EQUIPMENT TEST RELEASE AREA – AFFF AREA 8

FT004P-SUB, FT005P-SUB, DA054P, SS055P, DA056P: Site access requires flightline badge, flightline driver's license and coordination with the Airfield Manager (additionally FT004 (OU-8) and SS055P require advanced coordination with Security Forces).

SS051P, SS052P: These sites are within a restricted area and will require a flightline badge and AF escort with advanced coordination with the respective Hangar Manager.

DA053P: Site access requires advance notification to the Fire Department.

SS15AP-SUB: Site access requires flightline badge, flightline driver's license and POV pass and coordination with the Airfield Manager's office or Florida Air National Guard (FANG).

SA652P-SUB: Site access requires advance coordination with Security Forces and the presence of a CAC Holder.

It may also be worth noting that although several existing "legacy" sites have existing "OU" numbers, it is unknown whether new/different OU #s will be established for the PFAS investigation process at these sites. Additionally, it is more than likely that the other "new" sites (which don't have an assigned legacy "OU" #) will be designated as OUs by the EPA. The EPA will expect these regulatory IDs to be referenced in/on documents, once assigned.

Site FT004 (OU-8) is located between the Mako Ramp, Munitions Storage Area (MSA) and the flightline areas. Additional advanced coordination is required with Security Forces.

Site SA652 (OU-11T) is a fenced area and activities will require additional coordination with the Security Forces and requires off-base access (CAC card escort required).

Although other Site source areas may not have specific additional security requirements, the flightline is located downgradient from many of the sites. Plume delineation could require flightline access, which would trigger the requirement state above for SS15A and FT005.

Any construction activities that disturb the surface or subsurface (including digging, compaction, soil sampling, injection or sampling point installation using Direct Push Technology (DPT), Hollow-Stem Auger (HSA), or any other intrusive technology) must be coordinated with the Facility Manager when working in close proximity to a building.

The AE is also responsible for completing the appropriate steps of the construction coordination process (e.g., AF Form 103 and AF Form 332) for intrusive activities including sampling. This includes, but is not limited to, completing and submitting dig permit paperwork, attending associated meetings to answer questions, obtaining dig permit signatures, marking dig locations for utility locates, meeting utility locators, escorting any subcontractors or delivery vehicles, and consultations with Wing POCs, such as natural resources personnel.

1.1.2 Tyndall AFB, FL:

Some investigative document examples are as follows:

- Final Preliminary Assessment Report for PerFluorinated Compounds at Tyndall Air Force Base, Panama City, FL, CH2MHill, April 2015
- Final SI Report for Aqueous Film Forming Foam Areas at Tyndall AFB (Aerostar SES LLC (ASL), Sep 2018

TAFB Installation Overview

Tyndall AFB is located on an 18-mile-long, narrow, northwest-to southeast-trending peninsula occupying approximately 29,000 acres. Tyndall AFB is bordered by St. Andrew Sound and the Gulf of Mexico to the south-southeast, St. Andrew Bay and the Gulf of Mexico to the south-southwest, East Bay to the north, and the Mexico Beach area to the east-southeast.

Tyndall AFB was activated in December 1941 at the outset of World War II. The first mission of Tyndall AFB was to train instructors for a gunnery school. In May 1946, Tyndall AFB became the home of the Air University's Air Tactical School, training junior officers in the responsibilities of command at squadron level. This mission continued until 1950 when the base became responsible for training all-weather jet interceptor pilots and air weapons controllers. The air weapons controller school remains an important part of the activities at Tyndall AFB. Tyndall AFB transferred from the Air Training Command to the Aerospace Defense Command in July 1957. At that time, its mission shifted to that of a weapons center. The USAF Air Defense Weapons Center (ADWC) activated 1 January 1968, to provide a single area within the Department of Defense for the centralization of operational and technical expertise on air superiority matters. The ADWC and Tyndall AFB transferred to the Tactical Air Command (TAC), 1 October 1979, as part of a USAF reorganization when TAC picked up the continental air

defense mission. On 1 July 1981, the USAF ADWC again reorganized and activated the 325th Fighter Weapons Wing, later renamed the 325th Tactical Training Wing. Under the center and wing concept, the USAF ADWC continued to provide a variety of missions, all tied directly with combat readiness training for TAC. The command was changed again in June 1992 from TAC to the Air Combat Command (ACC). In 1993, the command was changed to the Air Education and Training Command and in 2013, the command was changed back to ACC.

AE personnel needing access to Tyndall AFB on a frequent basis must obtain a contractor badge. Approximate time required is ten (10) working days to obtain approved contractor badge. Prior to performing work involving disturbing soil and/or structures, AE must obtain an approved AF Form 103, Work Clearance Request. Approximate time required is ten (10) working days to obtain approved form.

Sites for Investigation in this SOW:

a. SS041P: AFFF Area 1 Fire Station #1 (Building 214)
b. FT017P-Sub: AFFF Area 2 Nozzle Spray Test Area
c. SS516P-Sub: AFFF Area 3 QF-4 Drone Crash Site Response #1 (2001)
d. SS042P: AFFF Area 5 F-15 Jet Fuel Fire Response
e. SS043P: AFFF Area 6 F-15 Jet Tire Fire Response
f. SS022P-Sub: AFFF Area 8 F-22 Raptor Crash Site Response
g. SS044P: AFFF Area 9 F-106 Crash Site Emergency Response
k. TU539P-Sub: AFFF Area 10 Silver Flag WWTP Spray Field
l. TU539P-Sub: AFFF Area 11 Former Silver Flag Wastewater Treatment Faciliy
m. TU539P-Sub: Silver Flag Fire Trng Area (in AFFF SI Report) (Named AFRL Fire Trng Pit in EESOH)
n. FT016P-Sub: Shell Bank Fire Training Area
o. FT017P-Sub: Highway 98 Fire Training Areas
p. FT023P-Sub: Little Cedar Creek/Bayou Fire Training Area Former Active Fire Training Area
q. SS046P: Area 7 Subscale Drone Crash Site Response (exercised as Optional Delineation task)

1.2 General Intent

This task order includes the PFAS RI at HARB and TAFB. All sites within each installation shall be fully delineated both horizontally and vertically, and any un-allocated resources required for delineation at an installation can be moved to other sites within that Installation as needed to achieve the final Phase-I RI requirements. **Variations in delineation requirements may be approved by the PM/COR and AF RPMs.**

The initial plan presented in this SOW includes the approach, methods, and quantities the Government deems necessary to fully delineate each location/site; the AE shall plan, initiate, and conduct planning sessions with the Government to refine the allocation of resources to complete the location/site-specific requirements. The AE shall document all planning sessions including resources used and/or reallocated, as well as Government concurrence to ensure work remains within the existing scope and quantities of this task order.

The AE shall:

1) Plan and conduct a Phase I RI (following CERCLA guidance) to delineate the nature and extent of PFAS in surface and subsurface soil, groundwater, surface water, and sediment (all PFAS-impacted media) from AF releases at HARB and TAFB, and
2) Collect data from AFFF release areas identified for further investigation in this SOW, and
3) Develop a comprehensive understanding of the PFAS fate and transport including a comprehensive baseline groundwater flow.

The CSM shall encompass PFAS release locations installation-wide to acquire a holistic understanding of the PFAS release, comingling of contamination, interaction with legacy contamination, geologic and hydrogeologic conditions, and migration in the environment. This includes understanding the role and interaction of the geologic units, groundwater-bearing units, and surface water, as well as any man-made structures that may affect contaminant migration. Data from PFAS on the laboratory analyte list shall be used as necessary to update or develop the CSM.

A quantitative baseline risk assessment will not be prepared under this Phase 1 RI effort, but sample collection for the purposes of delineation of nature and extent in soil, groundwater, surface water, and sediment shall consider potential human and ecological receptors under reasonable scenarios in accordance with USEPA risk assessment guidance (USEPA RAGS). In addition, relevant exposure areas and depth intervals, required data quality for use in risk assessment, and minimum number of samples required to compute exposure point concentrations during development of the Phase I RI sampling design shall be considered.

Per AF policy, human health risk assessments must address an unlimited use/unrestricted exposure (UU/UE) scenario (i.e., hypothetical future residential) (AFI 32-7020). While risk assessments are not required under this Phase I Contract, sufficient data should be collected to support completion of a risk assessment in future phases.

The screening criteria in the 15 October 2019, and/or its updates, Assistant Secretary of Defense (ASD) Memorandum, *Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program*, shall be used to delineate PFOA, PFOS, and PFBS. On 08 April 2021, the PPRTV toxicity value for PFBS was updated. The report can be found on the EPA's webpage https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=542397. The ASD screening values are presented in Table 14.2. State promulgated values will not be used for delineation or considered as preliminary applicable or relevant and appropriate requirements without approval from the Office of the Secretary of Defense.

Table 5: ASD Screening Values								
Chemical	Carcinogenic Slope Factor - Oral (SF) (mg/kg-day)-1	Non-Carcinogenic Reference Dose (RfD) (mg/kg-day)	Residential Screening Levels					
			Tap Water (µg/L)			Soil (mg/Kg)		
			HQ =0.1	ILCR = IE-06	ILCR = IE-04	HQ= 0.1	ILCR= IE-06	ILCR= IE-04
PFOS	NA	~~2.00E-05~~ 2.00E-06	~~0.040~~ 0.004	NA	NA	~~0.13~~ 0.013	NA	NA
PFOA	7.00E-02	~~2.00E-05~~ 3.00E-06	~~0.040~~ 0.006	1.1	111	~~0.13~~ 0.019	7.8	775
PFBS	NA	3.00E-04	~~0.602~~ 0.601	NA	NA	1.9	NA	NA
PFNA	**NA**	**3.00E-06**	**0.006**	**NA**	**NA**	**0.019**	**NA**	**NA**
PFHxS	**NA**	**2.00E-05**	**0.039**	**NA**	**NA**	**0.13**	**NA**	**NA**
HFPO-DA	**NA**	**3.00E-06**	**0.006**	**NA**	**NA**	**0.023**	**NA**	**NA**

Note: The tap water RSL (HQ=0.1) shall be used for delineation in groundwater and surface water. The residential soil RSL (HQ=0.1) shall be used for delineation in soil and sediment.

2.0 Project Planning

The AE shall review the existing AF installation AR and other resources, as necessary, to evaluate all available information for the PFAS release sites identified in this SOW, evaluate potential PFAS transport mechanisms, provide a preliminary site CSM or update an existing CSM which shall be utilized to develop the Phase I RI technical approach, and ensure SOW compliance to complete the Phase I RI.

The Phase I RI planning shall include DQO project scoping sessions to review the existing site information and define project DQOs. The first 2 scoping sessions will include only USACE and AF stakeholders and the remaining sessions shall include USACE, AF, and regulatory stakeholders. **Planning meeting variations may be approved by the PM/COR and AF RPMs.** The AE shall follow guidance in the UFP-QAPP and document the project work plan using the UFP-QAPP worksheets for stakeholder review and approval.

Additional scoping sessions shall be completed for step-out well installation and/or sampling events after initial mobilization sample results, potentiometric maps, and well network optimization analysis have been developed to inform additional monitoring well and/or sampling locations. The pertinent sections of the UFP-QAPP shall be amended, as needed, to update the project plan. It is expected that the Phase I RI for each site will be an iterative process where data is collected and presented to the AF and USACE for planning/confirmation of subsequent investigation elements. This iterative process will continue until all sites are fully delineated and required information for the Phase I RI has been collected.

It is expected that the RI scoping will consist of:

a) Identifying data needs and developing DQOs.
b) Performing a site reconnaissance, community interviews and preliminary risk screening activities to evaluate all potentially complete exposure pathways.
c) Developing an initial area-wide baseline of groundwater flow and contaminant hydrogeologic conditions.
d) Reviewing existing data and updating the CSM to determine migration and exposure pathways requiring evaluation.
e) Evaluating storm water and other conveyances to determine potential transport mechanisms.

2.1 Prohibited and Acceptable Items

PFAS are present in a wide variety of commercial products including common household items (fabric softeners, sunscreens, low density polyethylene containers, Gore-Tex, cosmetics, moisturizing lotions, etc.). Given the low detection limits associated with PFAS analysis and the many potential sources of trace levels of PFAS, field personnel will strictly adhere to the sampling equipment and protocols summarized in Appendix D. If in doubt about a particular product or item in contact with environmental media including well construction materials and sampling equipment, the AE shall collect and analyze a rinsate sample using laboratory-supplied PFAS-free water to verify the materials do not contain PFAS.

2.2 Direct-Push Technology (DPT) Investigation

The AE shall develop a planned approach to complete initial characterization and delineation of contamination at each site using DPT methodologies. Data collected by DPT shall include both soil and groundwater samples for laboratory analysis as a screening tool to support the placement of permanent monitoring wells for more accurate and efficient horizontal and vertical delineation. The DPT methods/ equipment used shall be sufficient to complete both horizontal and vertical characterization and collect both soil and groundwater samples. A higher density of soil samples (vertical and horizontal) are expected to be collected in suspected source areas.

DPT equipment requirements shall be selected by the AE that will be capable of achieving the depth and sampling requirements for this Phase I RI including, but not limited to, vehicle weight, equipment hydraulic size and power, DPT tool size and sonic/vibratory capabilities, depth to groundwater, and DPT refusal considerations, etc. Equipment shall be compatible for low-detection requirements of PFAS sampling and analyses.

Vertical Aquifer Sampling (VAS) will be performed at selected DPT locations within source areas to determine the vertical distribution of contamination in groundwater. Discrete groundwater samples will be collected starting at the water table and then at specified intervals to the base of the aquifer and tested for PFAS. All groundwater removed will be treated or disposed of in accordance with the IDW Plan.

Surface soil sampling shall also be done in areas where PFAS impacted groundwater has been used for irrigation or watering of lawns/gardens at on-base and/or off-base locations.

At each site source area, an additional 3-5 soil samples (composite samples of each sample depth at each site) shall be collected for the analysis of geotechnical parameters (e.g., pH, grain size, Total Organic Carbon, and anion/cation exchange capacity). See installation-specific requirements in Appendix A.

The AE shall document all subsurface soils during well installation by a qualified and experienced geologist working under the direction of licensed Professional Geologist in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The number of DPT locations and depths, and some other RI requirement details are presented for each installation in Appendix A. Any unallocated resources may be reallocated between sites within an installation, with COR/PM approval, to address site-specific characterization requirements as needed to achieve Phase I RI objectives.

Direct Push Sampling for vertical delineation of PFAS impacted groundwater shall include groundwater samples at discrete depth intervals at each location to aid in developing a vertical profile of PFAS distribution in the subsurface. Direct Push Sampling in soil source areas shall also include soil samples for PFAS laboratory analysis per DPT location. The total number of DPT locations, depths, and soil and water samples may be adjusted and reallocated between sites as needed to achieve Phase I RI objectives.

2.3 Monitoring Well Installation

The AE shall install groundwater monitoring wells at or near PFAS release locations (on and/or off Installation) identified by stakeholders during scoping sessions. The actual monitoring well surface completion requirements will be determined during work plan preparation but the AE shall assume 2-inch diameter, Schedule 40 or 80 PVC (schedule 80 is required for wells > 50ft bgs or if the AE deems necessary given the local geological conditions), and completed at the surface with flush-mounted well boxes. The AF will be responsible for obtaining access agreements needed to install monitoring wells on non-AF property. Each monitoring well must be constructed, installed, and developed per governing state regulations for well installation. Governing State is defined as the state in which the installation is located. Monitoring wells shall be installed following all applicable State laws. **Well depths identified in Appendix A1 are estimates. Well depths and screen intervals shall be appropriate for evaluation of groundwater contamination.**

The AE shall include a description of the decision process logic for placing and completing step-out sampling (all media) in the UFP-QAPP WP.

The AE shall collect all surface and subsurface soil samples in accordance with F.A.C. 62-780 for all locations during sampling events so that the sampling results may be used for decision making purposes later. Samples shall be tested for PFAS on a standard turnaround.

Groundwater monitoring well installation at off-installation locations cannot take place until offsite access agreements have been completed by the AF and USACE.

If PFAS contamination is suspected or known in more than 1 discrete water-bearing zone, the AE shall screen each water-bearing zone separately. Soil core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations.

The AE shall not drill through confining materials while performing subsurface investigations and monitoring well installations**, unless approved by the Government**. If natural confining materials (e.g., clay) 2 feet in thickness or engineered confining materials (e.g., geosynthetic liners) are encountered during drilling activities, the AE shall immediately halt drilling activities and contact the USACE and/or AF Project Geologists for guidance.

The AE shall document all subsurface soils during well installation by a qualified and experienced Geologist working under the direction of licensed Professional Geologist licensed in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The AE shall develop all newly installed monitoring wells using a surge and pump procedure. Well development shall be in accordance with local, state, and federal requirements. All groundwater removed will be treated or disposed of in accordance with the approved WMP. Wells should be developed in order of those anticipated to be least contaminated to most contaminated, and equipment shall be properly decontaminated in-between wells. Pre- and post- development photographs are required.

2.4 Groundwater Sampling

The AE shall collect monitoring well samples from new and any existing monitoring wells and analyze the samples for PFAS. The AE shall collect the samples in up to 3 sample events.

- One initial sampling event to sample the existing monitoring well network. This data will be evaluated to determine placement of additional wells.
- Second sampling event (six months after first sampling event) for existing wells and newly installed wells.

- Third sampling event (six months after second sampling event) for existing wells and newly installed wells.
- If additional sampling is needed the options would be exercised as required.

Groundwater samples collected from monitoring wells shall be collected in a manner consistent with all applicable guidance and using a purge method appropriate for the aquifer characteristics and approved by the Base RPM. Groundwater samples shall be field tested for the following parameters: oxidation-reduction potential (ORP), pH, temperature, total dissolved solids (TDS), conductivity, dissolved oxygen (DO), and turbidity. In accordance with the applicable State requirements, use of passive diffusion bag (PDB) samplers or equivalent are not acceptable. All groundwater removed will be treated or disposed of in accordance with the approved Waste Management Plan.

2.5 Surface Water and Sediment Sampling

The AE shall collect surface water and sediment samples at co-located sample locations, unless otherwise specified. Samples shall be collected from downstream to upstream locations in creeks, streams, rivers, etc. In addition, storm water conveyances shall be sampled, as appropriate.

Samples shall be collected in a manner consistent with all applicable guidance. If site-specific conditions indicate, the influence of groundwater on surface water bodies or storm water conveyances shall be evaluated to document the contribution of contamination from base flow of groundwater into these features.

Surface water must be collected by inserting a capped sampling container with the opening pointing down to avoid the collection of surface films. At the time of container opening, the container must be more than 1 foot from the sediment bed and more than 1 foot below the surface water level and as close to the center of the channel as possible, where practicable. Surface water shall not be filtered to remove suspended solids, either in the field or at the laboratory. Centrifuging of the sample at the laboratory shall be used if phase separation is required. Sediment core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations. Sampling in creeks/streams/rivers will be conducted from downstream to upstream locations.

2.6 Pore Water Sampling with Lysimeters

The AE shall evaluate the potential for PFAS in soil to leach to groundwater at representative PFAS source areas using lysimetry. The AE shall install suction lysimeters at a representative range of soil types and contamination levels to evaluate migration to groundwater (source strength). Selection of locations for lysimeters should be done after soil data is available for review to ensure lysimeters are placed at locations best suited to address potential migration to groundwater. Lysimeters shall be installed at appropriate depths based on site-specific conditions per source area. Source areas shall be investigated to evaluate migration to groundwater. Pore water samples from lysimeters shall be collected during 4 separate sampling events. The duration of time between each of the 4 sampling events will be determined later. It is not expected the lysimeters will need to remain in place after the prescribed sampling has been performed and results have been reviewed.

2.7 Surveying

A licensed surveyor is required to survey horizontal and vertical elevations of newly installed wells, the vertical elevations of the ground surface near the wells, and the top of the inner well casings. Other surveys required during the performance of work in the SOW include but are not limited to: DPT and lysimeter locations, and all soil, sediment, and surface water sample locations. A licensed surveyor may not be required for DPT, lysimeter, soil, sediment, or surface water sample locations as long as the equipment used is capable of achieving sub- meter accuracy and appropriate benchmarks/controls are used in accordance with best practices and standard operating procedures (see Section 5.8). Installed

monitoring wells will be surveyed to 0.01-ft accuracy for location and elevation data by a professional land surveyor that is registered in the state in which the work is being performed.

2.8 Basewide Synoptic Groundwater Gauging

One UFP-QAPP**/WP** for each installation (total of 2 UFP-QAPP**/WP**s) shall define the exact procedure for a single Basewide Synoptic Groundwater Gauging event for up to 120 wells. The AE will gauge depth to groundwater on the designated wells and use the data to develop a potentiometric groundwater map depicting groundwater flow.

2.9 Decontamination

Decontamination of drilling equipment must only use materials listed in Appendix D. All equipment must be scrubbed with a plastic brush or steam cleaned and rinsed thoroughly in PFAS-free water to clean away any debris or material on exposed surfaces and then triple-rinsed in distilled (Grade 3 or better) or deionized water (or millipore water). Sampling must include submission of sample(s) representing any water at the point of use (i.e., water truck or tank on-site) used by the driller for drilling purposes.

Equipment that contacts well water within the well (pumping equipment, water meters, etc.) must not contain or be coated with Teflon® unless the Teflon® is internal to the equipment and does not contact the external environment.

2.10 AFFF Release Areas and Phase 1 RI Requirements

AFFF Release Areas were investigated in the SI phase conducted in accordance with CERCLA. Areas of Interest (AOIs) identified for investigation under this Phase I RI are listed in Appendix A and have been determined to have an AFFF release that requires additional investigation in this Phase I RI. Additional information about each of these areas is available in the Installation Site Investigation (SI) reports in the AR or available via the Installation RPMs.

2.11 RI Report

The AE shall prepare a Phase I RI Report for each installation that characterizes environmental conditions, describes the complete nature and extent of the PFOA, PFOS, and PFBS, describes and portrays a comprehensive groundwater flow and contaminant hydrogeological conditions, and evaluates the migration pathways based on the geologic, geophysical, hydrogeological, ecological, chemical, physical, and hydrologic data.

The report shall include analysis and interpretation of multiple factors such as groundwater hydrology/modeling and development of a CSM, groundwater transmissivity, fate transport and contaminant mass flux, calculation of travel times, contamination extent, source identification, and preliminary evaluation remedial alternatives (to be identified at a later date). Other RI reporting to be accomplished include:

- Three-dimensional CSM with pictorial.
- Site level conclusions and whether DQOs were met.
- Analytical data tables for that includes all ~~24~~ **analyzed** PFAS compounds.
- Hydrogeologic cross-section(s).
- Potentiometric maps.
- Isoconcentration contaminant contour maps.
- Basewide Investigative Data Report prepared in table format for internal technical/regulatory team distribution.
- Identification of potentially complete and/or complete exposure pathways and potential receptors.
- Recommendations for any future sampling to address risk assessment needs.

All project deliverables (plans, reports, memorandum, meeting minutes, handouts, etc.) for limited non-AF distribution must include a separate technical memorandum on non-publicly releasable information.

2.12 General Support Requirements

The AE shall be responsible for additional activities in support of this contract such as assisting the Government with public relations, access agreements, and other activities related to this task order.

Examples of support requirements are presented on Table 6.

Table 6: Additional General Support Tasks Required for this Contract

Task	Description	Frequency/Duration/Assumptions
RAB Meetings	Support AF RPM for preparations, reservations, mailings, and attend RABs	RAB meetings (if required)
Progress Status Teleconferences	Teleconferences between AE, AF and USACE	Assume biweekly per base
Partnering/Working Meetings (Site Reconnaissance)	Meetings with AF and USACE. Assume at AF unless COVID-19 restrictions require teleconferences	Assume 2 meetings/year per base
Miscellaneous PM and Tech support to USACE and AF	General support/requests related to the ERP	Assume labor support of up to 100 hours/year for miscellaneous, unscheduled support for requests, e.g., correspondence review, data calls, presentations, figures, data analysis/summaries, etc.
Public Affairs	Assist PAO by distributing mailers, attending a public meeting, document preparation, etc.	Assume home office support of up to 80 hours/year of effort related to responding to inquiries, review of requests, etc.
AE Manpower Reporting		Yearly
PMP, IMS, project web site	Maintain current documentation	Update web site and PMP as needed to maintain current, update IMS monthly. Update frequency shall be approved by the COR/PM and additional more frequent updates may be required per COR/PM.

2.13 Phase I Remedial Investigation CLIN Structure

The SOW includes the tasks required to complete a Phase I RI (in accordance with CERCLA) for each installation at the release area sites included in Appendix A. This task order does not include completing a Risk Assessment or FS. The Phase I RI shall be completed in accordance with the most recent EPA guidance and 40 CFR § 300.430(d), and the additional requirements stated in this SOW. All release areas shall be fully delineated both horizontally and vertically for affected media (soil, groundwater, surface water, sediment) and contaminant migration pathways. Details of the actual scope required to fulfill the

Phase I RI requirement will be determined in DQO scoping meetings with AF, the USACE, and environmental regulators.

2.14 Period of Performance (POP)

The performance period of this contract is 36 months after effective date of the contract. Subject to the availability of funds, the KO may exercise the optional line items by written notice to the AE. If exercised, options will have an initial POP of 36 months.

3.0 Optional Tasks

Optional tasks for each installation are in **Appendix B** below the site-specific requirements tables. The optional tasks may be exercised, as determined necessary by the Government, to complete the Phase I RI. The Phase I RI UFP-QAPP WP shall be prepared with the decision logic and worksheet details included to allow the exercise of these options without WP modification. **Quantities may be reallocated between sites on a given installation as needed** to address site-specific requirements to complete the Phase I RI.

The AE shall guarantee the negotiated price for options for the full contract period of performance (POP). If an option is awarded and later determined to be not required, the option and associated funds may be modified and removed from the contract. The Government will notify the AE of the intent to exercise the following options during the execution of this task order as specific optional tasks are needed to complete the Phase I RI, and the Government will issue the AE a notice to proceed prior to executing all options.

Optional task awarded after September 2022 do not include updates associated with EPA Draft Method 1633 or the May 2022 EPA Residential Screening Levels (RSLs). The need for updating those option tasks will be determined prior to award of those optional tasks.

APPENDICES A: Installation-Specific Requirements Tables

APPENDIX A1: Homestead Air Reserve Base Phase 1 RI Requirements

HARB Site-Specific Phase I RI Requirements

CLIN	Site	Status				MW Install						DPT for Soil Scre			
		Max GW PFOA + PFOS (ug/L)	Max. Soil Concentration (ug/kg)	Est DTW (ft bgs)	Qty Existing MWs	Qty New LDW	Est LDW Depth bgs (ft)	Total LDW Footage (ft)	Qty New VDW	Est VDW Depth bgs (ft)	Total VDW Footage (ft)	Qty SBs	SB Depth (ftbgs)	SB Total Feet (ft)	Qt So Sam (p SE
1	[redacted]	10.08	3.3 PFOA 78 PFOS 0.52 PFBS	5	15	5	15	75	1	35	35	15	4	60	3
2		0.32	8.1 PFOA 4.5 PFOS	5	0	8	15	120	1	35	35	6	4	24	3
3		0.915	3 PFOA 2.1 PFOS 0.3 PFBS	5	0	7	15	105	1	35	35	6	4	24	3
4		0.26	0.27 PFOA	5	0	7	15	105	1	35	35	8	4	32	3
5		12.8	4.1 PFOA 64 PFOS 0.42 PFBS	5	0	15	15	225	3	35	105	20	4	80	3
6		2.58	18 PFOA 440 PFOS	5	0	8	15	120	2	35	70	15	4	60	3
7		1.49	290 PFOA 110 PFOS 0.77 PFBS	5	0	8	15	120	2	35	70	15	4	60	3
8		0.071	No soil data collected	5	4	8	15	120	2	35	70	15	4	60	3
9		5.8	No soil data collected	5	4	14	15	210	2	35	70	20	4	80	3
10		1.03	14 PFOA 110 PFOS 0.65 PFBS	5	6	30	15	450	8	35	280	30	4	120	3
		Total			**29**	**110**		**1650**	**23**	**350**	**805**	**150**		**600**	

NOTES
DW = Lateral defining wells, VDW = Vertically defining wells
olumn V = 3 DPTs per new LDW Install - grab 1 GW sample at LDW depth; equals the number of GW samples needed during screening for LDWs
olumn X = 3 DPTs per new VDW install (3 x qty new VDWs)
olumn Y = qty of VDW DPTs (column X) x 3 sample intervals per DPT

APPENDIX A2: Tyndall Air Force Base Phase 1 RI Requirements

TAFB Site-Specific Phase I RI Requirements

		Status				MW Install						DPT for Soil S			
LIN	Site	Max GW PFOA + PFOS (ug/L)	Max. Soil Concentration (mg/kg)	Est DTW (ft bgs)	Qty Existing MWs	Qty New LDW	Est LDW Depth bgs (ft)	Total LDW Footage (ft)	Qty New VDW	Est VDW Depth bgs (ft)	Total VDW Footage (ft)	Qty SBs	SB Depth (ftbgs)	SB Total Feet (ft)	S
1	[redacted]	36.3	0.084	6	1	12	15	180	2	25	50	15	5	75	
2		0.74	0.046	2	1	10	10	100	1	22	22	4	2	8	
3		0.095	NS	4	6	5	15	75	1	25	25	3	4	12	
4		4.25	0.012	3	0	12	15	180	2	25	50	2	2	4	
5		6.489	0.023	2	0	10	10	100	1	20	20	2	2	4	
6		20.9	0.11	5	7	8	10	80	2	25	50	7	4	28	
7		0.18	0.00049	4	0	10	15	150	1	25	25	5	4	20	
8		8.36	0.039	3	0	15	15	225	3	25	75	6	2	12	
9		3.36	0.0093	3	0	12	15	180	3	25	75	6	2	12	
10		902.46	0.324	3	0	15	15	225	4	20	80	10	2	20	
11		877	0.53	3	33	15	15	225	4	20	80	6	2	12	
12		0.598	0.0024	2	32	12	10	120	3	20	60	5	1	5	
13		264	2.9	4	37	15	15	225	4	20	80	12	3	36	
		Total			**117**	**151**		**2065**	**31**	**297**	**692**	**83**		**248**	

OTES
DW = Lateral defining wells, VDW = Vertically defining wells
olumn V = 3 DPTs per new LDW Install - grab 1 GW sample at LDW depth; equals the number of GW samples needed during screening f
olumn X = 3 DPTs per new VDW install (3 x qty new VDWs)
olumn Y = qty of VDW DPTs (column X) x 3 sample intervals per DPT
olumn Z = # VDW DPTs (column "X") x VDW DPT depth (VDW DPT depth = estimated VDW depth (column K) plus 10 ft)
OW section 2.6: Porewater samples from Lysimeters will be collected during 4 separate sampling events
OW Section 2.4: Assume 3 separate GW sampling events for all new and existing MWs
ssume 2 separate surface water/sediment sampling events to collect samples (for seasonal variation; sample at low tide if applicable)
S = Not sampled
TU539P-Sub: there are 3 areas to investigate on site TU539P-Sub (see section 1.1.4 of the SOW); line 8 on the requirements table refers to

APPENDIX B – Installation-Specific Optional Tasks

1.0 HARB Options

1.1 Option-001 DPT (soil screening) and Soil Sampling I

The AE shall complete up to 300 ft of DPT. Up to 120 soil samples will be collected at up to 3 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

~~1.2 Option-002 DPT (soil boring) and Soil Sampling II~~

~~The AE shall complete up to 300 ft of DPT. Up to 120 soil samples will be collected at up to 3 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc~~

1.3 Option-003 Groundwater Sampling and Analysis I

The AE shall complete all task required to collect a groundwater sample from 29 existing monitoring wells and 133 new monitoring wells (total = 162 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

~~1.4 Option-004 Groundwater Sampling and Analysis II~~

~~The AE shall complete all task required to collect a groundwater sample from 29 existing monitoring wells and 133 new monitoring wells (total = 162 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc~~.

1.5 Option-005 DPT and Groundwater Sampling I for Groundwater Screening

The AE shall complete up to 3000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 150 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

~~1.6 Option-006 DPT and Groundwater Sampling II for Groundwater Screening~~

~~The AE shall complete up to 3000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 150 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc~~.

1.7 Option-007 Monitoring Well Installation and Sampling I

The AE shall install up to 1200 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 70 groundwater samples and up to 2 separate sampling events (total of up to 140 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

~~1.8 Option-008 Monitoring Well Installation, Sampling II~~

~~The AE shall install up to 1200 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 70 groundwater samples and up to 2 separate sampling events (total of up to 140 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

~~1.9 Option-009 Surface Water Sampling~~

~~The AE shall complete all tasks required to collect up to 31 surface water samples (up to 2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

~~1.10 Option-010 Sediment Sampling~~

~~The AE shall complete all tasks required to collect up to 31 additional sediment samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

~~1.11 Option-011 Surface Water and Sediment (Co-located Sampling)~~

~~The AE shall complete all tasks required to collect up to 25 surface water and 25 sediment co-located samples (up to 2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

~~1.12 Option-012 Lysimeter Installation and Porewater Sampling~~

~~The AE shall complete all tasks required to install up to 30 additional Lysimeters to the water table depth (assume additional Lysimeter footage of 150ft) and collect up to 30 additional porewater samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

1.13 Option-013 Optional Site 1 - Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to DA054P in Appendix A1, but also include an additional 10 surface water and 10 sediment samples per event.

~~1.14 Option-014 Optional Site 2 Delineation~~

~~The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to DA054P in Appendix A1, but also include an additional 10 surface water and 10 sediment samples per event.~~

2.0 TAFB Options

2.1 Option-001 DPT (soil screening) and Soil Sampling I

The AE shall complete up to 150 ft of DPT. Up to 80 soil samples will be collected at up to 4 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

2.2 Option-002 DPT (soil boring) and Soil Sampling II

The AE shall complete up to 150 ft of DPT. Up to 80 soil samples will be collected at up to 4 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

2.3 Option-003 Groundwater Sampling and Analysis I

The AE shall complete all task required to collect a groundwater sample from 117 existing monitoring wells and 182 new monitoring wells (total = 299 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

~~2.4 Option-004 Groundwater Sampling and Analysis II~~

~~The AE shall complete all task required to collect a groundwater sample from 117 existing monitoring wells and 182 new monitoring wells (total = 299 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.~~

2.5 Option-005 DPT and Groundwater Sampling I for Groundwater Screening

The AE shall complete up to 2000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 120 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

2.6 Option-006 DPT and Groundwater Sampling II for Groundwater Screening

The AE shall complete up to 2000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 120 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

2.7 Option-007 Monitoring Well Installation and Sampling I

The AE shall install up to 1000 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 50 groundwater samples and up to 2 separate sampling events (total of up to 100 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

~~2.8 Option-008 Monitoring Well Installation, Sampling II~~

~~The AE shall install up to 1000 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 50 groundwater samples and up to 2 separate sampling events (total of up to 100 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

~~**2.9 Option-009 Surface Water Sampling**~~

~~The AE shall complete all tasks required to collect up to 56 surface water samples (up to 2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

2.10 Option-010 Sediment Sampling

The AE shall complete all tasks required to collect up to 24 additional sediment samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

~~**2.11 Option-011 Lysimeter Installation and Porewater Sampling**~~

~~The AE shall complete all tasks required to install up to 40 additional Lysimeters to the water table depth (assume additional Lysimeter footage of 200ft) and collect up to 40 additional porewater samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.~~

2.12 Option-012 Optional Site 1 – Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to SS041P in Appendix A4.

~~**2.13 Option-013 Optional Site 2 Delineation**~~

~~The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to TU539P SUB Silver Flag Fire Trng Area (in AFFF SI Report) (Named AFRL Fire Trng Pit in EESOH) in Appendix A4.~~

APPENDIX C: List of Acronyms

AF ..... Air Force
AFB ..... Air Force Base
AFCEC ..... Air Force Civil Engineering Center
AFFF ..... Aqueous Film-Forming Foam
AFI ..... Air Force Instruction
AOI ..... Area of Interest
API ..... American Petroleum Institute
APP ..... Accident Prevention Plan
ASD ..... Assistant Secretary of Defense
bgs ..... Below Ground Surface
CAC ..... Common Access Card
CADD ..... Computer-aided Design and Drafting
CD ..... Compact Disc
CERCLA ..... Comprehensive Environmental Response, Compensation, and Liability Act
CFR ..... Code of Federal Regulations
CLIN ..... Contract Line Item Number
COR/PM ..... Contracting Officer's Representative
CPSMR ..... AE's Progress, Status and Management Report
CSM ..... Conceptual Site Model
DLH ..... Data Loading Handbook
DoD ..... Department of Defense
DPT ..... Direct-Push Technology
DQO ..... Data Quality Objectives
EDD ..... Electronic Data Deliverable
EO ..... Executive Order
ELAP ..... Environmental Laboratory Accreditation Program
EM CX ..... Environmental and Munitions Center of Expertise
EPA ..... Environmental Protection Agency
EPCRA ..... Emergency Planning and Community Right-to-Know Act
EPP ..... Environmental Preferable Purchasing
EPEAT ..... Electronic Product Environmental Assessment Tool
ERPIMS ..... Environmental Resources Program Information Management System
ESD ..... Explanation of Significant Differences
FAR ..... Federal Acquisition Regulations
FDEP ..... Florida Department of Environmental Protection
FEMP ..... Federal Emergency Management Program
FFA ..... Federal Facilities Agreement
FGDC ..... Federal Geographic Data Committee
FS ..... Feasibility Study
FSC ..... Federal Service Code
FE ..... Government-Furnished Equipment
GFI ..... Government-Furnished Information
GFP ..... Government-Furnished Property
GIO ..... Geospatial Integration Office
GIS ..... Geographical Information System
HAZWOPER ..... Hazardous Waste Operations and Emergency Response
HDPE ..... High-Density Polyethylene
IBC ..... International Building Code
IDW ..... Investigation-Derived Waste
IMS ..... Integrated Master Schedule

KO	Contracting Officer
KTR	AE (Prime Contractor)
LDPE	Low-Density Polyethylene
NA	Not Applicable
NACE	National Association of Corrosions Engineers
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEC	National Electrical Code
NFPA	National Fire Protection Association
NOV	Notice of Violation
NSDI	National Spatial Data Infrastructure
OSHA	Occupational Safety and Health Administration
PAO	Public Affairs Office
.pdf	portable document file
PDT	Project Delivery Tea,
PM	Project Manager
PMP	Project Management Plan
PMR	Project Management Review
POC	Point of Contact
POP	Period of Performance
PVC	Polyvinyl Chloride
SOW	Statement of Work
QA/QC	Quality Assurance/Quality Control
OSD	Office of the Secretary of Defense
QSM	Quality Systems Manual
RAB	Restoration Advisory Board
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RFP	Request for Proposal
Phase I RI	Remedial Investigation
ROD	Record of Decision
RPM	Restoration Project Manager
SARA	Superfund Amendments and Reauthorization Act
SB or SoB	Statement of Basis
SDSFIE	Spatial Data Standard for Infrastructure and Environment
SMP	Site Management Plan
SNAP	Significant New Alternatives Policy
SSHP	Site Safety and Health Plan
SSPC	Steel structures and painting counsel
SI	Site Inspection
SWMU	Solid Waste Management Unit
TO	Task Order
TBD	To Be Determined
UFC	Uniform Fire Code
UFP-QAPP	Uniform Federal Policy- Quality Assurance Program Plan
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited use/unrestricted exposure
WP	Work Plan

APPENDIX D: Summary of Prohibited and Acceptable Items

Prohibited Items	Acceptable Items
Field Equipment	
Teflon® containing materials	High- density polyethylene (HDPE) materials
Low density polyethylene (LDPE)	Polyvinyl chloride (PVC) or acetate liners
Aluminum foil	Silicon tubing
Waterproof field books	Loose paper (non- waterproof)
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
	Sharpies®, pens
Post- It Notes	
Field Clothing and Personal Protective Equipment (PPE)	
New cotton clothing or synthetic water resistant, waterproof, or stain- treated clothing, clothing containing Gore- Tex™	Well- laundered clothing, defined as clothing that has been washed 6 or more times after purchase, made of natural fibers (preferably cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore- Tex™	Boots made with polyurethane and polyvinyl chloride (PVC)
Tyvek®	Cotton Clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	Sunscreens - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are "free" or "natural" Insect Repellents - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics Sunscreen and insect repellant - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion
Sample Containers	
LDPE or glass containers	HDPE or polypropylene
Teflon®- lined caps	Unlined polypropylene caps
Rain Events	
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior to and following sampling activities
Equipment Decontamination	
Decon 90	Alconox® and/or Liquinox®
Water from an on- site well	PFAS-free water from a tested source **(following the most current PFAS-free guidance/definition)**
Food Considerations	
All food and drink, with exceptions noted on the right	Bottled water and hydration drinks (i.e., Gatorade® and Powerade®) to be brought and consumed only in the staging area

FLORIDA DEPARTMENT OF Environmental Protection

Northwest District
160 W. Government Street, Suite 308
Pensacola, FL 32502

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

January 10, 2024

United States Air Force
Attn: [redacted]
103 Mississippi Avenue, Building 36234
Tyndall AFB, Florida 32403
Brandon.Rocker@us.af.mil

Subject: Recovered Groundwater Treatment Plan Approval Order
Tyndall Air Force Base
Zone 3.2 WEG HQ and Hangar Facilities
Bay County
Facility ID DOD_2_18341

Dear [redacted]:

The Northwest District has reviewed the Tyndall AFB Zone 3.2 Groundwater Treatment Train Information and Pilot Study Test Result Information (Revision 1-2024.01.08) and Request for Groundwater Treatment Plan Approval Order e-mail from the US Army Corps of Engineers and Tyndall AFB, for the Facility referenced above. The documents were received on January 9, 2024. We found all the documents submitted to date to be adequate to meet the treatment requirements under the provisions of rule 62-780.525(4), Florida Administrative Code (F.A.C.). The Florida Department of Environmental Protection (Department) has determined that the actions proposed in this Interim Groundwater Remediation (IGR) represent a reasonable strategy toward accomplishing the site-specific objectives. However, implementation of this IGR is not intended to result in a complete cleanup to the applicable cleanup target levels referenced in Chapter 62-777, F.A.C., or site-specific cleanup target levels. A subsequent phase of remedial design may be necessary to accomplish the necessary comprehensive cleanup in accordance with Chapter 62-780, F.A.C. Pursuant to paragraph 62-780.525(7)(b), F.A.C., the Department approves the IGR as described in the Tyndall AFB Zone 3.2 Groundwater Treatment Train Information and Pilot Study Test Result Information.

If it appears during IGR implementation that the remedial treatment strategy is not effective a request for modification of this Order, pursuant to subsection 62-780.700(14), F.A.C., may be submitted to the Department or the Department may require the preparation and submittal of a IGR Modification to enhance the active treatment. Depending on the nature of the system modification, the Department may revoke this Order.

The operation of the IGR system must be initiated prior to discharge of recovered groundwater as outlined in the Tyndall AFB Zone 4.1 Groundwater Treatment Plan. You are also required to

submit to the Department record drawings (as-built drawings) of the treatment system within 120 days of initiating operation of the active remediation treatment system(s). These drawings must be signed and sealed by a professional engineer. You are further required to collect and submit effluent analytical results in accordance with the Pilot Study portion of the provided plan to ensure that the system is effectively removing the constituents of concern.

Notice of Rights

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until a subsequent order of the Department. Because the administrative hearing process is designed to formulate final agency action, the subsequent order may modify or take a different position than this action.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rules 28-106.201 and 28-106.301, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, any e-mail address, any facsimile number, and telephone number of the petitioner, if the petitioner is not represented by an attorney or a qualified representative; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@FloridaDEP.gov. Also, a copy of the petition shall be mailed to the addressee of this order at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the addressee of this order must be filed within **21** days of receipt of this written notice. Petitions filed by any persons other than the addressee of this order must be filed within **21** days of publication of the notice or within **21** days of receipt of the written notice, whichever occurs first. You cannot justifiably rely on the finality of this decision unless notice of this decision and the right of substantially affected persons to challenge this decision has been duly published or otherwise provided to all persons substantially affected by the decision. While you are not required to publish notice of this action, you may elect to do so pursuant Rule 62-110.106(10)(a).

The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C. If you do not publish notice of this action, this waiver may not apply to persons who have not received a clear point of entry.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@FloridaDEP.gov, before the deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

Judicial Review

Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Florida Rules of Appellate Procedure 9.110 and 9.190 with the Clerk of the Department in the Office of General Counsel (Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000) and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice must be filed within 30 days from the date this action is filed with the Clerk of the Department.

Questions

Any questions regarding the Department's review of your IGR should be directed to [redacted] or via e-mail at [redacted]. Questions regarding legal issues should be referred to the Department's Office of General Counsel at (850)-245-2242. Contact with any of the above does not constitute a petition for an administrative hearing or a request for an extension of time to file a petition for an administrative hearing.

EXECUTION AND CLERKING

Executed in Pensacola, Florida.
STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

[redacted]

Northwest District Director

EMO/aw

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this document and all attachments were sent on the filing date below to the following listed persons:

[redacted]

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.

[redacted] January 10, 2024

Clerk Date

BL HARBERT INTERNATIONAL

Ground water treatment train information & Pilot study test result information

(Revision 1 - 2024.01.08)

Zone 3.2 WEG HQ and Hangar Facilities

Tyndall AFB
Contract Number W9127822C0012

JSS MTS-150-01

Open Deck Mobile Water Treatment Trailer

SPECIFICATIONS:	
Bed Volume Pounds of Carbon Per Vessel:	2000 Pounds
Flow Rate at 7.5 minutes Empty Bed Contact Time	150 GPM
Inlet/Outlet Size with Connection Type	3" Male Cam Lock
Number of Bag Filters	Two (2) Trade Size # 2 Housings w/ Isolation Piping
Vacuum Breaker Loop	Included
Totalizing/Direct Read Flow Meter	Included
Sample Ports	Influent, Mid-Point & Effluent

SEE BELOW FOR PRINTABLE P&ID

JSS MTS-150-01:
Mobile Carbon Filtration Treatment Trailer

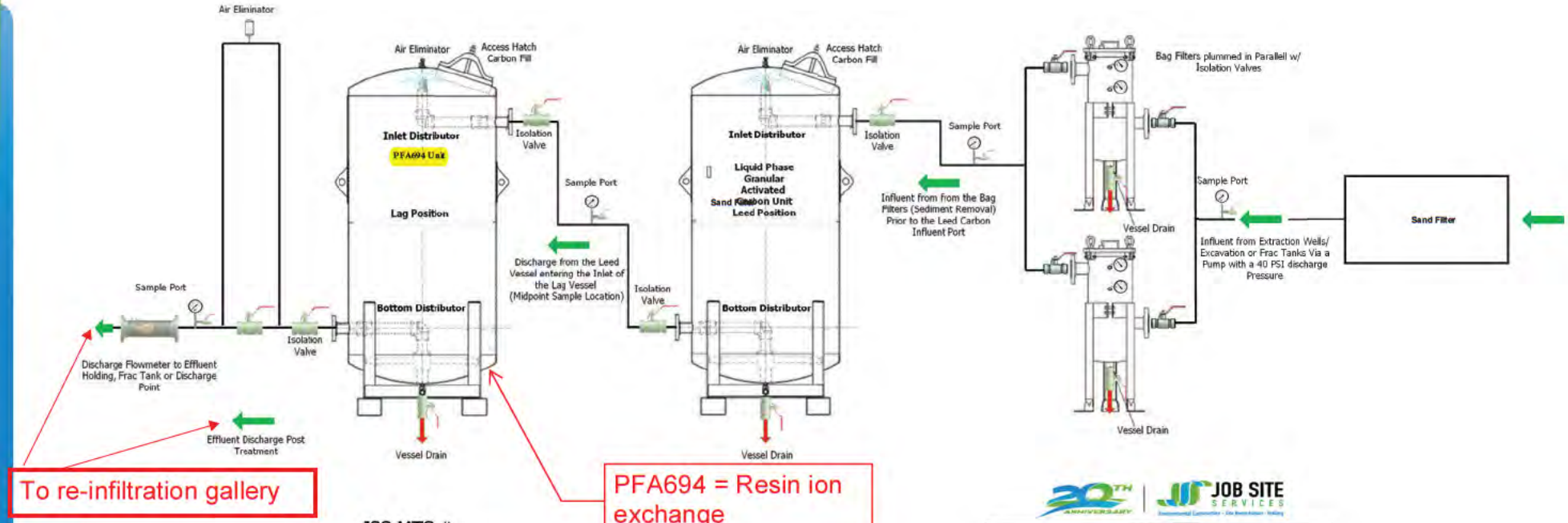
0-150 GPM Capacity

Job Site Services, Inc. Mobile Wastewater Treatment Systems are designed for ease of set-up, operation, and tear down when the jobs complete. JSS's plug and plug and treat design boasts:

Two (2) #2 filter housings, Two (2) 2000-pound carbon vessels, Schedule 80 PVC pipe and pressure/suction inner connection hose plumbing, totalizing flow meter, vacuum loop and pressure gauges with sample ports throughout. The two vessels are set in a lead/lag configuration. Depending on filtration needs, impregnated organo clay or sand can be used instead of carbon, along with custom media options available for specific treatment applications Job Site Services water treatment service staff is on call 24/7 to aid in the operation of this unit both on and off site

For information on renting or purchasing equipment please contact:
Info@JSSMI.com
or visit:
https://www.jssmi.com/contact/contact-formAnd one of our Experienced Project Managers will contact you direct.

Overall system configuration



JSS MTS #_ _ _

Detail	Units	Quanity	Type	Notes
Design Flow	GPM	GPM		
Carbon Per Vessel	Pounds Total			
Filter Bags	Each	(2) Per Change Out		
Layflat (Size & Distance to Discharge)	Diameter in Inches = _" Linear Feet	0'-0"		
Pump (List Type Here)	Unit			
Pump Discharge Hose (Size & Distance to Influent Connection on System)	Diameter in Inches = x" Linear Feet			
Pump Suction Hose (Size & Distance to Pump Inlet Connection from source)	Diameter in Inches = x" Linear Feet			

Job Site Services
4395 Wilder Road - Bay City, Michigan 48706
Main (989) 671-3318
Fax (989) 671-3316

Prepared for:

Site :

Conceptual Pipe Routing and Equipment Locations for discussion

Main 989-671-3318 | Fax 989-671-3316 | 4395 Wilder Rd., Bay City, MI 48706
jssmi.com

JSS EFX24-3

Enclosed Auto Backwashing Sand Filter

Sand filter system configuration

SPECIFICATIONS:	
Flow Rate at 7.5 minutes Empty Bed Contact Time	175 GPM
Inlet/Outlet Size with Connection Type	3" Male Cam Lock
Back Wash Rate	44 GPM
Automated Operation	Included
Heated Enclosure	Included
Insulated Enclosure	Yes
Enclosure Size	10'-0"long x 8'-0" wide x 8'-0" high

SEE BELOW FOR PRINTABLE Specifications and Layouts

JSS EFX24-3:
Enclosed Auto Backwashing Sand Filtration Vessels
0-175 GPM Capacity

Job Site Services, Inc. Mobile Wastewater Treatment Systems are designed for ease of set-up, operation, and tear down when the jobs complete. JSS's plug and plug and treatment design boasts:

Pre-Plumbed Manifolds 3" Inlet a 3" Discharge and a 2" Backwash header.
Programmable Backwash Sequence and Duration control is based on actual field conditions.
The System remains operational during a single Pod backwash cycle via automated Valving.

Job Site Services water treatment service staff is on call 24/7 to aid in the operation of this unit both on and off site.

For information on renting or purchasing equipment please contact:
Info@JSSMI.com
or visit:
https://www.jssmi.com/contact/contact-form
And one of our Experienced Project Managers will contact you direct.

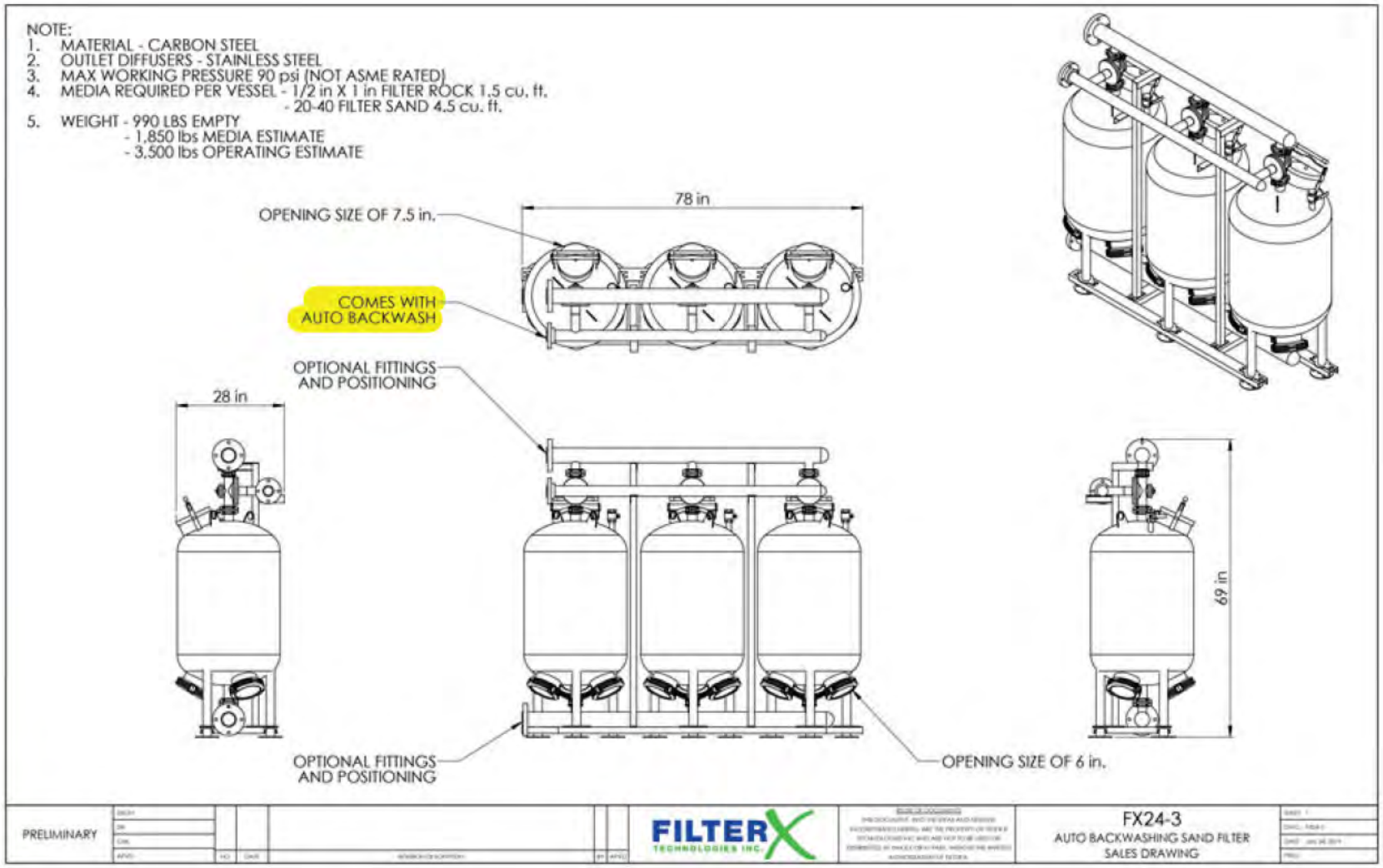
Sand filter system configuration

FX24-3
Auto Backwashing Sand Filter

Back wash PLC control panel

Maximum Flow Rate	175 gpm		40 m³/hr
Number of Vessels		3	
Vessel Diameter	24 in		610 mm
Maximum Working Pressure	90 psi		6 Bar
Minimum Working Pressure	20 psi		1.5 Bar
Backwash Flow Rate	44 gpm		10 m³/hr
Inlet / Outlet (ANSI Flange)	3 in		75 mm
Backwash (ANSI Flange)	2 in		50 mm
Overall Height	69 in		1760 mm
Overall Length (NO FITTINGS)	78 in		2000 mm
Overall Width (c/w Control Panel)	28 in		700 mm
Media Required Per Vessel			
1/2in x 1in Filter Rock	1.5 cu.ft.		0.04 m³
20-40 Filter Sand	4.5 cu.ft.		0.13 m³
Power Requirement		120 VAC	
Solenoid Power		24 VAC	
Required Air Supply		2 cfm @ 75 psi	
Weights			
Empty	990 lbs		450 kg
Media (Estimate)	1850 lbs		840 kg
Operating (with water)	3500 lbs		1587 kg
Standard Color		RAL 5010 Blue	

Sand filter system configuration



Main 989-671-3318 | Fax 989-671-3316 | 4395 Wilder Rd., Bay City, MI 48706
jssmi.com

ACTIVATED CARBON
& SERVICES

DATASHEET

Granulated activated charcoal media information

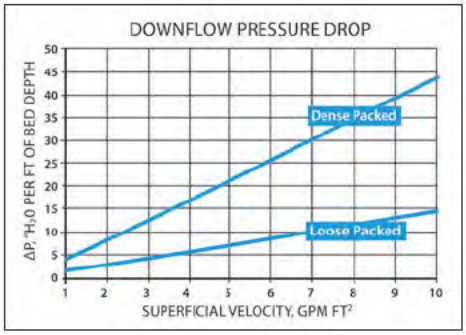
COL - GL 60R (8x30)

LIQUID PHASE REACTIVATED CARBON

COL-GL 60R (8 x 30) is a hard, reactivated, carbon manufactured from pooled spent carbon which is recommended for a variety of waste water and process water treatment. **COL-GL 60R (8 x 30)** efficiently removes chlorine, taste and odor compounds, and volatile organics, even with brief contact times.

APPLICATIONS

- Remediation
- Wastewater Treatment
- Condensate Water Treatment
- Range of Process Water Treatment



SPECIFICATIONS	COL-GL60R	ASTM TEST M
Iodine Number, min	800	–
Bulk Density, min	0.50g/cc	D-2854
Abrasion No., mi.	75	–
Effective Size, mm	0.8–1.0	–
Moisture as packed	2%	D-2867
U.S. Standard Sieve Size	8 x 30	–
Larger than No. 8, max.	15%	
Smaller than No. 30, max.	5%	

STANDARD PACKAGING

- 55 lb or 27. 5 lb polylined polypropylene bags
- 200 lb fiber drums
- 1100 lb supersacks

This information is offered solely for your consideration and verification. It has been gathered from reference materials and/or test procedures and is believed to be true and accurate. None of this information shall be constituting a warranty or representation, expressed or implied, for which we assume legal responsibility or that the information or goods described is fit for any particular use either alone or in combination with other goods or processes.

3774 Hoover Road, Blasdell, NY 14219 t 716 677-6661 f 716 677-6663 NYinfo@activatedcarbon.com activatedcarbon.com

PRODUCT DATA SHEET

Purofine®

PFA694

Polystyrenic Gel

Ion exchange media information

PRINCIPAL APPLICATIONS

- Removal of perfluoroalkyl substances
- Removal of polyfluoroalkyl substances

ADVANTAGES

- Very high operating capacity
- Excellent kinetics

SYSTEMS

- Municipal

TYPICAL PACKAGING

- 1 ft³ Sack
- 25 L Sack
- 5 ft³ Drum (Fiber)
- 1 m³ Supersack
- 42 ft³ Supersack

** Reduces PFAS to non-detect levels ranging from 1 – 5 parts per trillion*

TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS:

Polymer Structure	Polystyrene crosslinked with divinylbenzene
Appearance	Spherical Beads
Functional Group	Complex Amino
Mean Diameter	675 ± 75 µm
Uniformity Coefficient (max.)	1.3
Specific Gravity	1.05
Shipping Weight (approx.)	650 - 700 g/L (40.6 - 43.8 lb/ft³)
Temperature Limit	100 °C (212.0 °F) (Cl^- form)
Temperature Limit	60 °C (140.0 °F) (OH^- form)

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Hydraulic Characteristics

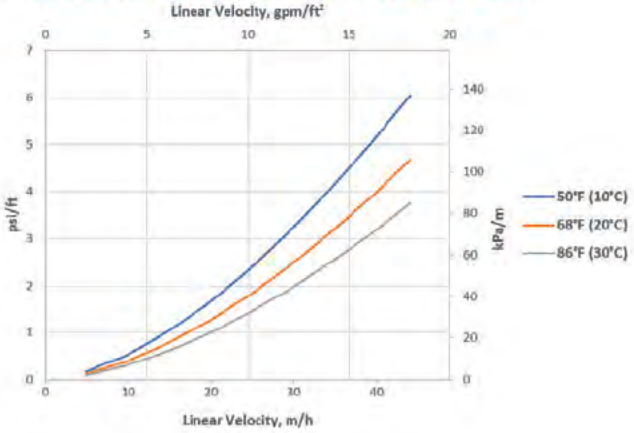
PRESSURE DROP

The pressure drop across a bed of ion exchange resin depends on the particle size distribution, bed depth, and voids volume of the exchange material, as well as on the flow rate and viscosity of the influent solution. Factors affecting any of these parameters—such as the presence of particulate matter filtered out by the bed, abnormal compressibility of the resin, or the incomplete classification of the bed—will have an adverse effect, and result in an increased head loss. Depending on the quality of the influent water, the application and the design of the plant, service flow rates may vary from 10 to 40 BV/h.

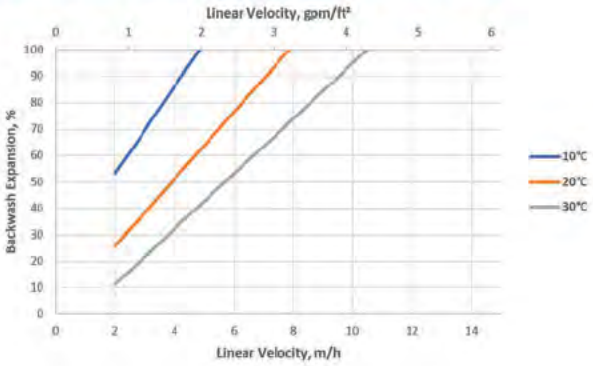
BACKWASH

During up-flow backwash, the resin bed should be expanded in volume between 50 and 70% for at least 10 to 15 minutes. This operation will free particulate matter, clear the bed of bubbles and voids, and reclassify the resin particles ensuring minimum resistance to flow. When first putting into service, approximately 30 minutes of expansion is usually sufficient to properly classify the bed. It is important to note that bed expansion increases with flow rate and decreases with influent fluid temperature. Caution must be taken to avoid loss of resin through the top of the vessel by over expansion of the bed.

PRESSURE DROP ACROSS RESIN BED



BACKWASH EXPANSION OF RESIN BED



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Treatment train narrative

BLHI's initial test of groundwater that was pulled from well points within the AFFF buffer zone and stored in frac tanks found the levels of contaminant to be from as low as 47 ppt combined PFOS/PFOA to as high as 1570 ppt combined PFOS/PFOA. (reference Section 1). Samples that tested over the 70ppt were then treated through a 55 gallon drum (500 lbs) of granulated activated charcoal (reference Section 2). The 55 gallon drum was found to be effective in bringing all but 1 frac tank below the required 70 ppt threshold. The frac tank that originally (reference Section 1) tested at 1570 ppt of combined PFOS/ PFOA was brought down to a concentration of 289 ppt of PFOS / PFOA while utilizing granulated activated charcoal only. All other frac tanks treated with granulated activated charcoal were brought below the required threshold.

A second round of testing was then performed on 11/21/2023 with a well point located at the area that originally produced the 1570 ppt of PFOS/PFOA, but this time the treatment train included sand filters, 5 micron bag filters, granulated activated charcoal and an ion exchange media (reference Section 3). The ensuing test results were unable to detect any PFOS/PFOA.

In addition, BLHI performed a third round of testing from 11/30/2023 to 12/8/2023 pulling groundwater from a continuous sock drain located along the south and west perimeter of the WEG Headquarters and Hangars (reference Section 4). This water was treated by the same means and methods as Section 3. These ensuing test results were also unable to detect any PFOS/PFOA.

This information leads BLHI to believe that the new proposed filtration train system will exceed the requirements for treatment and re-infiltration of groundwater within our AFFF buffer. In addition to having a primary filtration train consisting of a sand filter, 5 micron bag filter, 2,000 lb of granulated activated charcoal and an ion exchange media on-site during all dewatering activities, BLHI will also have a secondary filtration train system on-site at all times during dewatering activities that will mirror the primary filtration train. This redundance is to prevent disruption in dewatering due to mechanical failure and / or if the primary filtration system will require servicing (i.e. change out the filter media). Moving forward, we propose testing to be performed once a week by a DoD certified laboratory and for the test samples to be taken both pre-filtration and post-filtration. Due to the anticipated lead times for getting test results back from the certified laboratory, if a post-filtration test result is received above 25% of the allowable limit (70 ppt x 25% = 17.5 ppt) BLHI will notify UASF environmental & FDEP immediately and make the necessary modifications to assure we do not exceed 70 ppt (i.e. transfer to the secondary filtration system and change out the filter media on the primary filtration system). In addition, the filter media is anticipated to be effective for 6 months based off the original groundwater tested samples so at the 5 month run time BLHI will evaluate all the data and if the filtration system starts to lose its ability to properly treat the groundwater we will once again make the necessary modifications to assure we do not exceed 70 ppt.

The following pages are supporting Information as follows:

Section 1 - Groundwater well point test results from the West and East sides of the building pad (un-filtered).

Section 2 - Groundwater well point test results from the West and East sides of the building pad after treatment through a 55 gallon (500 lb) drum of granulated activated charcoal.

Section 3 - Groundwater well point test results from the East sides of the building pad after treatment through the new, revised treatment train system specified in this submittal.

Section 4 - Groundwater sock drain test results from the West and South sides of the building pad after treatment through the new, revised treatment train system specified in this submittal.

This Page Starts Treated Water Tests taken by Pace Analytical on 9/28/2023

(Section 1)

Section 1

[redacted]

Legend

- Hand Auger Soil Sample
- Temporary Well and Boring
- Existing Monitoring Wells
- AFFF Site
- Utility Corridor
- Building Footprint

1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).

2. **Bolded** values indicate the result was detected greater than the limit of detection.

N

0 — 299 150 3/4" — 300 Feet

TYNDALL AIR FORCE BASE
FLORIDA

PFAS Sampling Locations
Groundwater Samples
WEG HQ

ARCADIS | FIGURE 14-B

Pace Analytical Services, LLC
7979 Innovation Park Road
Baton Rouge, LA 70809
(225) 678-1833

Pre-treatment sample

ANALYTICAL RESULTS

Project: Tyndall AFB HF221083
Pace Project No.: 20292068

Water from west corners of the building

Sample: TANK 5 **Lab ID: 20292068007** Collected: 09/28/23 15:25 Received: 10/05/23 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	763051-92-9	
3:3 FTCA	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 14:18	356-02-5	
4:2 FTS	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	757124-72-4	
5:3 FTCA	ND	ng/L	24.2	1	10/11/23 11:21	10/12/23 14:18	914637-49-3	
6:2 FTS	**1080**	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	27619-97-2	
7:3 FTCA	ND	ng/L	24.2	1	10/11/23 11:21	10/12/23 14:18	812-70-4	
8:2 FTS	**8.9**	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	39108-34-4	
9Cl-PF3ONS	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	756426-58-1	
ADONA	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	919005-14-4	
HFPO-DA	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	13252-13-6	
NEtFOSAA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2991-50-6	
NEtFOSA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	4151-50-2	
NEtFOSE	ND	ng/L	9.7	1	10/11/23 11:21	10/12/23 14:18	1691-99-2	
NFDHA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	151772-58-6	
NMeFOSAA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2355-31-9	
NMeFOSA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	31506-32-8	
NMeFOSE	ND	ng/L	9.7	1	10/11/23 11:21	10/12/23 14:18	24448-09-7	
Perfluorobutanesulfonic acid	**9.1**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-73-5	
Perfluorodecanoic acid	**1.8**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	335-76-2	
Perfluorohexanoic acid	**350**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	307-24-4	
PFBA	**114**	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	375-22-4	
PFDS	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	335-77-3	
PFDoS	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	79780-39-5	
PFEESA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	113507-82-7	
PFHpS	**3.6**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-92-8	
PFMBA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	863090-89-5	
PFMPA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	377-73-1	
PFNS	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	68259-12-1	
PFOSA	**9.8**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	754-91-6	
PFPeA	**446**	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	2706-90-3	
PFPeS	**9.3**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	307-55-1	
Perfluoroheptanoic acid	**79.1**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-85-9	
Perfluorohexanesulfonic acid	**206**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	355-46-4	
Perfluorononanoic acid	**12.9**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**221**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	1763-23-1	
Perfluorooctanoic acid (PFOA)	**26.4**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	376-06-7	
Perfluorotridecanoic acid	**1.3**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	72629-94-8	
Perfluoroundecanoic acid	**22.7**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2058-94-8	
Surrogates								
13C2-PFDoA (S)	69	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C3HFPO-DA (S)	85	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C3-PFBS (S)	69	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C3-PFHxS (S)	66	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C4-PFBA (S)	8	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		S0

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
7979 Innovation Park Road
Baton Rouge, LA 70809
(225) 678-1833

Pre-treatment sample

ANALYTICAL RESULTS

Water from east corners of the building

Project: Tyndall AFB HF221083
Pace Project No.: 20292068

Sample: TANK 6 **Lab ID: 20292068003** Collected: 09/28/23 14:14 Received: 10/05/23 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	763051-92-9	
3:3 FTCA	ND	ng/L	6.1	1	10/11/23 11:21	10/12/23 13:14	356-02-5	
4:2 FTS	**56.4**	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	757124-72-4	
5:3 FTCA	ND	ng/L	30.3	1	10/11/23 11:21	10/12/23 13:14	914637-49-3	
6:2 FTS	**2280**	ng/L	24.2	5	10/11/23 11:21	10/12/23 14:35	27619-97-2	
7:3 FTCA	ND	ng/L	30.3	1	10/11/23 11:21	10/12/23 13:14	812-70-4	
8:2 FTS	**414**	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	39108-34-4	
9Cl-PF3ONS	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	756426-58-1	
ADONA	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	919005-14-4	
HFPO-DA	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	13252-13-6	
NEtFOSAA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2991-50-6	
NEtFOSA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	4151-50-2	
NEtFOSE	ND	ng/L	12.1	1	10/11/23 11:21	10/12/23 13:14	1691-99-2	
NFDHA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	151772-58-6	
NMeFOSAA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2355-31-9	
NMeFOSA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	31506-32-8	
NMeFOSE	ND	ng/L	12.1	1	10/11/23 11:21	10/12/23 13:14	24448-09-7	
Perfluorobutanesulfonic acid	**53.3**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-73-5	
Perfluorodecanoic acid	**1.4**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	335-76-2	
Perfluorohexanoic acid	**1000**	ng/L	6.1	5	10/11/23 11:21	10/12/23 14:35	307-24-4	
PFBA	**463**	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	375-22-4	
PFDS	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	335-77-3	
PFDoS	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	79780-39-5	
PFEESA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	113507-82-7	
PFHpS	**21.0**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-92-8	
PFMBA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	863090-89-5	
PFMPA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	377-73-1	
PFNS	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	68259-12-1	
PFOSA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	754-91-6	
PFPeA	**1570**	ng/L	12.1	5	10/11/23 11:21	10/12/23 14:35	2706-90-3	
PFPeS	**65.1**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	307-55-1	
Perfluoroheptanoic acid	**545**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-85-9	
Perfluorohexanesulfonic acid	**670**	ng/L	6.1	5	10/11/23 11:21	10/12/23 14:35	355-46-4	
Perfluorononanoic acid	**28.1**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**1310**	ng/L	6.1	5	10/11/23 11:21	10/12/23 14:35	1763-23-1	
Perfluorooctanoic acid (PFOA)	**230**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2058-94-8	
Surrogates								
13C2-PFDoA (S)	55	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C3HFPO-DA (S)	84	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C3-PFBS (S)	74	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C3-PFHxS (S)	61	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C4-PFBA (S)	48	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		

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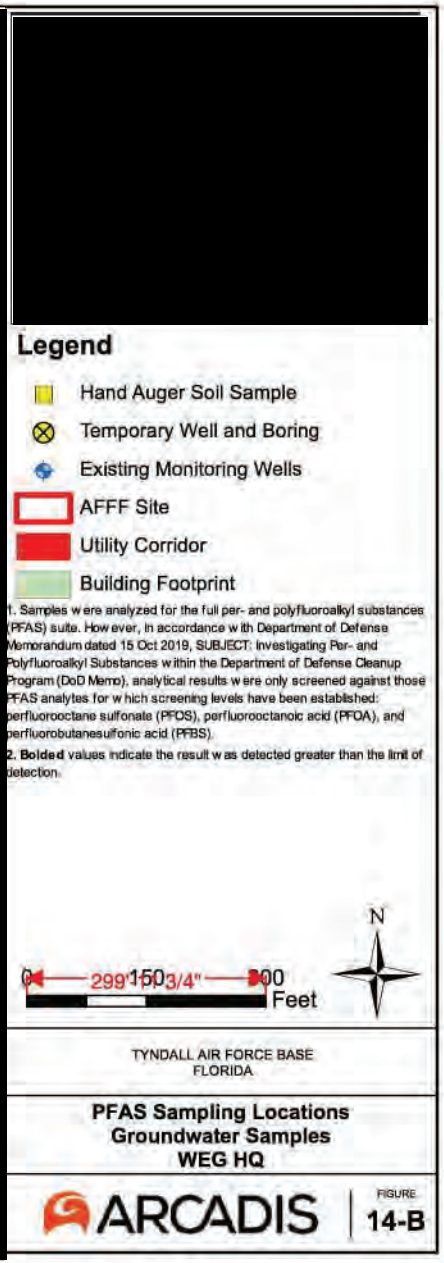
This Page Starts Treated Water Tests taken by Pace Analytical on 10/10/2023

(Section 2)

Section 2

[redacted]



Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

ANALYTICAL RESULTS

Previously Tank #5 water was pumped to tank #2 during the treatment process

Project: Tyndall AFB HF221083
Pace Project No.: 20293570

Sample: TANK 2 **Lab ID: 20293570002** Collected: 10/10/23 10:43 Received: 10/17/23 10:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633							
	Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	763051-92-9	
3:3 FTCA	ND	ng/L	7.0	1	10/25/23 13:51	10/26/23 17:50	356-02-5	
4:2 FTS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	757124-72-4	
5:3 FTCA	ND	ng/L	35.0	1	10/25/23 13:51	10/26/23 17:50	914637-49-3	
6:2 FTS	**229**	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	27619-97-2	
7:3 FTCA	ND	ng/L	35.0	1	10/25/23 13:51	10/26/23 17:50	812-70-4	
8:2 FTS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	39108-34-4	
9Cl-PF3ONS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	756426-58-1	
ADONA	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	919005-14-4	
HFPO-DA	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	13252-13-6	
NEtFOSAA	**5.2**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2991-50-6	
NEtFOSA	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	4151-50-2	
NEtFOSE	ND	ng/L	14.0	1	10/25/23 13:51	10/26/23 17:50	1691-99-2	
NFDHA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	151772-58-6	
NMeFOSAA	**5.5**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2355-31-9	
NMeFOSA	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	31506-32-8	
NMeFOSE	ND	ng/L	14.0	1	10/25/23 13:51	10/26/23 17:50	24448-09-7	
Perfluorobutanesulfonic acid	**2.3**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-73-5	
Perfluorodecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	335-76-2	
Perfluorohexanoic acid	**104**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	307-24-4	
PFBA	**37.2**	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	375-22-4	
PFDS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	335-77-3	
PFDoS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	79780-39-5	
PFEESA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	113507-82-7	
PFHpS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-92-8	
PFMBA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	863090-89-5	
PFMPA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	377-73-1	
PFNS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	68259-12-1	
PFOSA	**3.5**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	754-91-6	
PFPeA	**130**	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	2706-90-3	
PFPeS	**2.3**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	307-55-1	
Perfluoroheptanoic acid	**20.4**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-85-9	
Perfluorohexanesulfonic acid	**39.4**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	355-46-4	
Perfluorononanoic acid	**3.2**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**53.2**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	1763-23-1	
Perfluorooctanoic acid (PFOA)	**8.1**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	72629-94-8	
Perfluoroundecanoic acid	**5.4**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2058-94-8	
Surrogates								
13C2-PFDoA (S)	92	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C3HFPO-DA (S)	105	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C3-PFBS (S)	82	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C3-PFHxS (S)	93	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C4-PFBA (S)	28	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

ANALYTICAL RESULTS

Tank #5 water was pumped to tank #17 during the treatment process

Project: Tyndall AFB HF221083
Pace Project No.: 20293570

Sample: TANK 6 **Lab ID: 20293570003** Collected: 10/10/23 12:46 Received: 10/17/23 10:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	763051-92-9	
3:3 FTCA	ND	ng/L	4.9	1	10/25/23 13:51	10/26/23 18:06	356-02-5	
4:2 FTS	**12.4**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	757124-72-4	
5:3 FTCA	ND	ng/L	24.4	1	10/25/23 13:51	10/26/23 18:06	914637-49-3	
6:2 FTS	**516**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	27619-97-2	
7:3 FTCA	ND	ng/L	24.4	1	10/25/23 13:51	10/26/23 18:06	812-70-4	
8:2 FTS	**80.0**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	39108-34-4	
9Cl-PF3ONS	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	756426-58-1	
ADONA	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	919005-14-4	
HFPO-DA	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	13252-13-6	
NEtFOSAA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2991-50-6	
NEtFOSA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	4151-50-2	
NEtFOSE	ND	ng/L	9.7	1	10/25/23 13:51	10/26/23 18:06	1691-99-2	
NFDHA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	151772-58-6	
NMeFOSAA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2355-31-9	
NMeFOSA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	31506-32-8	
NMeFOSE	ND	ng/L	9.7	1	10/25/23 13:51	10/26/23 18:06	24448-09-7	
Perfluorobutanesulfonic acid	**12.8**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-73-5	
Perfluorodecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	335-76-2	
Perfluorohexanoic acid	**270**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	307-24-4	
PFBA	**128**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	375-22-4	
PFDS	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	335-77-3	
PFDoS	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	79780-39-5	
PFEESA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	113507-82-7	
PFHpS	**3.3**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-92-8	
PFMBA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	863090-89-5	
PFMPA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	377-73-1	
PFNS	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	68259-12-1	
PFOSA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	754-91-6	
PFPeA	**425**	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	2706-90-3	
PFPeS	**12.3**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	307-55-1	
Perfluoroheptanoic acid	**136**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-85-9	
Perfluorohexanesulfonic acid	**121**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	355-46-4	
Perfluorononanoic acid	**6.3**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**236**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	1763-23-1	
Perfluorooctanoic acid (PFOA)	**53.0**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2058-94-8	
Surrogates								
13C2-PFDoA (S)	76	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C3HFPO-DA (S)	93	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C3-PFBS (S)	78	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C3-PFHxS (S)	82	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C4-PFBA (S)	17	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		S0

REPORT OF LABORATORY ANALYSIS

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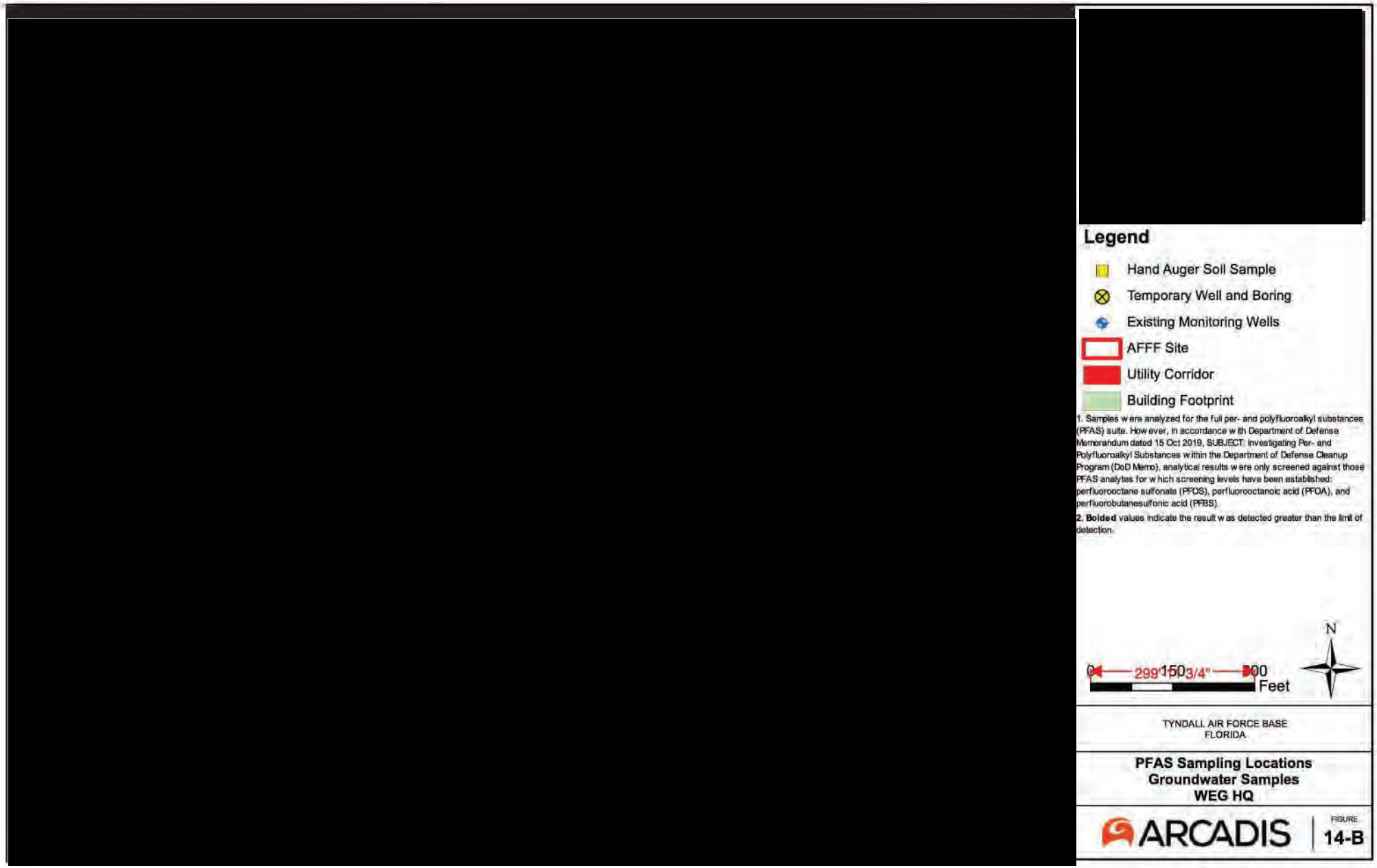
This Page Starts Treated Water Tests taken by Pace Analytical on 11/21/2023

(Section 3)

Section 3


Legend
Hand Auger Soil Sample
Temporary Well and Boring
Existing Monitoring Wells
AFFF Site
Utility Corridor
Building Footprint
1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. Bolded values indicate the result was detected greater than the limit of detection.
N
0
299'150 3/4"
300
Feet
TYNDALL AIR FORCE BASE
FLORIDA
PFAS Sampling Locations
Groundwater Samples
WEG HQ
ARCADIS
FIGURE
14-B

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

December 20, 2023

Renee Eddins
Terracon
2930 Wellington Circle
Suite 201
Tallahassee, FL 32309

RE: Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Dear Renee Eddins:

Enclosed are the analytical results for sample(s) received by the laboratory on November 28, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Baton Rouge

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melissa MacNaughton

Melissa MacNaughton
melissa.macnaughton@pacelabs.com
(225) 769-4900
Project Manager

Enclosures

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CERTIFICATIONS

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Pace Analytical Services Baton Rouge
7979 Innovation Park Drive Ste A, Baton Rouge, LA 70820-7402
Louisiana Dept of Enviromental Quality (NELAC/LELAP): 01979
Florida Dept of Health (NELAC/FELAP): E87854
DoD ELAP (A2LA) #: 6429.01
Alabama DEM #: 41900
Alaska DEC-DW #: LA00024
Alaska DEC CS-LAP #: 21-001
Arkansas DEQ #: 88-0655
California ELAP #: 3063
Georgia DPD #: C050
Hawaii DOH State Laboratories Division
Illinois EPA #: 200048
Kansas DoHE #: E-10354
Kentucky DEP UST Branch #: 123054
Louisiana DOH #: LA036
Minnesota DOH #: 2233799
Mississippi State Dept of Health
Montana Department of Environmental Quality
Nebraska DHHS #: NE-OS-35.21
Nevada DCNR DEP #: LA00024
New York DOH #: 12149
North Carolina DEQ - WW & GW #: 618
North Dakota DEQ #: R195
Ohio EPA #: 87782
Oklahoma Dept of Environmental Quality #: 9403
Oregon ELAP #: 4168
Pennsylvania Dept of Environmental Protection #: 68-05973
South Carolina DHEC #: 73006001
Texas CEQ #: T104704178-23-15
Utah DOH #: LA00024
Virginia DCLS #: 6460215
Washington Dept of Ecology #: C929
Wisconsin DNR #: 399139510

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(225) 769-4900

SAMPLE SUMMARY

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20298341001	**POST TREATMENT TANK 8**	Water	11/21/23 08:30	11/28/23 09:40

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20298341001	**POST TREATMENT TANK 8**	EPA 1633	RMP	64

PASI-BR = Pace Analytical Services - Baton Rouge

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Date: December 20, 2023

POST TREATMENT TANK 8 (Lab ID: 20298341001)

- For method EPA 1633, the sample was extracted at a reduced volume due to clogging of the SPE cartridge. As a result, reporting limits are elevated.

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PROJECT NARRATIVE

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Method: **EPA 1633**
Description: PFAS in Water by EPA 1633
Client: TERRACON
Date: December 20, 2023

General Information:
1 sample was analyzed for EPA 1633 by Pace Analytical Services Baton Rouge. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 1633 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Treated proposed with JSS Treatment train

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Sample: POST TREATMENT TANK 8 **Lab ID: 20298341001** Collected: 11/21/23 08:30 Received: 11/28/23 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	763051-92-9	
3:3 FTCA	ND	ng/L	5000	1	12/18/23 10:00	12/20/23 07:07	356-02-5	
4:2 FTS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	757124-72-4	
5:3 FTCA	ND	ng/L	25000	1	12/18/23 10:00	12/20/23 07:07	914637-49-3	
6:2 FTS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	27619-97-2	
7:3 FTCA	ND	ng/L	25000	1	12/18/23 10:00	12/20/23 07:07	812-70-4	
8:2 FTS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	39108-34-4	
9Cl-PF3ONS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	756426-58-1	
ADONA	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	919005-14-4	
HFPO-DA	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	13252-13-6	
NEtFOSAA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2991-50-6	
NEtFOSA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	4151-50-2	
NEtFOSE	ND	ng/L	10000	1	12/18/23 10:00	12/20/23 07:07	1691-99-2	
NFDHA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	151772-58-6	
NMeFOSAA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2355-31-9	
NMeFOSA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	31506-32-8	
NMeFOSE	ND	ng/L	10000	1	12/18/23 10:00	12/20/23 07:07	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-73-5	
Perfluorodecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	335-76-2	
Perfluorohexanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	307-24-4	
PFBA	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	375-22-4	
PFDS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	335-77-3	
PFDoS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	79780-39-5	
PFEESA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	113507-82-7	
PFHpS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-92-8	
PFMBA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	863090-89-5	
PFMPA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	377-73-1	
PFNS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	68259-12-1	
PFOSA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	754-91-6	
PFPeA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	2706-90-3	
PFPeS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	355-46-4	
Perfluorononanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2058-94-8	
Surrogates								
13C2-PFDoA (S)	85	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
13C3HFPO-DA (S)	96	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C3-PFBS (S)	90	%.	40-135	1	12/18/23 10:00	12/20/23 07:07		
13C3-PFHxS (S)	88	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C4-PFBA (S)	92	%.	5-130	1	12/18/23 10:00	12/20/23 07:07		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Sample: POST TREATMENT TANK 8 **Lab ID: 20298341001** Collected: 11/21/23 08:30 Received: 11/28/23 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C4-PFHpA (S)	90	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C5-PFHxA (S)	92	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C5-PFPeA (S)	101	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C6-PFDA (S)	89	%.	20-150	1	12/18/23 10:00	12/20/23 07:07		
13C8-PFOA (S)	90	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C8-PFOS (S)	91	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C8-PFOSA (S)	84	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C9-PFNA (S)	92	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
d3-MeFOSAA (S)	94	%.	40-170	1	12/18/23 10:00	12/20/23 07:07		
d3-NMeFOSA (S)	68	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
d5-EtFOSAA (S)	86	%.	25-135	1	12/18/23 10:00	12/20/23 07:07		
d5-NEtFOSA (S)	74	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
d7-NMeFOSE (S)	72	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
d9-NEtFOSE (S)	70	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
13C24:2FTS (S)	92	%.	40-200	1	12/18/23 10:00	12/20/23 07:07		
13C26:2FTS (S)	98	%.	40-200	1	12/18/23 10:00	12/20/23 07:07		
13C28:2FTS (S)	102	%.	40-300	1	12/18/23 10:00	12/20/23 07:07		
13C7-PFUdA (S)	87	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C2-PFTA (S)	82	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

QC Batch: 312002
QC Batch Method: EPA 1633
Analysis Method: EPA 1633
Analysis Description: BR PFAS in Water by EPA 1633
Laboratory: Pace Analytical Services - Baton Rouge

Associated Lab Samples: 20298341001

METHOD BLANK: 1494243 Matrix: Water
Associated Lab Samples: 20298341001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	ND	4.0	12/20/23 06:19	
3:3 FTCA	ng/L	ND	5.0	12/20/23 06:19	
4:2 FTS	ng/L	ND	4.0	12/20/23 06:19	
5:3 FTCA	ng/L	ND	25.0	12/20/23 06:19	
6:2 FTS	ng/L	ND	4.0	12/20/23 06:19	
7:3 FTCA	ng/L	ND	25.0	12/20/23 06:19	
8:2 FTS	ng/L	ND	4.0	12/20/23 06:19	
9Cl-PF3ONS	ng/L	ND	4.0	12/20/23 06:19	
ADONA	ng/L	ND	4.0	12/20/23 06:19	
HFPO-DA	ng/L	ND	4.0	12/20/23 06:19	
NEtFOSA	ng/L	ND	1.0	12/20/23 06:19	
NEtFOSAA	ng/L	ND	1.0	12/20/23 06:19	
NEtFOSE	ng/L	ND	10.0	12/20/23 06:19	
NFDHA	ng/L	ND	2.0	12/20/23 06:19	
NMeFOSA	ng/L	ND	1.0	12/20/23 06:19	
NMeFOSAA	ng/L	ND	1.0	12/20/23 06:19	
NMeFOSE	ng/L	ND	10.0	12/20/23 06:19	
Perfluorobutanesulfonic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorodecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorododecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluoroheptanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorohexanesulfonic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorohexanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorononanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorooctanesulfonic acid (PFOS)	ng/L	ND	1.0	12/20/23 06:19	
Perfluorooctanoic acid (PFOA)	ng/L	ND	1.0	12/20/23 06:19	
Perfluorotetradecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorotridecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluoroundecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
PFBA	ng/L	ND	4.0	12/20/23 06:19	
PFDoS	ng/L	ND	1.0	12/20/23 06:19	
PFDS	ng/L	ND	1.0	12/20/23 06:19	
PFEESA	ng/L	ND	2.0	12/20/23 06:19	
PFHpS	ng/L	ND	1.0	12/20/23 06:19	
PFMBA	ng/L	ND	2.0	12/20/23 06:19	
PFMPA	ng/L	ND	2.0	12/20/23 06:19	
PFNS	ng/L	ND	1.0	12/20/23 06:19	
PFOSA	ng/L	ND	1.0	12/20/23 06:19	
PFPeA	ng/L	ND	2.0	12/20/23 06:19	
PFPeS	ng/L	ND	1.0	12/20/23 06:19	

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REPORT OF LABORATORY ANALYSIS

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7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

METHOD BLANK: 1494243 Matrix: Water
Associated Lab Samples: 20298341001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C2-PFDoA (S)	%.	76	10-130	12/20/23 06:19	
13C2-PFTA (S)	%.	75	40-130	12/20/23 06:19	
13C24:2FTS (S)	%.	81	40-200	12/20/23 06:19	
13C26:2FTS (S)	%.	86	40-200	12/20/23 06:19	
13C28:2FTS (S)	%.	92	40-300	12/20/23 06:19	
13C3-PFBS (S)	%.	77	40-135	12/20/23 06:19	
13C3-PFHxS (S)	%.	78	40-130	12/20/23 06:19	
13C3HFPO-DA (S)	%.	87	40-130	12/20/23 06:19	
13C4-PFBA (S)	%.	83	5-130	12/20/23 06:19	
13C4-PFHpA (S)	%.	80	40-130	12/20/23 06:19	
13C5-PFHxA (S)	%.	82	40-130	12/20/23 06:19	
13C5-PFPeA (S)	%.	90	40-130	12/20/23 06:19	
13C6-PFDA (S)	%.	79	20-150	12/20/23 06:19	
13C7-PFUdA (S)	%.	78	40-130	12/20/23 06:19	
13C8-PFOA (S)	%.	80	40-130	12/20/23 06:19	
13C8-PFOS (S)	%.	81	40-130	12/20/23 06:19	
13C8-PFOSA (S)	%.	76	40-130	12/20/23 06:19	
13C9-PFNA (S)	%.	78	40-130	12/20/23 06:19	
d3-MeFOSAA (S)	%.	87	40-170	12/20/23 06:19	
d3-NMeFOSA (S)	%.	60	10-130	12/20/23 06:19	
d5-EtFOSAA (S)	%.	84	25-135	12/20/23 06:19	
d5-NEtFOSA (S)	%.	63	10-130	12/20/23 06:19	
d7-NMeFOSE (S)	%.	71	10-130	12/20/23 06:19	
d9-NEtFOSE (S)	%.	69	10-130	12/20/23 06:19	

LABORATORY CONTROL SAMPLE: 1494244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	94.5	114	120	55-160	
3:3 FTCA	ng/L	125	128	102	65-130	
4:2 FTS	ng/L	93.9	105	112	70-145	
5:3 FTCA	ng/L	626	647	103	70-135	
6:2 FTS	ng/L	95.2	103	108	65-155	
7:3 FTCA	ng/L	626	671	107	50-145	
8:2 FTS	ng/L	96.4	107	111	60-150	
9Cl-PF3ONS	ng/L	93.9	114	121	70-155	
ADONA	ng/L	94.5	106	112	65-145	
HFPO-DA	ng/L	100	107	107	70-145	
NEtFOSA	ng/L	25	24.7	99	65-145	
NEtFOSAA	ng/L	25	25.6	102	70-145	
NEtFOSE	ng/L	250	258	103	70-135	
NFDHA	ng/L	50.1	54.8	109	50-150	
NMeFOSA	ng/L	25	24.9	99	60-150	
NMeFOSAA	ng/L	25	25.9	103	50-150	

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(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

LABORATORY CONTROL SAMPLE: 1494244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
NMeFOSE	ng/L	250	251	100	70-145	
Perfluorobutanesulfonic acid	ng/L	22.2	22.4	101	60-145	
Perfluorodecanoic acid	ng/L	25	25.6	102	70-150	
Perfluorododecanoic acid	ng/L	25	25.0	100	70-140	
Perfluoroheptanoic acid	ng/L	25	25.6	102	70-150	
Perfluorohexanesulfonic acid	ng/L	22.9	22.0	96	65-145	
Perfluorohexanoic acid	ng/L	25	25.6	102	70-145	
Perfluorononanoic acid	ng/L	25	25.5	102	70-150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	23.2	22.8	98	55-150	
Perfluorooctanoic acid (PFOA)	ng/L	25	25.5	102	70-150	
Perfluorotetradecanoic acid	ng/L	25	25.8	103	60-145	
Perfluorotridecanoic acid	ng/L	25	25.3	101	65-140	
Perfluoroundecanoic acid	ng/L	25	24.9	100	70-145	
PFBA	ng/L	100	102	102	70-145	
PFDoS	ng/L	24.3	23.3	96	50-145	
PFDS	ng/L	24.2	25.0	103	60-145	
PFEESA	ng/L	44.6	48.3	108	70-145	
PFHpS	ng/L	23.9	24.0	101	70-150	
PFMBA	ng/L	50.1	46.2	92	60-150	
PFMPA	ng/L	50.1	54.5	109	55-140	
PFNS	ng/L	24.1	24.9	103	65-145	
PFOSA	ng/L	25	25.4	102	70-145	
PFPeA	ng/L	50.1	51.3	102	60-135	
PFPeS	ng/L	23.5	23.5	100	65-140	
13C2-PFDoA (S)	%.			80	10-130	
13C2-PFTA (S)	%.			77	40-130	
13C24:2FTS (S)	%.			76	40-200	
13C26:2FTS (S)	%.			84	40-200	
13C28:2FTS (S)	%.			88	40-300	
13C3-PFBS (S)	%.			80	40-135	
13C3-PFHxS (S)	%.			81	40-130	
13C3HFPO-DA (S)	%.			88	40-130	
13C4-PFBA (S)	%.			85	5-130	
13C4-PFHpA (S)	%.			84	40-130	
13C5-PFHxA (S)	%.			82	40-130	
13C5-PFPeA (S)	%.			92	40-130	
13C6-PFDA (S)	%.			84	20-150	
13C7-PFUdA (S)	%.			83	40-130	
13C8-PFOA (S)	%.			83	40-130	
13C8-PFOS (S)	%.			84	40-130	
13C8-PFOSA (S)	%.			77	40-130	
13C9-PFNA (S)	%.			83	40-130	
d3-MeFOSAA (S)	%.			87	40-170	
d3-NMeFOSA (S)	%.			62	10-130	
d5-EtFOSAA (S)	%.			84	25-135	
d5-NEtFOSA (S)	%.			65	10-130	
d7-NMeFOSE (S)	%.			65	10-130	

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

LABORATORY CONTROL SAMPLE: 1494244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
d9-NEtFOSE (S)	%.			65	10-130	

LABORATORY CONTROL SAMPLE: 1494245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	7.6	8.1	108	40-150	
3:3 FTCA	ng/L	10	9.6	96	40-150	
4:2 FTS	ng/L	7.5	7.9	106	40-150	
5:3 FTCA	ng/L	50	46.8	94	40-150	
6:2 FTS	ng/L	7.6	7.7	101	40-150	
7:3 FTCA	ng/L	50	48.4	97	40-150	
8:2 FTS	ng/L	7.7	8.6	111	40-150	
9Cl-PF3ONS	ng/L	7.5	8.4	112	40-150	
ADONA	ng/L	7.6	7.4	99	40-150	
HFPO-DA	ng/L	8	7.7	96	40-150	
NEtFOSA	ng/L	2	1.8	90	40-150	
NEtFOSAA	ng/L	2	2.0	99	40-150	
NEtFOSE	ng/L	20	18.9	94	40-150	
NFDHA	ng/L	4	4.4	110	40-150	
NMeFOSA	ng/L	2	1.9	96	40-150	
NMeFOSAA	ng/L	2	1.9	95	40-150	
NMeFOSE	ng/L	20	18.5	93	40-150	
Perfluorobutanesulfonic acid	ng/L	1.8	1.7	98	40-150	
Perfluorodecanoic acid	ng/L	2	2.0	100	40-150	
Perfluorododecanoic acid	ng/L	2	2.0	99	40-150	
Perfluoroheptanoic acid	ng/L	2	2.1	105	40-150	
Perfluorohexanesulfonic acid	ng/L	1.8	1.8	97	40-150	
Perfluorohexanoic acid	ng/L	2	2.1	103	40-150	
Perfluorononanoic acid	ng/L	2	2.0	99	40-150	
Perfluorooctanesulfonic acid	ng/L	1.9	1.9	104	40-150	
Perfluorooctanoic acid	ng/L	2	2.2	108	40-150	
Perfluorotetradecanoic acid	ng/L	2	2.0	98	40-150	
Perfluorotridecanoic acid	ng/L	2	2.0	101	40-150	
Perfluoroundecanoic acid	ng/L	2	2.0	98	40-150	
PFBA	ng/L	8	7.8	98	40-150	
PFDoS	ng/L	1.9	1.8	91	40-150	
PFDS	ng/L	1.9	1.8	95	40-150	
PFEESA	ng/L	3.6	3.7	104	40-150	
PFHpS	ng/L	1.9	1.9	100	40-150	
PFMBA	ng/L	4	3.5	88	40-150	
PFMPA	ng/L	4	4.3	107	40-150	
PFNS	ng/L	1.9	1.9	99	40-150	
PFOSA	ng/L	2	2.0	98	40-150	
PFPeA	ng/L	4	3.9	98	40-150	
PFPeS	ng/L	1.9	1.9	99	40-150	

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

LABORATORY CONTROL SAMPLE: 1494245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
13C2-PFDoA (S)	%.			83	10-130	
13C2-PFTA (S)	%.			81	40-130	
13C24:2FTS (S)	%.			88	40-200	
13C26:2FTS (S)	%.			98	40-200	
13C28:2FTS (S)	%.			100	40-300	
13C3-PFBS (S)	%.			87	40-135	
13C3-PFHxS (S)	%.			85	40-130	
13C3HFPO-DA (S)	%.			95	40-130	
13C4-PFBA (S)	%.			91	5-130	
13C4-PFHpA (S)	%.			87	40-130	
13C5-PFHxA (S)	%.			91	40-130	
13C5-PFPeA (S)	%.			99	40-130	
13C6-PFDA (S)	%.			89	20-150	
13C7-PFUdA (S)	%.			83	40-130	
13C8-PFOA (S)	%.			89	40-130	
13C8-PFOS (S)	%.			90	40-130	
13C8-PFOSA (S)	%.			83	40-130	
13C9-PFNA (S)	%.			85	40-130	
d3-MeFOSAA (S)	%.			94	40-170	
d3-NMeFOSA (S)	%.			59	10-130	
d5-EtFOSAA (S)	%.			90	25-135	
d5-NEtFOSA (S)	%.			62	10-130	
d7-NMeFOSE (S)	%.			55	10-130	
d9-NEtFOSE (S)	%.			56	10-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494257 1494258

Parameter	Units	20298341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
11Cl-PF3OUdS	ng/L	ND	94500	94500	106000	114000	112	121	55-160	7	30	
3:3 FTCA	ng/L	ND	125000	125000	117000	127000	93	102	65-130	9	30	
4:2 FTS	ng/L	ND	93900	93900	94500	101000	101	107	70-145	6	30	
5:3 FTCA	ng/L	ND	626000	626000	567000	623000	91	100	70-135	9	30	
6:2 FTS	ng/L	ND	95200	95200	92900	105000	98	110	65-155	12	30	
7:3 FTCA	ng/L	ND	626000	626000	593000	662000	95	106	50-145	11	30	
8:2 FTS	ng/L	ND	96400	96400	101000	107000	104	111	60-150	6	30	
9Cl-PF3ONS	ng/L	ND	93900	93900	103000	114000	110	121	70-155	9	30	
ADONA	ng/L	ND	94500	94500	96200	106000	102	112	65-145	10	30	
HFPO-DA	ng/L	ND	100000	100000	99500	107000	99	107	70-145	7	30	
NEtFOSA	ng/L	ND	25000	25000	22400	24200	89	97	65-145	8	30	
NEtFOSAA	ng/L	ND	25000	25000	24500	25900	97	103	70-145	6	30	
NEtFOSE	ng/L	ND	250000	250000	240000	254000	96	101	70-135	6	30	
NFDHA	ng/L	ND	50100	50100	53600	54300	107	108	50-150	1	30	
NMeFOSA	ng/L	ND	25000	25000	23700	24900	95	99	60-150	5	30	
NMeFOSAA	ng/L	ND	25000	25000	22600	25800	90	103	50-150	13	30	

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494257 1494258

Parameter	Units	20298341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
NMeFOSE	ng/L	ND	250000	250000	236000	253000	94	101	70-145	7	30	
Perfluorobutanesulfonic acid	ng/L	ND	22200	22200	20800	22700	93	102	60-145	9	30	
Perfluorodecanoic acid	ng/L	ND	25000	25000	23200	25700	92	102	70-150	10	30	
Perfluorododecanoic acid	ng/L	ND	25000	25000	23200	25100	92	100	70-140	8	30	
Perfluoroheptanoic acid	ng/L	ND	25000	25000	22900	25800	91	103	70-150	12	30	
Perfluorohexanesulfonic acid	ng/L	ND	22900	22900	20100	22100	87	96	65-145	10	30	
Perfluorohexanoic acid	ng/L	ND	25000	25000	23800	25700	94	102	70-145	8	30	
Perfluorononanoic acid	ng/L	ND	25000	25000	22400	25100	89	100	70-150	12	30	
Perfluorooctanesulfonic acid	ng/L	ND	23200	23200	20800	22900	89	98	55-150	10	30	
Perfluorooctanoic acid	ng/L	ND	25000	25000	23300	24800	92	98	70-150	6	30	
Perfluorotetradecanoic acid	ng/L	ND	25000	25000	24100	25900	96	103	60-145	7	30	
Perfluorotridecanoic acid	ng/L	ND	25000	25000	23200	25300	92	101	65-140	9	30	
Perfluoroundecanoic acid	ng/L	ND	25000	25000	23000	25200	92	101	70-145	9	30	
PFBA	ng/L	ND	100000	100000	93300	101000	93	101	70-145	8	30	
PFDoS	ng/L	ND	24300	24300	22500	25300	92	104	50-145	12	30	
PFDS	ng/L	ND	24200	24200	22600	26000	93	107	60-145	14	30	
PFEESA	ng/L	ND	44600	44600	45500	46200	102	104	70-145	2	30	
PFHpS	ng/L	ND	23900	23900	21800	25400	91	106	70-150	15	30	
PFMBA	ng/L	ND	50100	50100	44500	45400	89	91	60-150	2	30	
PFMPA	ng/L	ND	50100	50100	52700	54300	105	108	55-140	3	30	
PFNS	ng/L	ND	24100	24100	22800	25700	94	106	65-145	12	30	
PFOSA	ng/L	ND	25000	25000	23200	25500	93	102	70-145	10	30	
PFPeA	ng/L	ND	50100	50100	47000	51200	94	102	60-135	9	30	
PFPeS	ng/L	ND	23500	23500	21700	23600	92	100	65-140	9	30	
13C2-PFDoA (S)	%.						89	80	10-130			
13C2-PFTA (S)	%.						83	76	40-130			
13C24:2FTS (S)	%.						83	74	40-200			
13C26:2FTS (S)	%.						90	77	40-200			
13C28:2FTS (S)	%.						95	81	40-300			
13C3-PFBS (S)	%.						86	75	40-135			
13C3-PFHxS (S)	%.						84	76	40-130			
13C3HFPO-DA (S)	%.						92	84	40-130			
13C4-PFBA (S)	%.						88	82	5-130			
13C4-PFHpA (S)	%.						86	79	40-130			
13C5-PFHxA (S)	%.						87	79	40-130			
13C5-PFPeA (S)	%.						95	87	40-130			
13C6-PFDA (S)	%.						87	77	20-150			
13C7-PFUdA (S)	%.						86	77	40-130			
13C8-PFOA (S)	%.						85	78	40-130			
13C8-PFOS (S)	%.						87	76	40-130			
13C8-PFOSA (S)	%.						77	74	40-130			
13C9-PFNA (S)	%.						89	77	40-130			
d3-MeFOSAA (S)	%.						91	79	40-170			

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494257 1494258

Parameter	Units	20298341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
d3-NMeFOSA (S)	%.						64	59	10-130			
d5-EtFOSAA (S)	%.						84	76	25-135			
d5-NEtFOSA (S)	%.						67	59	10-130			
d7-NMeFOSE (S)	%.						67	64	10-130			
d9-NEtFOSE (S)	%.						64	62	10-130			

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QUALIFIERS

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

SAMPLE QUALIFIERS

Sample: 20298341001

[1] For method EPA 1633, the sample was extracted at a reduced volume due to clogging of the SPE cartridge. As a result, reporting limits are elevated.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20298341001	**POST TREATMENT TANK 8**	EPA 1633	312002	EPA 1633	312515

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Pace® Location Requested (City/State):
Pace Analytical Baton Rouge
7979 Innovation Park Dr, Suite A
Baton Rouge, LA 70820

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

Affix Workorder Label Here

WO# : 20298341

20298341

Company Name:	TERRACON	Contact/Report To:	[redacted]
Street Address:	2930 Wellington Circle, Suite 201 Tallahassee, FL 32309	Phone #:	
		E-Mail:	[redacted]
		Cc E-Mail:	
Customer Project #:		Invoice To:	Accounts Payable
Project Name:	HF221083 Tyndall WEG Hanger	Invoice E-Mail:	invoices@terracon.coupahost.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	
Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET		County / State origin of sample(s):	Florida

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other_____

Regulatory Program (DW, RCRA, etc.) as applicable:

Rush (Pre-approval required):
[ ] 2 Day [ ] 3 day [ ] 5 day [ ] Other_____

Date Results Requested:

DW PWSID # or WW Permit # as applicable:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Other (OT), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk

Specify Container Size.**

Identify Container Preservative Type***

Analysis Requested

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only
Proj. Mgr: Melissa MacNaughton
AcctNum / Client ID:
Table #:
Profile / Template: 18522
Prelog / Bottle Ord. ID: EZ 3016577

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res. Cl2	Number & Type of Containers Plastic	Number & Type of Containers Glass	PFAS in Water by EPA 1633	PFAS-TSS screening	Sample Comment	Preservation non-conformance identified for sample.
Post Treatment Tank 8	G	GM	11/20/23	8:30	11/21/23	8:30		1		1	1	1	X

Customer Remarks / Special Conditions / Possible Hazards:

Collected By:
Printed Name: [redacted]
Signature

Additional Instructions from Pace®:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
		[redacted]	11-22-23 9:40	
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Delivered by: [ ] In- Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEX [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: 2 of 2

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace® Terms and Conditions found at https://www.pacelabs.com/resource-library/resource/pace-terms-and-conditions/

WO#: 20298341

PM: MM1 Due Date: 12/05/23

CLIENT: BR-TERRACON

Pace

Sample Condition Upon Reci

Workord

CLIENT

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: DJM / 11/22/23 9:40

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☑ Yes	☐ No		Were custody seals present on the cooler?	
☑ Yes	☐ No	☐ NA	If custody seals were present, were they intact and unbroken?	

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: EF2 IR Gun Correction Factor: +0 °C

Cooler #1	Cooler Temp °C: 1.2	(Actual/True)	Samples on ice ☑ Yes ☐ No; pH Strip Lot #
Cooler #2	Cooler Temp °C:	(Actual/True)	
Cooler #3	Cooler Temp °C:	(Actual/True)	Method of coolant: ☐ Wet ☑ Ice Packs ☐ Dry Ice ☐ None
Cooler #4	Cooler Temp °C:	(Actual/True)	

Tracking #: 7081 4046 7751

☑ Yes	☐ No	☐ NA	Is a temperature blank present?	
☑ Yes	☐ No	☐ NA	Was a chain of custody (COC) recieved?	
☑ Yes	☐ No	☐ NA	Was the line and profile number listed on the COC?	
☑ Yes	☐ No	☐ NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.	
☑ Yes	☐ No		Were proper custody procedures (relinquished/received) followed?	
☑ Yes	☐ No	☐ NA	Is the sampler name and signature on the COC?	
☑ Yes	☐ No		Were sample IDs listed on the COC and all sample containers?	
☑ Yes	☐ No		Was collection date & time listed on the COC and all sample containers?	
☐ Yes	☑ No		Did all container label information (ID, date, time) agree with the COC?	
☑ Yes	☐ No		Were tests to be performed listed on the COC?	
☑ Yes	☐ No		Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
☑ Yes	☐ No		Was adequate sample volume available?	
☑ Yes	☐ No		Were all samples received within ½ the holding time or 48 hours, whichever comes first?	
☑ Yes	☐ No		Were all samples containers accounted for? (No missing / excess)	
☐ Yes	☐ No	☐ NA	Were VOA, 8015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?	
☐ Yes	☐ No	☐ NA	Trip blank present?	
☐ Yes	☐ No	☐ NA	Filtered volume received for dissolved tests? If no, list affected sample(s) in comments below.	
☐ Yes	☐ No	☐ NA	Were all metals/nutrient samples received at a pH of < 2?	If No, was preservative added? ☐ Yes ☐ No. If added, record lots. Dispenser/pipette lot #: _____
☐ Yes	☐ No	☐ NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?	HNO_3 _____ H_2SO_4 _____ NaOH _____ Date: _____ Time: _____

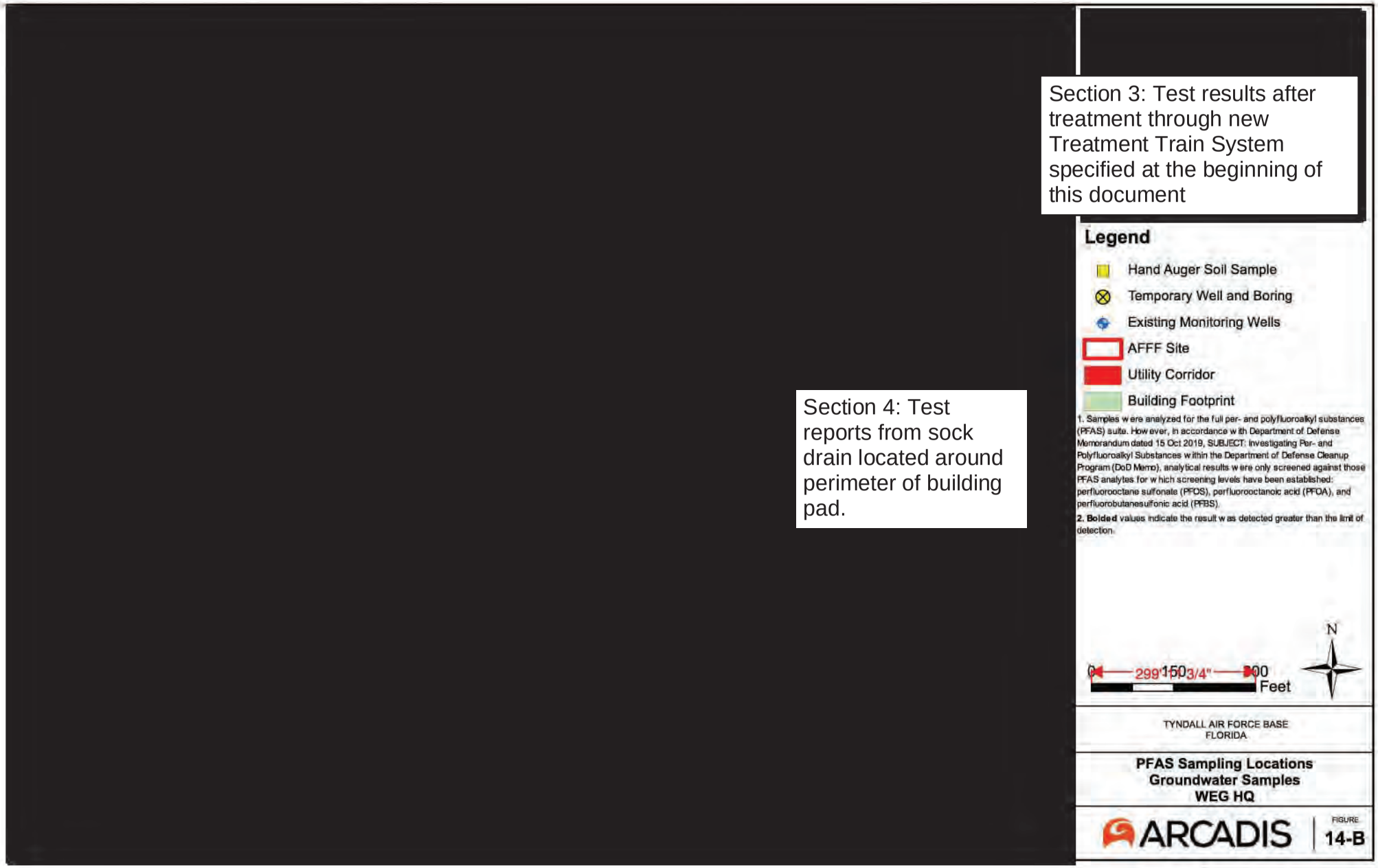
Comments:

Samples date + time do not match the chain. Logged per chain.

This Page Starts Treated Water Tests taken by Pace Analytical on 11/30/2023 - 12/8/2023

(Section 4)

Section 4


Section 3: Test results after treatment through new Treatment Train System specified at the beginning of this document
Legend
Hand Auger Soil Sample
Temporary Well and Boring
Existing Monitoring Wells
AFFF Site
Utility Corridor
Building Footprint
1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. Bolded values indicate the result was detected greater than the limit of detection.
Section 4: Test reports from sock drain located around perimeter of building pad.
N
0
299'150 3/4"
300
Feet
TYNDALL AIR FORCE BASE
FLORIDA
PFAS Sampling Locations
Groundwater Samples
WEG HQ
ARCADIS
FIGURE
14-B

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

Section 3

January 04, 2024

Renee Eddins
Terracon
2930 Wellington Circle
Suite 201
Tallahassee, FL 32309

RE: Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Dear Renee Eddins:

Enclosed are the analytical results for sample(s) received by the laboratory on December 09, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Baton Rouge

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melissa MacNaughton

Melissa MacNaughton
melissa.macnaughton@pacelabs.com
(225) 769-4900
Project Manager

Enclosures

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

CERTIFICATIONS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Pace Analytical Services Baton Rouge
7979 Innovation Park Drive Ste A, Baton Rouge, LA 70820-7402
Louisiana Dept of Enviromental Quality (NELAC/LELAP): 01979
Florida Dept of Health (NELAC/FELAP): E87854
DoD ELAP (A2LA) #: 6429.01
Alabama DEM #: 41900
Alaska DEC-DW #: LA00024
Alaska DEC CS-LAP #: 21-001
Arkansas DEQ #: 88-0655
California ELAP #: 3063
Georgia DPD #: C050
Hawaii DOH State Laboratories Division
Illinois EPA #: 200048
Kansas DoHE #: E-10354
Kentucky DEP UST Branch #: 123054
Louisiana DOH #: LA036
Minnesota DOH #: 2233799
Mississippi State Dept of Health
Montana Department of Environmental Quality
Nebraska DHHS #: NE-OS-35.21
Nevada DCNR DEP #: LA00024
New York DOH #: 12149
North Carolina DEQ - WW & GW #: 618
North Dakota DEQ #: R195
Ohio EPA #: 87782
Oklahoma Dept of Environmental Quality #: 9403
Oregon ELAP #: 4168
Pennsylvania Dept of Environmental Protection #: 68-05973
South Carolina DHEC #: 73006001
Texas CEQ #: T104704178-23-15
Utah DOH #: LA00024
Virginia DCLS #: 6460215
Washington Dept of Ecology #: C929
Wisconsin DNR #: 399139510

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SAMPLE SUMMARY

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20300170001	**POST TREATMENT**	Water	12/08/23 09:02	12/09/23 10:05
20300170002	**POST TREATMENT**	Water	12/06/23 11:00	12/09/23 10:05
20300170003	**POST TREATMENT**	Water	11/30/23 15:43	12/09/23 10:05
20300170004	**POST TREATMENT**	Water	12/01/23 13:50	12/09/23 10:05
20300170005	**POST TREATMENT**	Water	12/07/23 09:00	12/09/23 10:05
20300170006	**POST TREATMENT**	Water	12/04/23 12:22	12/09/23 10:05
20300170007	**POST TREATMENT**	Water	12/05/23 11:28	12/09/23 10:05

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SAMPLE ANALYTE COUNT

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20300170001	POST TREATMENT	EPA 1633	RMP	64
20300170002	POST TREATMENT	EPA 1633	RMP	64
20300170003	POST TREATMENT	EPA 1633	RMP	64
20300170004	POST TREATMENT	EPA 1633	RMP	64
20300170005	POST TREATMENT	EPA 1633	RMP	64
20300170006	POST TREATMENT	EPA 1633	RMP	64
20300170007	POST TREATMENT	EPA 1633	RMP	64

PASI-BR = Pace Analytical Services - Baton Rouge

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PROJECT NARRATIVE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Date: January 04, 2024

POST TREATMENT (Lab ID: 20300170001)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170002)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170003)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170004)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170005)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170006)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170007)

• For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

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PROJECT NARRATIVE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Method: **EPA 1633**
Description: PFAS in Water by EPA 1633
Client: TERRACON
Date: January 04, 2024

General Information:
7 samples were analyzed for EPA 1633 by Pace Analytical Services Baton Rouge. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 1633 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 313623

1b: Analyte was detected in an associated instrument blank.

- POST TREATMENT (Lab ID: 20300170002)
  - Perfluorododecanoic acid
- POST TREATMENT (Lab ID: 20300170005)
  - Perfluorododecanoic acid

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PROJECT NARRATIVE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Method: **EPA 1633**
Description: PFAS in Water by EPA 1633
Client: TERRACON
Date: January 04, 2024

Analyte Comments:

QC Batch: 313623

2b: Analyte was detected in an associated instrument blank.

- BLANK (Lab ID: 1501490)
  - Perfluorododecanoic acid
- LCS (Lab ID: 1501491)
  - Perfluorododecanoic acid
- MS (Lab ID: 1501493)
  - Perfluorododecanoic acid
- MSD (Lab ID: 1501494)
  - Perfluorododecanoic acid
- POST TREATMENT (Lab ID: 20300170006)
  - Perfluorododecanoic acid
- POST TREATMENT (Lab ID: 20300170007)
  - Perfluorododecanoic acid
- SRM (Lab ID: 1501492)
  - Perfluorododecanoic acid

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Treated proposed with JSS Treatment train

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170001** Collected: 12/08/23 09:02 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	763051-92-9	
3:3 FTCA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:02	356-02-5	
4:2 FTS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	757124-72-4	
5:3 FTCA	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:02	914637-49-3	
6:2 FTS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	27619-97-2	
7:3 FTCA	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:02	812-70-4	
8:2 FTS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	39108-34-4	
9Cl-PF3ONS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	756426-58-1	
ADONA	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	919005-14-4	
HFPO-DA	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	13252-13-6	
NEtFOSAA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2991-50-6	
NEtFOSA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	4151-50-2	
NEtFOSE	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:02	1691-99-2	
NFDHA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	151772-58-6	
NMeFOSAA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2355-31-9	
NMeFOSA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	31506-32-8	
NMeFOSE	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:02	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-73-5	
Perfluorodecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	335-76-2	
Perfluorohexanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	307-24-4	
PFBA	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	375-22-4	
PFDS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	335-77-3	
PFDoS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	79780-39-5	
PFEESA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	113507-82-7	
PFHpS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-92-8	
PFMBA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	863090-89-5	
PFMPA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	377-73-1	
PFNS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	68259-12-1	
PFOSA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	754-91-6	
PFPeA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	2706-90-3	
PFPeS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	355-46-4	
Perfluorononanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2058-94-8	
Surrogates								
13C2-PFDoA (S)	77	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
13C3HFPO-DA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C3-PFBS (S)	80	%.	40-135	1	12/27/23 06:56	12/28/23 16:02		
13C3-PFHxS (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C4-PFBA (S)	81	%.	5-130	1	12/27/23 06:56	12/28/23 16:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170001** Collected: 12/08/23 09:02 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C4-PFHpA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C5-PFHxA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C5-PFPeA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C6-PFDA (S)	82	%.	20-150	1	12/27/23 06:56	12/28/23 16:02		
13C8-PFOA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C8-PFOS (S)	81	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C8-PFOSA (S)	77	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C9-PFNA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
d3-MeFOSAA (S)	81	%.	40-170	1	12/27/23 06:56	12/28/23 16:02		
d3-NMeFOSA (S)	58	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
d5-EtFOSAA (S)	76	%.	25-135	1	12/27/23 06:56	12/28/23 16:02		
d5-NEtFOSA (S)	57	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
d7-NMeFOSE (S)	71	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
d9-NEtFOSE (S)	69	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
13C24:2FTS (S)	79	%.	40-200	1	12/27/23 06:56	12/28/23 16:02		
13C26:2FTS (S)	82	%.	40-200	1	12/27/23 06:56	12/28/23 16:02		
13C28:2FTS (S)	80	%.	40-300	1	12/27/23 06:56	12/28/23 16:02		
13C7-PFUdA (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C2-PFTA (S)	76	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		

Sample: POST TREATMENT **Lab ID: 20300170002** Collected: 12/06/23 11:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/28/23 14:04	12/30/23 05:19	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 05:19	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 05:19	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	756426-58-1	
ADONA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	919005-14-4	
HFPO-DA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 05:19	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 05:19	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-73-5	

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170002** Collected: 12/06/23 11:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	307-24-4	
PFBA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	375-22-4	
PFDS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	377-73-1	
PFNS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	307-55-1	1b
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2058-94-8	
Surrogates								
13C2-PFDoA (S)	83	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
13C3HFPO-DA (S)	92	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C3-PFBS (S)	92	%.	40-135	1	12/28/23 14:04	12/30/23 05:19		
13C3-PFHxS (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C4-PFBA (S)	83	%.	5-130	1	12/28/23 14:04	12/30/23 05:19		
13C4-PFHpA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C5-PFHxA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C5-PFPeA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C6-PFDA (S)	84	%.	20-150	1	12/28/23 14:04	12/30/23 05:19		
13C8-PFOA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C8-PFOS (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C8-PFOSA (S)	80	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C9-PFNA (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
d3-MeFOSAA (S)	85	%.	40-170	1	12/28/23 14:04	12/30/23 05:19		
d3-NMeFOSA (S)	52	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
d5-EtFOSAA (S)	80	%.	25-135	1	12/28/23 14:04	12/30/23 05:19		
d5-NEtFOSA (S)	52	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
d7-NMeFOSE (S)	57	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
d9-NEtFOSE (S)	55	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
13C24:2FTS (S)	86	%.	40-200	1	12/28/23 14:04	12/30/23 05:19		
13C26:2FTS (S)	86	%.	40-200	1	12/28/23 14:04	12/30/23 05:19		
13C28:2FTS (S)	79	%.	40-300	1	12/28/23 14:04	12/30/23 05:19		
13C7-PFUdA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170002** Collected: 12/06/23 11:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C2-PFTA (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		

Sample: POST TREATMENT **Lab ID: 20300170003** Collected: 11/30/23 15:43 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/27/23 06:56	12/28/23 16:19	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:19	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:19	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	756426-58-1	
ADONA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	919005-14-4	
HFPO-DA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:19	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:19	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-73-5	
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	307-24-4	
PFBA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	375-22-4	
PFDS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	377-73-1	
PFNS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	1763-23-1	

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170003** Collected: 11/30/23 15:43 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2058-94-8	
Surrogates								
13C2-PFDoA (S)	83	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
13C3HFPO-DA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C3-PFBS (S)	81	%.	40-135	1	12/27/23 06:56	12/28/23 16:19		
13C3-PFHxS (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C4-PFBA (S)	83	%.	5-130	1	12/27/23 06:56	12/28/23 16:19		
13C4-PFHpA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C5-PFHxA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C5-PFPeA (S)	85	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C6-PFDA (S)	82	%.	20-150	1	12/27/23 06:56	12/28/23 16:19		
13C8-PFOA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C8-PFOS (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C8-PFOSA (S)	78	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C9-PFNA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
d3-MeFOSAA (S)	82	%.	40-170	1	12/27/23 06:56	12/28/23 16:19		
d3-NMeFOSA (S)	67	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
d5-EtFOSAA (S)	78	%.	25-135	1	12/27/23 06:56	12/28/23 16:19		
d5-NEtFOSA (S)	64	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
d7-NMeFOSE (S)	73	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
d9-NEtFOSE (S)	71	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
13C24:2FTS (S)	82	%.	40-200	1	12/27/23 06:56	12/28/23 16:19		
13C26:2FTS (S)	85	%.	40-200	1	12/27/23 06:56	12/28/23 16:19		
13C28:2FTS (S)	79	%.	40-300	1	12/27/23 06:56	12/28/23 16:19		
13C7-PFUdA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C2-PFTA (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		

Sample: POST TREATMENT **Lab ID: 20300170004** Collected: 12/01/23 13:50 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/27/23 06:56	12/28/23 16:35	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:35	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:35	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	756426-58-1	
ADONA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	919005-14-4	

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170004** Collected: 12/01/23 13:50 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
HFPO-DA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:35	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:35	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-73-5	
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	307-24-4	
PFBA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	375-22-4	
PFDS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	377-73-1	
PFNS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2058-94-8	
Surrogates								
13C2-PFDoA (S)	80	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
13C3HFPO-DA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C3-PFBS (S)	86	%.	40-135	1	12/27/23 06:56	12/28/23 16:35		
13C3-PFHxS (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C4-PFBA (S)	85	%.	5-130	1	12/27/23 06:56	12/28/23 16:35		
13C4-PFHpA (S)	85	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C5-PFHxA (S)	87	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C5-PFPeA (S)	87	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C6-PFDA (S)	82	%.	20-150	1	12/27/23 06:56	12/28/23 16:35		
13C8-PFOA (S)	86	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C8-PFOS (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C8-PFOSA (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C9-PFNA (S)	85	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
d3-MeFOSAA (S)	86	%.	40-170	1	12/27/23 06:56	12/28/23 16:35		

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7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170004** Collected: 12/01/23 13:50 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
d3-NMeFOSA (S)	70	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
d5-EtFOSAA (S)	80	%.	25-135	1	12/27/23 06:56	12/28/23 16:35		
d5-NEtFOSA (S)	67	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
d7-NMeFOSE (S)	77	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
d9-NEtFOSE (S)	74	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
13C24:2FTS (S)	85	%.	40-200	1	12/27/23 06:56	12/28/23 16:35		
13C26:2FTS (S)	87	%.	40-200	1	12/27/23 06:56	12/28/23 16:35		
13C28:2FTS (S)	85	%.	40-300	1	12/27/23 06:56	12/28/23 16:35		
13C7-PFUdA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C2-PFTA (S)	81	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		

Sample: POST TREATMENT **Lab ID: 20300170005** Collected: 12/07/23 09:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	763051-92-9	
3:3 FTCA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 06:08	356-02-5	
4:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	757124-72-4	
5:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:08	914637-49-3	
6:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	27619-97-2	
7:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:08	812-70-4	
8:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	39108-34-4	
9Cl-PF3ONS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	756426-58-1	
ADONA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	919005-14-4	
HFPO-DA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	13252-13-6	
NEtFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2991-50-6	
NEtFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	4151-50-2	
NEtFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:08	1691-99-2	
NFDHA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	151772-58-6	
NMeFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2355-31-9	
NMeFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	31506-32-8	
NMeFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:08	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-73-5	
Perfluorodecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	335-76-2	
Perfluorohexanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	307-24-4	
PFBA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	375-22-4	
PFDS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	335-77-3	
PFDoS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	79780-39-5	
PFEESA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	113507-82-7	
PFHpS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-92-8	
PFMBA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	863090-89-5	
PFMPA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	377-73-1	

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(225) 769-4900

ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170005** Collected: 12/07/23 09:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
PFNS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	68259-12-1	
PFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	754-91-6	
PFPeA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	2706-90-3	
PFPeS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	307-55-1	1b
Perfluoroheptanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	355-46-4	
Perfluorononanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2058-94-8	
Surrogates								
13C2-PFDoA (S)	83	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
13C3HFPO-DA (S)	91	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C3-PFBS (S)	90	%.	40-135	1	12/28/23 14:04	12/30/23 06:08		
13C3-PFHxS (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C4-PFBA (S)	84	%.	5-130	1	12/28/23 14:04	12/30/23 06:08		
13C4-PFHpA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C5-PFHxA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C5-PFPeA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C6-PFDA (S)	84	%.	20-150	1	12/28/23 14:04	12/30/23 06:08		
13C8-PFOA (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C8-PFOS (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C8-PFOSA (S)	81	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C9-PFNA (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
d3-MeFOSAA (S)	86	%.	40-170	1	12/28/23 14:04	12/30/23 06:08		
d3-NMeFOSA (S)	54	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
d5-EtFOSAA (S)	82	%.	25-135	1	12/28/23 14:04	12/30/23 06:08		
d5-NEtFOSA (S)	54	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
d7-NMeFOSE (S)	58	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
d9-NEtFOSE (S)	56	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
13C24:2FTS (S)	84	%.	40-200	1	12/28/23 14:04	12/30/23 06:08		
13C26:2FTS (S)	79	%.	40-200	1	12/28/23 14:04	12/30/23 06:08		
13C28:2FTS (S)	77	%.	40-300	1	12/28/23 14:04	12/30/23 06:08		
13C7-PFUdA (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C2-PFTA (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170006** Collected: 12/04/23 12:22 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	763051-92-9	
3:3 FTCA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 06:56	356-02-5	
4:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	757124-72-4	
5:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:56	914637-49-3	
6:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	27619-97-2	
7:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:56	812-70-4	
8:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	39108-34-4	
9Cl-PF3ONS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	756426-58-1	
ADONA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	919005-14-4	
HFPO-DA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	13252-13-6	
NEtFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2991-50-6	
NEtFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	4151-50-2	
NEtFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:56	1691-99-2	
NFDHA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	151772-58-6	
NMeFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2355-31-9	
NMeFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	31506-32-8	
NMeFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:56	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-73-5	
Perfluorodecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	335-76-2	
Perfluorohexanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	307-24-4	
PFBA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	375-22-4	
PFDS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	335-77-3	
PFDoS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	79780-39-5	
PFEESA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	113507-82-7	
PFHpS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-92-8	
PFMBA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	863090-89-5	
PFMPA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	377-73-1	
PFNS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	68259-12-1	
PFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	754-91-6	
PFPeA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	2706-90-3	
PFPeS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	307-55-1	2b
Perfluoroheptanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	355-46-4	
Perfluorononanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2058-94-8	
Surrogates								
13C2-PFDoA (S)	84	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
13C3HFPO-DA (S)	96	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C3-PFBS (S)	91	%.	40-135	1	12/28/23 14:04	12/30/23 06:56		
13C3-PFHxS (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C4-PFBA (S)	88	%.	5-130	1	12/28/23 14:04	12/30/23 06:56		

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(225) 769-4900

ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170006** Collected: 12/04/23 12:22 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C4-PFHpA (S)	88	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C5-PFHxA (S)	90	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C5-PFPeA (S)	93	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C6-PFDA (S)	86	%.	20-150	1	12/28/23 14:04	12/30/23 06:56		
13C8-PFOA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C8-PFOS (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C8-PFOSA (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C9-PFNA (S)	88	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
d3-MeFOSAA (S)	88	%.	40-170	1	12/28/23 14:04	12/30/23 06:56		
d3-NMeFOSA (S)	57	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
d5-EtFOSAA (S)	79	%.	25-135	1	12/28/23 14:04	12/30/23 06:56		
d5-NEtFOSA (S)	54	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
d7-NMeFOSE (S)	61	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
d9-NEtFOSE (S)	59	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
13C24:2FTS (S)	90	%.	40-200	1	12/28/23 14:04	12/30/23 06:56		
13C26:2FTS (S)	87	%.	40-200	1	12/28/23 14:04	12/30/23 06:56		
13C28:2FTS (S)	80	%.	40-300	1	12/28/23 14:04	12/30/23 06:56		
13C7-PFUdA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C2-PFTA (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		

Sample: POST TREATMENT **Lab ID: 20300170007** Collected: 12/05/23 11:28 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/28/23 14:04	12/30/23 07:13	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 07:13	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 07:13	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	756426-58-1	
ADONA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	919005-14-4	
HFPO-DA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 07:13	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 07:13	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-73-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170007** Collected: 12/05/23 11:28 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	307-24-4	
PFBA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	375-22-4	
PFDS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	377-73-1	
PFNS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	307-55-1	2b
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2058-94-8	
Surrogates								
13C2-PFDoA (S)	82	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
13C3HFPO-DA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C3-PFBS (S)	88	%.	40-135	1	12/28/23 14:04	12/30/23 07:13		
13C3-PFHxS (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C4-PFBA (S)	82	%.	5-130	1	12/28/23 14:04	12/30/23 07:13		
13C4-PFHpA (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C5-PFHxA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C5-PFPeA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C6-PFDA (S)	81	%.	20-150	1	12/28/23 14:04	12/30/23 07:13		
13C8-PFOA (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C8-PFOS (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C8-PFOSA (S)	78	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C9-PFNA (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
d3-MeFOSAA (S)	84	%.	40-170	1	12/28/23 14:04	12/30/23 07:13		
d3-NMeFOSA (S)	52	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
d5-EtFOSAA (S)	79	%.	25-135	1	12/28/23 14:04	12/30/23 07:13		
d5-NEtFOSA (S)	51	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
d7-NMeFOSE (S)	59	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
d9-NEtFOSE (S)	57	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
13C24:2FTS (S)	81	%.	40-200	1	12/28/23 14:04	12/30/23 07:13		
13C26:2FTS (S)	83	%.	40-200	1	12/28/23 14:04	12/30/23 07:13		
13C28:2FTS (S)	74	%.	40-300	1	12/28/23 14:04	12/30/23 07:13		
13C7-PFUdA (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170007** Collected: 12/05/23 11:28 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C2-PFTA (S)	81	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

QC Batch: 313312
QC Batch Method: EPA 1633
Analysis Method: EPA 1633
Analysis Description: BR PFAS in Water by EPA 1633
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20300170001, 20300170003, 20300170004

METHOD BLANK: 1500266 Matrix: Water
Associated Lab Samples: 20300170001, 20300170003, 20300170004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	ND	4.0	12/28/23 15:14	
3:3 FTCA	ng/L	ND	5.0	12/28/23 15:14	
4:2 FTS	ng/L	ND	4.0	12/28/23 15:14	
5:3 FTCA	ng/L	ND	25.0	12/28/23 15:14	
6:2 FTS	ng/L	ND	4.0	12/28/23 15:14	
7:3 FTCA	ng/L	ND	25.0	12/28/23 15:14	
8:2 FTS	ng/L	ND	4.0	12/28/23 15:14	
9Cl-PF3ONS	ng/L	ND	4.0	12/28/23 15:14	
ADONA	ng/L	ND	4.0	12/28/23 15:14	
HFPO-DA	ng/L	ND	4.0	12/28/23 15:14	
NEtFOSA	ng/L	ND	1.0	12/28/23 15:14	
NEtFOSAA	ng/L	ND	1.0	12/28/23 15:14	
NEtFOSE	ng/L	ND	10.0	12/28/23 15:14	
NFDHA	ng/L	ND	2.0	12/28/23 15:14	
NMeFOSA	ng/L	ND	1.0	12/28/23 15:14	
NMeFOSAA	ng/L	ND	1.0	12/28/23 15:14	
NMeFOSE	ng/L	ND	10.0	12/28/23 15:14	
Perfluorobutanesulfonic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorodecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorododecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluoroheptanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorohexanesulfonic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorohexanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorononanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorooctanesulfonic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorooctanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorotetradecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorotridecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluoroundecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
PFBA	ng/L	ND	4.0	12/28/23 15:14	
PFDoS	ng/L	ND	1.0	12/28/23 15:14	
PFDS	ng/L	ND	1.0	12/28/23 15:14	
PFEESA	ng/L	ND	2.0	12/28/23 15:14	
PFHpS	ng/L	ND	1.0	12/28/23 15:14	
PFMBA	ng/L	ND	2.0	12/28/23 15:14	
PFMPA	ng/L	ND	2.0	12/28/23 15:14	
PFNS	ng/L	ND	1.0	12/28/23 15:14	
PFOSA	ng/L	ND	1.0	12/28/23 15:14	
PFPeA	ng/L	ND	2.0	12/28/23 15:14	
PFPeS	ng/L	ND	1.0	12/28/23 15:14	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

METHOD BLANK: 1500266 Matrix: Water
Associated Lab Samples: 20300170001, 20300170003, 20300170004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C2-PFDoA (S)	%.	89	10-130	12/28/23 15:14	
13C2-PFTA (S)	%.	87	40-130	12/28/23 15:14	
13C24:2FTS (S)	%.	93	40-200	12/28/23 15:14	
13C26:2FTS (S)	%.	96	40-200	12/28/23 15:14	
13C28:2FTS (S)	%.	91	40-300	12/28/23 15:14	
13C3-PFBS (S)	%.	88	40-135	12/28/23 15:14	
13C3-PFHxS (S)	%.	88	40-130	12/28/23 15:14	
13C3HFPO-DA (S)	%.	92	40-130	12/28/23 15:14	
13C4-PFBA (S)	%.	91	5-130	12/28/23 15:14	
13C4-PFHpA (S)	%.	90	40-130	12/28/23 15:14	
13C5-PFHxA (S)	%.	91	40-130	12/28/23 15:14	
13C5-PFPeA (S)	%.	93	40-130	12/28/23 15:14	
13C6-PFDA (S)	%.	89	20-150	12/28/23 15:14	
13C7-PFUdA (S)	%.	89	40-130	12/28/23 15:14	
13C8-PFOA (S)	%.	89	40-130	12/28/23 15:14	
13C8-PFOS (S)	%.	89	40-130	12/28/23 15:14	
13C8-PFOSA (S)	%.	87	40-130	12/28/23 15:14	
13C9-PFNA (S)	%.	90	40-130	12/28/23 15:14	
d3-MeFOSAA (S)	%.	91	40-170	12/28/23 15:14	
d3-NMeFOSA (S)	%.	69	10-130	12/28/23 15:14	
d5-EtFOSAA (S)	%.	86	25-135	12/28/23 15:14	
d5-NEtFOSA (S)	%.	68	10-130	12/28/23 15:14	
d7-NMeFOSE (S)	%.	83	10-130	12/28/23 15:14	
d9-NEtFOSE (S)	%.	80	10-130	12/28/23 15:14	

LABORATORY CONTROL SAMPLE: 1500267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	94.5	96.6	102	55-160	
3:3 FTCA	ng/L	125	139	111	65-130	
4:2 FTS	ng/L	93.9	90.0	96	70-145	
5:3 FTCA	ng/L	626	625	100	70-135	
6:2 FTS	ng/L	95.2	98.2	103	65-155	
7:3 FTCA	ng/L	626	616	98	50-145	
8:2 FTS	ng/L	96.4	98.8	102	60-150	
9Cl-PF3ONS	ng/L	93.9	92.0	98	70-155	
ADONA	ng/L	94.5	94.0	99	65-145	
HFPO-DA	ng/L	100	103	103	70-145	
NEtFOSA	ng/L	25	24.1	96	65-145	
NEtFOSAA	ng/L	25	25.1	100	70-145	
NEtFOSE	ng/L	250	245	98	70-135	
NFDHA	ng/L	50.1	52.2	104	50-150	
NMeFOSA	ng/L	25	23.5	94	60-150	
NMeFOSAA	ng/L	25	22.9	91	50-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1500267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
NMeFOSE	ng/L	250	245	98	70-145	
Perfluorobutanesulfonic acid	ng/L	22.2	21.3	96	60-145	
Perfluorodecanoic acid	ng/L	25	23.7	95	70-150	
Perfluorododecanoic acid	ng/L	25	24.1	96	70-140	
Perfluoroheptanoic acid	ng/L	25	24.1	96	70-150	
Perfluorohexanesulfonic acid	ng/L	22.9	21.6	94	65-145	
Perfluorohexanoic acid	ng/L	25	23.7	95	70-145	
Perfluorononanoic acid	ng/L	25	24.1	96	70-150	
Perfluorooctanesulfonic acid	ng/L	23.2	22.5	97	55-150	
Perfluorooctanoic acid	ng/L	25	23.5	94	70-150	
Perfluorotetradecanoic acid	ng/L	25	24.4	98	60-145	
Perfluorotridecanoic acid	ng/L	25	25.1	100	65-140	
Perfluoroundecanoic acid	ng/L	25	25.3	101	70-145	
PFBA	ng/L	100	97.8	98	70-145	
PFDoS	ng/L	24.3	22.9	94	50-145	
PFDS	ng/L	24.2	23.9	99	60-145	
PFEESA	ng/L	44.6	47.6	107	70-145	
PFHpS	ng/L	23.9	23.8	100	70-150	
PFMBA	ng/L	50.1	52.3	105	60-150	
PFMPA	ng/L	50.1	53.2	106	55-140	
PFNS	ng/L	24.1	23.7	99	65-145	
PFOSA	ng/L	25	24.4	98	70-145	
PFPeA	ng/L	50.1	48.8	97	60-135	
PFPeS	ng/L	23.5	23.8	101	65-140	
13C2-PFDoA (S)	%.			78	10-130	
13C2-PFTA (S)	%.			77	40-130	
13C24:2FTS (S)	%.			78	40-200	
13C26:2FTS (S)	%.			78	40-200	
13C28:2FTS (S)	%.			76	40-300	
13C3-PFBS (S)	%.			79	40-135	
13C3-PFHxS (S)	%.			79	40-130	
13C3HFPO-DA (S)	%.			80	40-130	
13C4-PFBA (S)	%.			81	5-130	
13C4-PFHpA (S)	%.			80	40-130	
13C5-PFHxA (S)	%.			80	40-130	
13C5-PFPeA (S)	%.			82	40-130	
13C6-PFDA (S)	%.			79	20-150	
13C7-PFUdA (S)	%.			78	40-130	
13C8-PFOA (S)	%.			81	40-130	
13C8-PFOS (S)	%.			78	40-130	
13C8-PFOSA (S)	%.			76	40-130	
13C9-PFNA (S)	%.			80	40-130	
d3-MeFOSAA (S)	%.			81	40-170	
d3-NMeFOSA (S)	%.			63	10-130	
d5-EtFOSAA (S)	%.			77	25-135	
d5-NEtFOSA (S)	%.			62	10-130	
d7-NMeFOSE (S)	%.			76	10-130	

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7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1500267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
d9-NEtFOSE (S)	%.			73	10-130	

LABORATORY CONTROL SAMPLE: 1500268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	7.6	7.0	93	40-150	
3:3 FTCA	ng/L	10	10.2	102	40-150	
4:2 FTS	ng/L	7.5	7.1	94	40-150	
5:3 FTCA	ng/L	50	45.9	92	40-150	
6:2 FTS	ng/L	7.6	7.6	99	40-150	
7:3 FTCA	ng/L	50	47.2	94	40-150	
8:2 FTS	ng/L	7.7	7.4	97	40-150	
9Cl-PF3ONS	ng/L	7.5	6.8	91	40-150	
ADONA	ng/L	7.6	7.1	94	40-150	
HFPO-DA	ng/L	8	7.6	95	40-150	
NEtFOSA	ng/L	2	1.8	92	40-150	
NEtFOSAA	ng/L	2	1.9	95	40-150	
NEtFOSE	ng/L	20	18.6	93	40-150	
NFDHA	ng/L	4	3.6	91	40-150	
NMeFOSA	ng/L	2	2.0	102	40-150	
NMeFOSAA	ng/L	2	2.2	111	40-150	
NMeFOSE	ng/L	20	18.4	92	40-150	
Perfluorobutanesulfonic acid	ng/L	1.8	1.8	102	40-150	
Perfluorodecanoic acid	ng/L	2	1.9	94	40-150	
Perfluorododecanoic acid	ng/L	2	1.9	93	40-150	
Perfluoroheptanoic acid	ng/L	2	1.9	97	40-150	
Perfluorohexanesulfonic acid	ng/L	1.8	1.7	95	40-150	
Perfluorohexanoic acid	ng/L	2	1.9	93	40-150	
Perfluorononanoic acid	ng/L	2	2.1	105	40-150	
Perfluorooctanesulfonic acid	ng/L	1.9	1.8	96	40-150	
Perfluorooctanoic acid	ng/L	2	2.0	101	40-150	
Perfluorotetradecanoic acid	ng/L	2	2.0	100	40-150	
Perfluorotridecanoic acid	ng/L	2	2.0	99	40-150	
Perfluoroundecanoic acid	ng/L	2	1.8	88	40-150	
PFBA	ng/L	8	7.5	94	40-150	
PFDoS	ng/L	1.9	1.8	92	40-150	
PFDS	ng/L	1.9	1.7	88	40-150	
PFEESA	ng/L	3.6	3.4	96	40-150	
PFHpS	ng/L	1.9	2.1	108	40-150	
PFMBA	ng/L	4	3.7	92	40-150	
PFMPA	ng/L	4	3.9	98	40-150	
PFNS	ng/L	1.9	1.7	86	40-150	
PFOSA	ng/L	2	2.0	101	40-150	
PFPeA	ng/L	4	3.7	92	40-150	
PFPeS	ng/L	1.9	1.9	100	40-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1500268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
13C2-PFDoA (S)	%.			78	10-130	
13C2-PFTA (S)	%.			75	40-130	
13C24:2FTS (S)	%.			82	40-200	
13C26:2FTS (S)	%.			84	40-200	
13C28:2FTS (S)	%.			79	40-300	
13C3-PFBS (S)	%.			79	40-135	
13C3-PFHxS (S)	%.			78	40-130	
13C3HFPO-DA (S)	%.			81	40-130	
13C4-PFBA (S)	%.			81	5-130	
13C4-PFHpA (S)	%.			82	40-130	
13C5-PFHxA (S)	%.			82	40-130	
13C5-PFPeA (S)	%.			83	40-130	
13C6-PFDA (S)	%.			82	20-150	
13C7-PFUdA (S)	%.			80	40-130	
13C8-PFOA (S)	%.			82	40-130	
13C8-PFOS (S)	%.			79	40-130	
13C8-PFOSA (S)	%.			76	40-130	
13C9-PFNA (S)	%.			78	40-130	
d3-MeFOSAA (S)	%.			81	40-170	
d3-NMeFOSA (S)	%.			66	10-130	
d5-EtFOSAA (S)	%.			75	25-135	
d5-NEtFOSA (S)	%.			67	10-130	
d7-NMeFOSE (S)	%.			76	10-130	
d9-NEtFOSE (S)	%.			74	10-130	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

QC Batch: 313623
QC Batch Method: EPA 1633
Analysis Method: EPA 1633
Analysis Description: BR PFAS in Water by EPA 1633
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20300170002, 20300170005, 20300170006, 20300170007

METHOD BLANK: 1501490 Matrix: Water
Associated Lab Samples: 20300170002, 20300170005, 20300170006, 20300170007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	ND	4.0	12/30/23 04:31	
3:3 FTCA	ng/L	ND	5.0	12/30/23 04:31	
4:2 FTS	ng/L	ND	4.0	12/30/23 04:31	
5:3 FTCA	ng/L	ND	25.0	12/30/23 04:31	
6:2 FTS	ng/L	ND	4.0	12/30/23 04:31	
7:3 FTCA	ng/L	ND	25.0	12/30/23 04:31	
8:2 FTS	ng/L	ND	4.0	12/30/23 04:31	
9Cl-PF3ONS	ng/L	ND	4.0	12/30/23 04:31	
ADONA	ng/L	ND	4.0	12/30/23 04:31	
HFPO-DA	ng/L	ND	4.0	12/30/23 04:31	
NEtFOSA	ng/L	ND	1.0	12/30/23 04:31	
NEtFOSAA	ng/L	ND	1.0	12/30/23 04:31	
NEtFOSE	ng/L	ND	10.0	12/30/23 04:31	
NFDHA	ng/L	ND	2.0	12/30/23 04:31	
NMeFOSA	ng/L	ND	1.0	12/30/23 04:31	
NMeFOSAA	ng/L	ND	1.0	12/30/23 04:31	
NMeFOSE	ng/L	ND	10.0	12/30/23 04:31	
Perfluorobutanesulfonic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorodecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorododecanoic acid	ng/L	ND	1.0	12/30/23 04:31	2b
Perfluoroheptanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorohexanesulfonic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorohexanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorononanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorooctanesulfonic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorooctanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorotetradecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorotridecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluoroundecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
PFBA	ng/L	ND	4.0	12/30/23 04:31	
PFDoS	ng/L	ND	1.0	12/30/23 04:31	
PFDS	ng/L	ND	1.0	12/30/23 04:31	
PFEESA	ng/L	ND	2.0	12/30/23 04:31	
PFHpS	ng/L	ND	1.0	12/30/23 04:31	
PFMBA	ng/L	ND	2.0	12/30/23 04:31	
PFMPA	ng/L	ND	2.0	12/30/23 04:31	
PFNS	ng/L	ND	1.0	12/30/23 04:31	
PFOSA	ng/L	ND	1.0	12/30/23 04:31	
PFPeA	ng/L	ND	2.0	12/30/23 04:31	
PFPeS	ng/L	ND	1.0	12/30/23 04:31	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

METHOD BLANK: 1501490 Matrix: Water
Associated Lab Samples: 20300170002, 20300170005, 20300170006, 20300170007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C2-PFDoA (S)	%.	74	10-130	12/30/23 04:31	
13C2-PFTA (S)	%.	77	40-130	12/30/23 04:31	
13C24:2FTS (S)	%.	79	40-200	12/30/23 04:31	
13C26:2FTS (S)	%.	73	40-200	12/30/23 04:31	
13C28:2FTS (S)	%.	70	40-300	12/30/23 04:31	
13C3-PFBS (S)	%.	83	40-135	12/30/23 04:31	
13C3-PFHxS (S)	%.	78	40-130	12/30/23 04:31	
13C3HFPO-DA (S)	%.	83	40-130	12/30/23 04:31	
13C4-PFBA (S)	%.	78	5-130	12/30/23 04:31	
13C4-PFHpA (S)	%.	77	40-130	12/30/23 04:31	
13C5-PFHxA (S)	%.	79	40-130	12/30/23 04:31	
13C5-PFPeA (S)	%.	81	40-130	12/30/23 04:31	
13C6-PFDA (S)	%.	78	20-150	12/30/23 04:31	
13C7-PFUdA (S)	%.	76	40-130	12/30/23 04:31	
13C8-PFOA (S)	%.	80	40-130	12/30/23 04:31	
13C8-PFOS (S)	%.	78	40-130	12/30/23 04:31	
13C8-PFOSA (S)	%.	73	40-130	12/30/23 04:31	
13C9-PFNA (S)	%.	81	40-130	12/30/23 04:31	
d3-MeFOSAA (S)	%.	76	40-170	12/30/23 04:31	
d3-NMeFOSA (S)	%.	45	10-130	12/30/23 04:31	
d5-EtFOSAA (S)	%.	73	25-135	12/30/23 04:31	
d5-NEtFOSA (S)	%.	43	10-130	12/30/23 04:31	
d7-NMeFOSE (S)	%.	47	10-130	12/30/23 04:31	
d9-NEtFOSE (S)	%.	46	10-130	12/30/23 04:31	

LABORATORY CONTROL SAMPLE: 1501491

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	94.5	108	115	55-160	
3:3 FTCA	ng/L	125	141	112	65-130	
4:2 FTS	ng/L	93.9	91.4	97	70-145	
5:3 FTCA	ng/L	626	605	97	70-135	
6:2 FTS	ng/L	95.2	98.6	104	65-155	
7:3 FTCA	ng/L	626	628	100	50-145	
8:2 FTS	ng/L	96.4	100	104	60-150	
9Cl-PF3ONS	ng/L	93.9	106	113	70-155	
ADONA	ng/L	94.5	98.2	104	65-145	
HFPO-DA	ng/L	100	112	112	70-145	
NEtFOSA	ng/L	25	23.7	94	65-145	
NEtFOSAA	ng/L	25	24.4	97	70-145	
NEtFOSE	ng/L	250	244	97	70-135	
NFDHA	ng/L	50.1	61.3	122	50-150	
NMeFOSA	ng/L	25	24.4	97	60-150	
NMeFOSAA	ng/L	25	24.2	97	50-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1501491

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
NMeFOSE	ng/L	250	251	100	70-145	
Perfluorobutanesulfonic acid	ng/L	22.2	21.3	96	60-145	
Perfluorodecanoic acid	ng/L	25	24.1	96	70-150	
Perfluorododecanoic acid	ng/L	25	23.4	93	70-140	2b
Perfluoroheptanoic acid	ng/L	25	23.3	93	70-150	
Perfluorohexanesulfonic acid	ng/L	22.9	22.3	97	65-145	
Perfluorohexanoic acid	ng/L	25	23.6	94	70-145	
Perfluorononanoic acid	ng/L	25	23.2	93	70-150	
Perfluorooctanesulfonic acid	ng/L	23.2	21.7	93	55-150	
Perfluorooctanoic acid	ng/L	25	22.7	91	70-150	
Perfluorotetradecanoic acid	ng/L	25	24.3	97	60-145	
Perfluorotridecanoic acid	ng/L	25	24.6	98	65-140	
Perfluoroundecanoic acid	ng/L	25	25.0	100	70-145	
PFBA	ng/L	100	96.8	97	70-145	
PFDoS	ng/L	24.3	20.2	83	50-145	
PFDS	ng/L	24.2	21.8	90	60-145	
PFEESA	ng/L	44.6	61.9	139	70-145	
PFHpS	ng/L	23.9	24.4	102	70-150	
PFMBA	ng/L	50.1	57.4	115	60-150	
PFMPA	ng/L	50.1	59.2	118	55-140	
PFNS	ng/L	24.1	23.2	96	65-145	
PFOSA	ng/L	25	24.3	97	70-145	
PFPeA	ng/L	50.1	48.0	96	60-135	
PFPeS	ng/L	23.5	23.3	99	65-140	
13C2-PFDoA (S)	%.			78	10-130	
13C2-PFTA (S)	%.			76	40-130	
13C24:2FTS (S)	%.			75	40-200	
13C26:2FTS (S)	%.			69	40-200	
13C28:2FTS (S)	%.			69	40-300	
13C3-PFBS (S)	%.			87	40-135	
13C3-PFHxS (S)	%.			80	40-130	
13C3HFPO-DA (S)	%.			88	40-130	
13C4-PFBA (S)	%.			82	5-130	
13C4-PFHpA (S)	%.			82	40-130	
13C5-PFHxA (S)	%.			86	40-130	
13C5-PFPeA (S)	%.			86	40-130	
13C6-PFDA (S)	%.			80	20-150	
13C7-PFUdA (S)	%.			78	40-130	
13C8-PFOA (S)	%.			83	40-130	
13C8-PFOS (S)	%.			83	40-130	
13C8-PFOSA (S)	%.			79	40-130	
13C9-PFNA (S)	%.			84	40-130	
d3-MeFOSAA (S)	%.			86	40-170	
d3-NMeFOSA (S)	%.			49	10-130	
d5-EtFOSAA (S)	%.			80	25-135	
d5-NEtFOSA (S)	%.			48	10-130	
d7-NMeFOSE (S)	%.			58	10-130	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1501491

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
d9-NEtFOSE (S)	%.			56	10-130	

LABORATORY CONTROL SAMPLE: 1501492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	7.6	7.8	103	40-150	
3:3 FTCA	ng/L	10	9.6	96	40-150	
4:2 FTS	ng/L	7.5	6.9	92	40-150	
5:3 FTCA	ng/L	50	42.2	84	40-150	
6:2 FTS	ng/L	7.6	7.4	98	40-150	
7:3 FTCA	ng/L	50	41.7	83	40-150	
8:2 FTS	ng/L	7.7	7.7	100	40-150	
9Cl-PF3ONS	ng/L	7.5	7.4	98	40-150	
ADONA	ng/L	7.6	6.5	86	40-150	
HFPO-DA	ng/L	8	7.5	94	40-150	
NEtFOSA	ng/L	2	1.8	88	40-150	
NEtFOSAA	ng/L	2	1.9	97	40-150	
NEtFOSE	ng/L	20	18.3	91	40-150	
NFDHA	ng/L	4	3.9	97	40-150	
NMeFOSA	ng/L	2	1.8	91	40-150	
NMeFOSAA	ng/L	2	1.9	93	40-150	
NMeFOSE	ng/L	20	18.4	92	40-150	
Perfluorobutanesulfonic acid	ng/L	1.8	1.6	90	40-150	
Perfluorodecanoic acid	ng/L	2	1.9	96	40-150	
Perfluorododecanoic acid	ng/L	2	1.8	91	40-150	2b
Perfluoroheptanoic acid	ng/L	2	1.8	92	40-150	
Perfluorohexanesulfonic acid	ng/L	1.8	1.8	96	40-150	
Perfluorohexanoic acid	ng/L	2	1.9	94	40-150	
Perfluorononanoic acid	ng/L	2	1.8	90	40-150	
Perfluorooctanesulfonic acid	ng/L	1.9	1.8	98	40-150	
Perfluorooctanoic acid	ng/L	2	2.0	98	40-150	
Perfluorotetradecanoic acid	ng/L	2	1.8	88	40-150	
Perfluorotridecanoic acid	ng/L	2	1.9	97	40-150	
Perfluoroundecanoic acid	ng/L	2	1.8	88	40-150	
PFBA	ng/L	8	7.3	92	40-150	
PFDoS	ng/L	1.9	1.6	84	40-150	
PFDS	ng/L	1.9	1.8	91	40-150	
PFEESA	ng/L	3.6	4.0	112	40-150	
PFHpS	ng/L	1.9	1.9	97	40-150	
PFMBA	ng/L	4	3.6	89	40-150	
PFMPA	ng/L	4	3.7	93	40-150	
PFNS	ng/L	1.9	1.7	90	40-150	
PFOSA	ng/L	2	2.0	102	40-150	
PFPeA	ng/L	4	3.7	92	40-150	
PFPeS	ng/L	1.9	1.7	88	40-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1501492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
13C2-PFDoA (S)	%.			79	10-130	
13C2-PFTA (S)	%.			77	40-130	
13C24:2FTS (S)	%.			80	40-200	
13C26:2FTS (S)	%.			75	40-200	
13C28:2FTS (S)	%.			72	40-300	
13C3-PFBS (S)	%.			83	40-135	
13C3-PFHxS (S)	%.			78	40-130	
13C3HFPO-DA (S)	%.			83	40-130	
13C4-PFBA (S)	%.			79	5-130	
13C4-PFHpA (S)	%.			77	40-130	
13C5-PFHxA (S)	%.			80	40-130	
13C5-PFPeA (S)	%.			81	40-130	
13C6-PFDA (S)	%.			79	20-150	
13C7-PFUdA (S)	%.			77	40-130	
13C8-PFOA (S)	%.			83	40-130	
13C8-PFOS (S)	%.			80	40-130	
13C8-PFOSA (S)	%.			73	40-130	
13C9-PFNA (S)	%.			79	40-130	
d3-MeFOSAA (S)	%.			82	40-170	
d3-NMeFOSA (S)	%.			48	10-130	
d5-EtFOSAA (S)	%.			77	25-135	
d5-NEtFOSA (S)	%.			46	10-130	
d7-NMeFOSE (S)	%.			58	10-130	
d9-NEtFOSE (S)	%.			55	10-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1501493 1501494

Parameter	Units	20300170002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
11Cl-PF3OUdS	ng/L	ND	2360	2360	2760	2580	117	109	55-160	7	30	
3:3 FTCA	ng/L	ND	3130	3130	2930	2820	94	90	65-130	4	30	
4:2 FTS	ng/L	ND	2350	2350	2300	2240	98	96	70-145	3	30	
5:3 FTCA	ng/L	ND	15600	15600	12600	12400	81	79	70-135	2	30	
6:2 FTS	ng/L	ND	2380	2380	2420	2380	102	100	65-155	2	30	
7:3 FTCA	ng/L	ND	15600	15600	13500	13100	86	83	50-145	3	30	
8:2 FTS	ng/L	ND	2410	2410	2500	2500	104	103	60-150	0	30	
9Cl-PF3ONS	ng/L	ND	2350	2350	2620	2460	111	105	70-155	6	30	
ADONA	ng/L	ND	2360	2360	2420	2230	102	95	65-145	8	30	
HFPO-DA	ng/L	ND	2500	2500	2730	2530	109	101	70-145	8	30	
NEtFOSA	ng/L	ND	626	626	606	628	97	100	65-145	4	30	
NEtFOSAA	ng/L	ND	626	626	634	591	101	94	70-145	7	30	
NEtFOSE	ng/L	ND	6260	6260	6150	6000	98	96	70-135	3	30	
NFDHA	ng/L	ND	1250	1250	1450	1150	115	92	50-150	23	30	
NMeFOSA	ng/L	ND	626	626	613	615	98	98	60-150	0	30	
NMeFOSAA	ng/L	ND	626	626	635	620	101	99	50-150	2	30	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1501493 1501494

Parameter	Units	20300170002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
NMeFOSE	ng/L	ND	6260	6260	6230	6040	99	96	70-145	3	30	
Perfluorobutanesulfonic acid	ng/L	ND	556	556	530	507	95	91	60-145	4	30	
Perfluorodecanoic acid	ng/L	ND	626	626	578	554	92	88	70-150	4	30	
Perfluorododecanoic acid	ng/L	ND	626	626	581	576	92	91	70-140	1	30	2b
Perfluoroheptanoic acid	ng/L	ND	626	626	585	569	93	90	70-150	3	30	
Perfluorohexanesulfonic acid	ng/L	ND	573	573	538	537	93	93	65-145	0	30	
Perfluorohexanoic acid	ng/L	ND	626	626	595	563	94	89	70-145	6	30	
Perfluorononanoic acid	ng/L	ND	626	626	564	545	90	87	70-150	3	30	
Perfluorooctanesulfonic acid	ng/L	ND	581	581	552	512	94	88	55-150	8	30	
Perfluorooctanoic acid	ng/L	ND	626	626	582	539	92	85	70-150	8	30	
Perfluorotetradecanoic acid	ng/L	ND	626	626	617	597	99	95	60-145	3	30	
Perfluorotridecanoic acid	ng/L	ND	626	626	607	588	96	93	65-140	3	30	
Perfluoroundecanoic acid	ng/L	ND	626	626	613	593	98	95	70-145	3	30	
PFBA	ng/L	ND	2500	2500	2420	2320	97	93	70-145	4	30	
PFDoS	ng/L	ND	607	607	527	507	87	83	50-145	4	30	
PFDS	ng/L	ND	604	604	564	539	93	89	60-145	5	30	
PFEESA	ng/L	ND	1110	1110	1450	1150	130	103	70-145	23	30	
PFHpS	ng/L	ND	596	596	579	583	97	98	70-150	1	30	
PFMBA	ng/L	ND	1250	1250	1340	1040	107	83	60-150	25	30	
PFMPA	ng/L	ND	1250	1250	1370	1060	110	84	55-140	26	30	
PFNS	ng/L	ND	603	603	579	552	96	92	65-145	5	30	
PFOSA	ng/L	ND	626	626	596	570	95	91	70-145	4	30	
PFPeA	ng/L	ND	1250	1250	1190	1150	95	92	60-135	4	30	
PFPeS	ng/L	ND	588	588	559	572	95	97	65-140	2	30	
13C2-PFDoA (S)	%.						86	80	10-130			
13C2-PFTA (S)	%.						82	76	40-130			
13C24:2FTS (S)	%.						78	73	40-200			
13C26:2FTS (S)	%.						76	71	40-200			
13C28:2FTS (S)	%.						72	66	40-300			
13C3-PFBS (S)	%.						89	86	40-135			
13C3-PFHxS (S)	%.						85	79	40-130			
13C3HFPO-DA (S)	%.						89	84	40-130			
13C4-PFBA (S)	%.						85	80	5-130			
13C4-PFHpA (S)	%.						84	77	40-130			
13C5-PFHxA (S)	%.						87	80	40-130			
13C5-PFPeA (S)	%.						88	82	40-130			
13C6-PFDA (S)	%.						85	80	20-150			
13C7-PFUdA (S)	%.						81	78	40-130			
13C8-PFOA (S)	%.						88	83	40-130			
13C8-PFOS (S)	%.						86	79	40-130			
13C8-PFOSA (S)	%.						82	78	40-130			
13C9-PFNA (S)	%.						85	82	40-130			
d3-MeFOSAA (S)	%.						88	82	40-170			

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1501493 1501494

Parameter	Units	20300170002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
d3-NMeFOSA (S)	%.						56	50	10-130			
d5-EtFOSAA (S)	%.						81	77	25-135			
d5-NEtFOSA (S)	%.						55	49	10-130			
d7-NMeFOSE (S)	%.						60	55	10-130			
d9-NEtFOSE (S)	%.						57	52	10-130			

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(225) 769-4900

QUALIFIERS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

SAMPLE QUALIFIERS

Sample: 20300170001
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170002
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170003
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170004
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170005
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170006
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170007
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

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Baton Rouge, LA 70820
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QUALIFIERS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

ANALYTE QUALIFIERS

1b	Analyte was detected in an associated instrument blank.
2b	Analyte was detected in an associated instrument blank.

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7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20300170001	**POST TREATMENT**	EPA 1633	313312	EPA 1633	313679
20300170002	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834
20300170003	**POST TREATMENT**	EPA 1633	313312	EPA 1633	313679
20300170004	**POST TREATMENT**	EPA 1633	313312	EPA 1633	313679
20300170005	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834
20300170006	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834
20300170007	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834

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Pace® Location Requested (City/State):
Pace Analytical Baton Rouge
7979 Innovation Park Dr, Suite A
Baton Rouge, LA 70820

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

WO# : 20300170

20300170

Company Name:	TERRACON	Contact/Report To:	[redacted]
Street Address:	2930 Wellington Circle, Suite 201 Tallahassee, FL 32309	Phone #:	
		E-Mail:	[redacted]
		Cc E-Mail:	
Customer Project #:		Invoice To:	Accounts Payable
Project Name:	HF221083 Tyndall WEG Hanger	Invoice E-Mail:	invoices@terracon.coupahost.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	
Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET		County / State origin of sample(s):	Florida

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other_____

Regulatory Program (DW, RCRA, etc.) as applicable:

Rush (Pre-approval required):
[ ] 2 Day [ ] 3 day [ ] 5 day [ ] Other_____

Date Results Requested:

DW PWSID # or WW Permit # as applicable:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Other (OT), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk

Specify Container Size **

Identify Container Preservative Type***

Analysis Requested

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only

Proj. Mgr: Melissa MacNaughton
AcctNum / Client ID:
Table #:
Profile / Template: 18522
Prelog / Bottle Ord. ID: EZ 3033015

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res. Cl2	Number & Type of Containers Plastic	Number & Type of Containers Glass	PFAS in Water by EPA 1633	PFAS-TSS screening	Sample Comment	Preservation non-conformance identified for sample:
Post treatment					12-8-23	9:00						1	
Post treatment					12-6-23	11:00						2	
Post treatment					11-30-23	15:48						3	
					12-1-23	13:50						4	
					12-7-23	9:00						5	
					12-4-23	12:22						6	
					12-5-23	11:28						7	

Customer Remarks / Special Conditions / Possible Hazards:

Collected By:
Printed Name:
Signature:

Additional Instructions from Pace®:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)

Relinquished by/Company: (Signature) [redacted]	Date/Time: 12/9/23 1005	Received by/Company: (Signature) [redacted]	Date/Time: 12/12/23 1005	Tracking Number:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time: 1300	Delivered by: [ ] In-Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEx [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: 1 of 2

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace® Terms and Conditions found at https://www.pacelabs.com/resource-library/resource/pace-terms-and-conditions/

ENV-FRM-CORQ-0019_v01_082123 ©

Pace

Sample Condition Upon Reciept (S

Workorder

WO#: 20300170

PM: MM1 Due Date: 12/18/23

CLIENT: BR-TERRACON

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: BRP / 12/12/23

Means of receipt: ☐Pace ☐Client ☐UPS ☑FedEx ☐Other:				
☑ Yes	☐ No		Were custody seals present on the cooler?	
☑ Yes	☐ No	☐ NA	If custody seals were present, were they intact and unbroken?	
Method: ☐Temperature Blank ☑Against Bottles IR Gun ID: 6171 IR Gun Correction Factor: 0 °C				
Cooler #1	Cooler Temp °C: 1.7	(Actual/True)	Samples on ice ☑Yes ☐No	pH Strip Lot #
Cooler #2	Cooler Temp °C:	(Actual/True)		
Cooler #3	Cooler Temp °C:	(Actual/True)	Method of coolant: ☑ Wet ☐Ice Packs ☐ Dry Ice ☐ None	
Cooler #4	Cooler Temp °C:	(Actual/True)		
Tracking #:				

☐ Yes	☑ No	☐ NA	Is a temperature blank present?	
☑ Yes	☐ No	☐ NA	Was a chain of custody (COC) recieved?	
☑ Yes	☐ No	☐ NA	Was the line and profile number listed on the COC?	
☑ Yes	☐ No	☐ NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.	
☑ Yes	☐ No		Were proper custody procedures (relinquished/received) followed?	
☐ Yes	☑ No	☐ NA	Is the sampler name and signature on the COC?	
☑ Yes	☐ No		Were sample IDs listed on the COC and all sample containers?	
☑ Yes	☐ No		Was collection date & time listed on the COC and all sample containers?	
☑ Yes	☐ No		Did all container label information (ID, date, time) agree with the COC?	
☑ Yes	☐ No		Were tests to be performed listed on the COC?	
☑ Yes	☐ No		Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
☑ Yes	☐ No		Was adequate sample volume available?	
☑ Yes	☐ No		Were all samples received within ½ the holding time or 48 hours, whichever comes first?	
☑ Yes	☐ No		Were all samples containers accounted for? (No missing / excess)	
☐ Yes	☐ No	☑ NA	Were VOA, 8015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?	
☐ Yes	☐ No	☑ NA	Trip blank present?	
☐ Yes	☐ No	☑ NA	Filtered volume received for dissolved tests? *If no, list affected sample(s) in comments below.*	
☐ Yes	☐ No	☑ NA	Were all metals/nutrient samples received at a pH of < 2?	If No, was preservative added? ☐Yes ☐No If added, record lots. Dispenser/pipette lot #:
☐ Yes	☐ No	☑ NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?	HNO_3 H_2SO_4 NaOH Date: Time:

Comments:

FLORIDA DEPARTMENT OF
Environmental Protection

Northwest District
160 W. Government Street, Suite 308
Pensacola, FL 32502

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

January 10, 2024

United States Air Force
Attn: Lieutenant Colonel Brandon R. Rocker
103 Mississippi Avenue, Building 36234
Tyndall AFB, Florida 32403
Brandon.Rocker@us.af.mil

Subject: Recovered Groundwater Treatment Plan Approval Order
Tyndall Air Force Base
Zone 3.2 WEG HQ and Hangar Facilities
Bay County
Facility ID DOD_2_18341

Dear Lieutenant Colonel Rocker:

The Northwest District has reviewed the Tyndall AFB Zone 3.2 Groundwater Treatment Train Information and Pilot Study Test Result Information (Revision 1-2024.01.08) and Request for Groundwater Treatment Plan Approval Order e-mail from the US Army Corps of Engineers and Tyndall AFB, for the Facility referenced above. The documents were received on January 9, 2024. We found all the documents submitted to date to be adequate to meet the treatment requirements under the provisions of rule 62-780.525(4), Florida Administrative Code (F.A.C.). The Florida Department of Environmental Protection (Department) has determined that the actions proposed in this Interim Groundwater Remediation (IGR) represent a reasonable strategy toward accomplishing the site-specific objectives. However, implementation of this IGR is not intended to result in a complete cleanup to the applicable cleanup target levels referenced in Chapter 62-777, F.A.C., or site-specific cleanup target levels. A subsequent phase of remedial design may be necessary to accomplish the necessary comprehensive cleanup in accordance with Chapter 62-780, F.A.C. Pursuant to paragraph 62-780.525(7)(b), F.A.C., the Department approves the IGR as described in the Tyndall AFB Zone 3.2 Groundwater Treatment Train Information and Pilot Study Test Result Information.

If it appears during IGR implementation that the remedial treatment strategy is not effective a request for modification of this Order, pursuant to subsection 62-780.700(14), F.A.C., may be submitted to the Department or the Department may require the preparation and submittal of a IGR Modification to enhance the active treatment. Depending on the nature of the system modification, the Department may revoke this Order.

The operation of the IGR system must be initiated prior to discharge of recovered groundwater as outlined in the Tyndall AFB Zone 4.1 Groundwater Treatment Plan. You are also required to

submit to the Department record drawings (as-built drawings) of the treatment system within 120 days of initiating operation of the active remediation treatment system(s). These drawings must be signed and sealed by a professional engineer. You are further required to collect and submit effluent analytical results in accordance with the Pilot Study portion of the provided plan to ensure that the system is effectively removing the constituents of concern.

Notice of Rights

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until a subsequent order of the Department. Because the administrative hearing process is designed to formulate final agency action, the subsequent order may modify or take a different position than this action.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rules 28-106.201 and 28-106.301, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, any e-mail address, any facsimile number, and telephone number of the petitioner, if the petitioner is not represented by an attorney or a qualified representative; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@FloridaDEP.gov. Also, a copy of the petition shall be mailed to the addressee of this order at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the addressee of this order must be filed within **21** days of receipt of this written notice. Petitions filed by any persons other than the addressee of this order must be filed within **21** days of publication of the notice or within **21** days of receipt of the written notice, whichever occurs first. You cannot justifiably rely on the finality of this decision unless notice of this decision and the right of substantially affected persons to challenge this decision has been duly published or otherwise provided to all persons substantially affected by the decision. While you are not required to publish notice of this action, you may elect to do so pursuant Rule 62-110.106(10)(a).

The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C. If you do not publish notice of this action, this waiver may not apply to persons who have not received a clear point of entry.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, or via electronic correspondence at Agency_Clerk@FloridaDEP.gov, before the deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

Judicial Review

Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Florida Rules of Appellate Procedure 9.110 and 9.190 with the Clerk of the Department in the Office of General Counsel (Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000) and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice must be filed within 30 days from the date this action is filed with the Clerk of the Department.

Questions

Any questions regarding the Department's review of your IGR should be directed to Alex Webster, PG at (850)-595-0664 or via e-mail at Alex.Webster@FloridaDEP.gov . Questions regarding legal issues should be referred to the Department's Office of General Counsel at (850)-245-2242. Contact with any of the above does not constitute a petition for an administrative hearing or a request for an extension of time to file a petition for an administrative hearing.

EXECUTION AND CLERKING
Executed in Pensacola, Florida.
STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Elizabeth Mullins Orr
Northwest District Director

EMO/aw

CERTIFICATE OF SERVICE
The undersigned duly designated deputy clerk hereby certifies that this document and all attachments were sent on the filing date below to the following listed persons:

John Winters, Tyndall AFB, John.Winters.5@us.af.mil
Scott Sickles, US ACOE, Scott.T.Sickles@usace.army.mil

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to Section 120.52, F. S., with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

January 10, 2024
Date

Ground water treatment train information & Pilot study test result information

(Revision 1 - 2024.01.08)

Zone 3.2 WEG HQ and Hangar Facilities

Tyndall AFB
Contract Number W9127822C0012

JSS MTS-150-01

Open Deck Mobile Water Treatment Trailer

SPECIFICATIONS:	
Bed Volume Pounds of Carbon Per Vessel:	2000 Pounds
Flow Rate at 7.5 minutes Empty Bed Contact Time	150 GPM
Inlet/Outlet Size with Connection Type	3” Male Cam Lock
Number of Bag Filters	Two (2) Trade Size # 2 Housings w/ Isolation Piping
Vacuum Breaker Loop	Included
Totalizing/Direct Read Flow Meter	Included
Sample Ports	Influent, Mid-Point & Effluent

SEE BELOW FOR PRINTABLE P&ID

JSS MTS-150-01:
Mobile Carbon Filtration Treatment Trailer

0-150 GPM Capacity

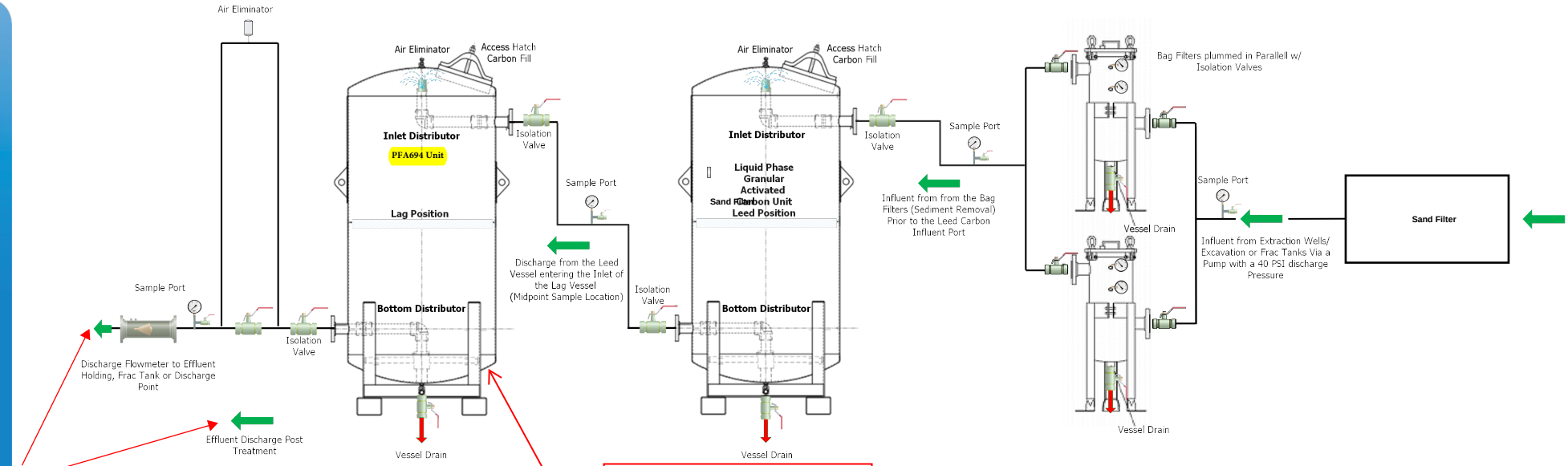
Job Site Services, Inc. Mobile Wastewater Treatment Systems are designed for ease of set-up, operation, and tear down when the jobs complete. JSS’s plug and plug and treat design boasts:

Two (2) #2 filter housings, Two (2) 2000-pound carbon vessels, Schedule 80 PVC pipe and pressure/suction inner connection hose plumbing, totalizing flow meter, vacuum loop and pressure gauges with sample ports throughout. The two vessels are set in a lead/lag configuration. Depending on filtration needs, impregnated organo clay or sand can be used instead of carbon, along with custom media options available for specific treatment applications Job Site Services water treatment service staff is on call 24/7 to aid in the operation of this unit both on and off site

For information on renting or purchasing equipment please contact:
Info@JSSMI.com
or visit:
https://www.jssmi.com/contact/contact-formAnd one of our Experienced Project Managers will contact you direct.

Main 989-671-3318 | Fax 989-671-3316 | 4395 Wilder Rd., Bay City, MI 48706
jssmi.com

Overall system configuration



To re-infiltration gallery

PFA694 = Resin ion exchange

JSS MTS #_ _ _

Detail	Units	Quanity	Type	Notes
Design Flow	GPM	GPM		
Carbon Per Vessel	Pounds Total			
Filter Bags	Each	(2) Per Change Out		
Layflat (Size & Distance to Discharge)	Diameter in Inches = _" Linear Feet	0'-0"		
Pump (List Type Here)	Unit			
Pump Discharge Hose (Size & Distance to Influent Connection on System)	Diameter in Inches = x" Linear Feet			
Pump Suction Hose (Size & Distance to Pump Inlet Connection from source)	Diameter in Inches = x" Linear Feet			

Job Site Services
4395 Wilder Road - Bay City, Michigan 48706
Main (989) 671-3318
Fax (989) 671-3316

Prepared for:

Site :

Drawing
Conceptual Pipe Routing and Equipment Locations for discussion

Date: 00/00/202_	Page 1 of 1	Prepared by: Charles Sumrack	For Discussion
JSS Project #_ _ _ _ _		Not To Scale Reference Only	Comment Only

JSS EFX24-3

Enclosed Auto Backwashing Sand Filter

Sand filter system configuration

SPECIFICATIONS:	
Flow Rate at 7.5 minutes Empty Bed Contact Time	175 GPM
Inlet/Outlet Size with Connection Type	3” Male Cam Lock
Back Wash Rate	44 GPM
Automated Operation	Included
Heated Enclosure	Included
Insulated Enclosure	Yes
Enclosure Size	10’-0”long x 8’-0” wide x 8’-0” high

SEE BELOW FOR PRINTABLE Specifications and Layouts

JSS EFX24-3:
Enclosed Auto Backwashing Sand Filtration Vessels
0-175 GPM Capacity

Job Site Services, Inc. Mobile Wastewater Treatment Systems are designed for ease of set-up, operation, and tear down when the jobs complete. JSS’s plug and plug and treatment design boasts:

Pre-Plumbed Manifolds 3” Inlet a 3” Discharge and a 2” Backwash header.
Programmable Backwash Sequence and Duration control is based on actual field conditions.
The System remains operational during a single Pod backwash cycle via automated Valving.

Job Site Services water treatment service staff is on call 24/7 to aid in the operation of this unit both on and off site.

For information on renting or purchasing equipment please contact:
Info@JSSMI.com
or visit:
https://www.jssmi.com/contact/contact-form
And one of our Experienced Project Managers will contact you direct.

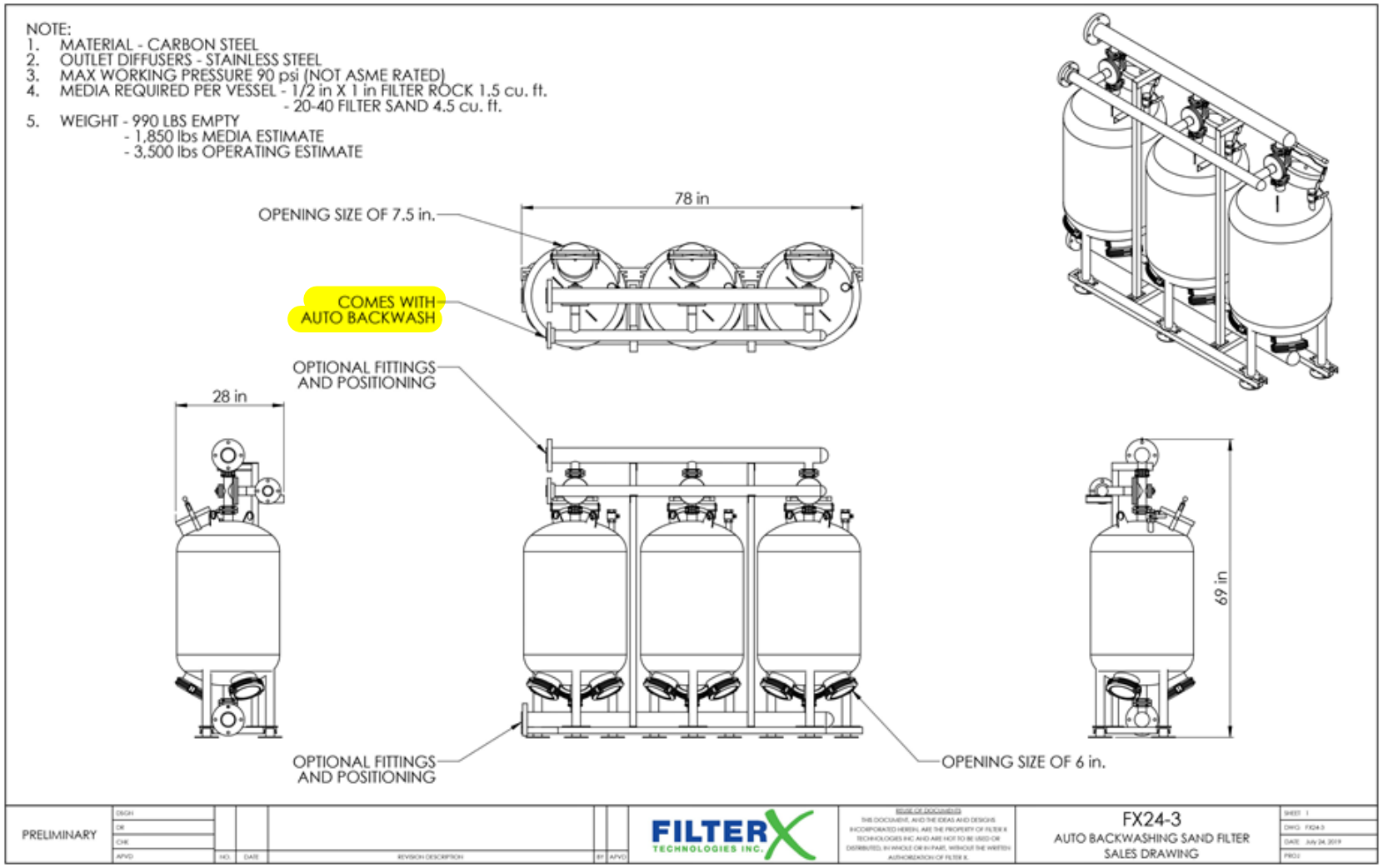
Sand filter system configuration

FX24-3
Auto Backwashing Sand Filter

Back wash PLC control panel

Maximum Flow Rate	175 gpm		40 m^3/hr
Number of Vessels		3	
Vessel Diameter	24 in		610 mm
Maximum Working Pressure	90 psi		6 Bar
Minimum Working Pressure	20 psi		1.5 Bar
Backwash Flow Rate	44 gpm		10 m^3/hr
Inlet / Outlet (ANSI Flange)	3 in		75 mm
Backwash (ANSI Flange)	2 in		50 mm
Overall Height	69 in		1760 mm
Overall Length (NO FITTINGS)	78 in		2000 mm
Overall Width (c/w Control Panel)	28 in		700 mm
Media Required Per Vessel			
1/2in x 1in Filter Rock	1.5 cu.ft.		0.04 m^3
20-40 Filter Sand	4.5 cu.ft.		0.13 m^3
Power Requirement		120 VAC	
Solenoid Power		24 VAC	
Required Air Supply		2 cfm @ 75 psi	
Weights			
Empty	990 lbs		450 kg
Media (Estimate)	1850 lbs		840 kg
Operating (with water)	3500 lbs		1587 kg
Standard Color		RAL 5010 Blue	

Sand filter system configuration



Main 989-671-3318 | Fax 989-671-3316 | 4395 Wilder Rd., Bay City, MI 48706
jssmi.com

ACTIVATED CARBON
& SERVICES

DATASHEET

Granulated activated charcoal media information

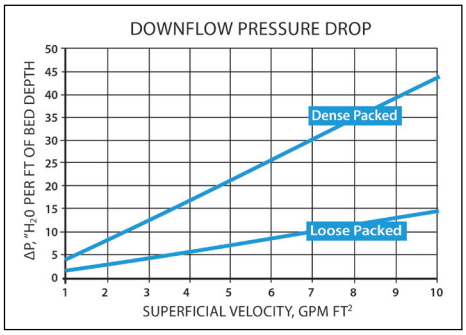
COL - GL 60R (8x30)

LIQUID PHASE REACTIVATED CARBON

COL-GL 60R (8 x 30) is a hard, reactivated, carbon manufactured from pooled spent carbon which is recommended for a variety of waste water and process water treatment. **COL-GL 60R (8 x 30)** efficiently removes chlorine, taste and odor compounds, and volatile organics, even with brief contact times.

APPLICATIONS

- Remediation
- Wastewater Treatment
- Condensate Water Treatment
- Range of Process Water Treatment



SPECIFICATIONS	COL-GL60R	ASTM TEST M
Iodine Number, min	800	–
Bulk Density, min	0.50g/cc	D-2854
Abrasion No., mi.	75	–
Effective Size, mm	0.8–1.0	–
Moisture as packed	2%	D-2867
U.S. Standard Sieve Size	8 x 30	–
Larger than No. 8, max.	15%	
Smaller than No. 30, max.	5%	

STANDARD PACKAGING

- 55 lb or 27. 5 lb polylined polypropylene bags
- 200 lb fiber drums
- 1100 lb supersacks

This information is offered solely for your consideration and verification. It has been gathered from reference materials and/or test procedures and is believed to be true and accurate. None of this information shall be constituting a warranty or representation, expressed or implied, for which we assume legal responsibility or that the information or goods described is fit for any particular use either alone or in combination with other goods or processes.

3774 Hoover Road, Blasdell, NY 14219 t 716 677-6661 f 716 677-6663 NYinfo@activatedcarbon.com activatedcarbon.com

PRODUCT DATA SHEET

Purofine®

PFA694

Polystyrenic Gel

Ion exchange media information

PRINCIPAL APPLICATIONS

- Removal of perfluoroalkyl substances
- Removal of polyfluoroalkyl substances

ADVANTAGES

- Very high operating capacity
- Excellent kinetics

SYSTEMS

- Municipal

TYPICAL PACKAGING

- 1 ft³ Sack
- 25 L Sack
- 5 ft³ Drum (Fiber)
- 1 m³ Supersack
- 42 ft³ Supersack

** Reduces PFAS to non-detect levels ranging from 1 – 5 parts per trillion*

TYPICAL PHYSICAL & CHEMICAL CHARACTERISTICS:

Polymer Structure	Polystyrene crosslinked with divinylbenzene
Appearance	Spherical Beads
Functional Group	Complex Amino
Mean Diameter	675 ± 75 µm
Uniformity Coefficient (max.)	1.3
Specific Gravity	1.05
Shipping Weight (approx.)	650 - 700 g/L (40.6 - 43.8 lb/ft³)
Temperature Limit	100 °C (212.0 °F) (Cl^- form)
Temperature Limit	60 °C (140.0 °F) (OH^- form)

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Hydraulic Characteristics

Ion exchange media information

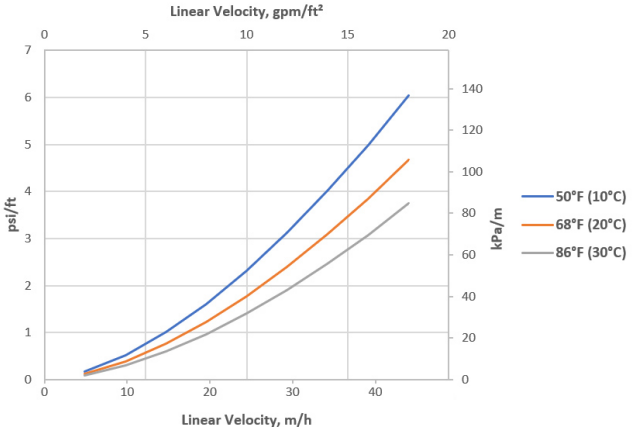
PRESSURE DROP

The pressure drop across a bed of ion exchange resin depends on the particle size distribution, bed depth, and voids volume of the exchange material, as well as on the flow rate and viscosity of the influent solution. Factors affecting any of these parameters—such as the presence of particulate matter filtered out by the bed, abnormal compressibility of the resin, or the incomplete classification of the bed—will have an adverse effect, and result in an increased head loss. Depending on the quality of the influent water, the application and the design of the plant, service flow rates may vary from 10 to 40 BV/h.

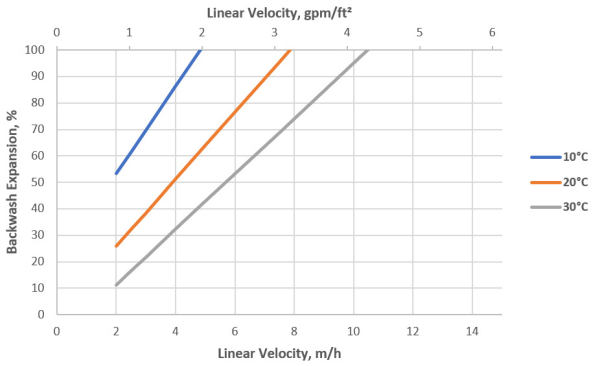
BACKWASH

During up-flow backwash, the resin bed should be expanded in volume between 50 and 70% for at least 10 to 15 minutes. This operation will free particulate matter, clear the bed of bubbles and voids, and reclassify the resin particles ensuring minimum resistance to flow. When first putting into service, approximately 30 minutes of expansion is usually sufficient to properly classify the bed. It is important to note that bed expansion increases with flow rate and decreases with influent fluid temperature. Caution must be taken to avoid loss of resin through the top of the vessel by over expansion of the bed.

PRESSURE DROP ACROSS RESIN BED



BACKWASH EXPANSION OF RESIN BED



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Treatment train narrative

BLHI's initial test of groundwater that was pulled from well points within the AFFF buffer zone and stored in frac tanks found the levels of contaminant to be from as low as 47 ppt combined PFOS/PFOA to as high as 1570 ppt combined PFOS/PFOA. (reference Section 1). Samples that tested over the 70ppt were then treated through a 55 gallon drum (500 lbs) of granulated activated charcoal (reference Section 2). The 55 gallon drum was found to be effective in bringing all but 1 frac tank below the required 70 ppt threshold. The frac tank that originally (reference Section 1) tested at 1570 ppt of combined PFOS/ PFOA was brought down to a concentration of 289 ppt of PFOS / PFOA while utilizing granulated activated charcoal only. All other frac tanks treated with granulated activated charcoal were brought below the required threshold.

A second round of testing was then performed on 11/21/2023 with a well point located at the area that originally produced the 1570 ppt of PFOS/PFOA, but this time the treatment train included sand filters, 5 micron bag filters, granulated activated charcoal and an ion exchange media (reference Section 3). The ensuing test results were unable to detect any PFOS/PFOA.

In addition, BLHI performed a third round of testing from 11/30/2023 to 12/8/2023 pulling groundwater from a continuous sock drain located along the south and west perimeter of the WEG Headquarters and Hangars (reference Section 4). This water was treated by the same means and methods as Section 3. These ensuing test results were also unable to detect any PFOS/PFOA.

This information leads BLHI to believe that the new proposed filtration train system will exceed the requirements for treatment and re-infiltration of groundwater within our AFFF buffer. In addition to having a primary filtration train consisting of a sand filter, 5 micron bag filter, 2,000 lb of granulated activated charcoal and an ion exchange media on-site during all dewatering activities, BLHI will also have a secondary filtration train system on-site at all times during dewatering activities that will mirror the primary filtration train. This redundance is to prevent disruption in dewatering due to mechanical failure and / or if the primary filtration system will require servicing (i.e. change out the filter media). Moving forward, we propose testing to be performed once a week by a DoD certified laboratory and for the test samples to be taken both pre-filtration and post-filtration. Due to the anticipated lead times for getting test results back from the certified laboratory, if a post-filtration test result is received above 25% of the allowable limit (70 ppt x 25% = 17.5 ppt) BLHI will notify UASF environmental & FDEP immediately and make the necessary modifications to assure we do not exceed 70 ppt (i.e. transfer to the secondary filtration system and change out the filter media on the primary filtration system). In addition, the filter media is anticipated to be effective for 6 months based off the original groundwater tested samples so at the 5 month run time BLHI will evaluate all the data and if the filtration system starts to lose its ability to properly treat the groundwater we will once again make the necessary modifications to assure we do not exceed 70 ppt.

The following pages are supporting Information as follows:

Section 1 - Groundwater well point test results from the West and East sides of the building pad (un-filtered).

Section 2 - Groundwater well point test results from the West and East sides of the building pad after treatment through a 55 gallon (500 lb) drum of granulated activated charcoal.

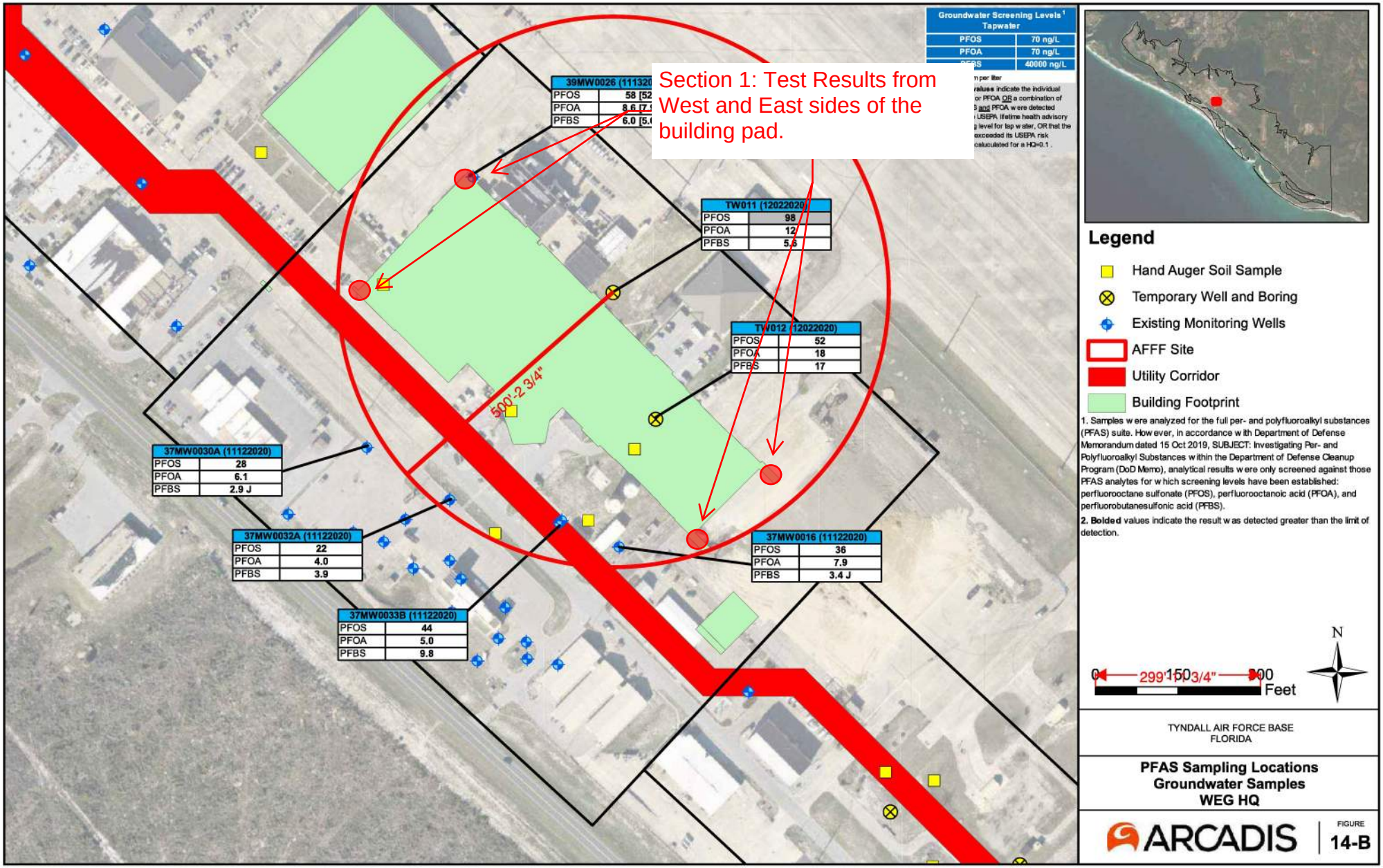
Section 3 - Groundwater well point test results from the East sides of the building pad after treatment through the new, revised treatment train system specified in this submittal.

Section 4 - Groundwater sock drain test results from the West and South sides of the building pad after treatment through the new, revised treatment train system specified in this submittal.

This Page Starts Treated Water Tests taken by Pace Analytical on 9/28/2023

(Section 1)

Section 1


Groundwater Screening Levels[1] Tapwater
PFOS 70 ng/L
PFOA 70 ng/L
PFBS 40000 ng/L
Section 1: Test Results from West and East sides of the building pad.
39MW0026 (111320
PFOS 58 [52
PFOA 8.6 [7.
PFBS 6.0 [5.
TW011 (12022020)
PFOS 98
PFOA 12
PFBS 5.6
TW012 (12022020)
PFOS 52
PFOA 18
PFBS 17
500'-2 3/4"
37MW0030A (11122020)
PFOS 28
PFOA 6.1
PFBS 2.9 J
37MW0032A (11122020)
PFOS 22
PFOA 4.0
PFBS 3.9
37MW0033B (11122020)
PFOS 44
PFOA 5.0
PFBS 9.8
37MW0016 (11122020)
PFOS 36
PFOA 7.9
PFBS 3.4 J
Legend
Hand Auger Soil Sample
Temporary Well and Boring
Existing Monitoring Wells
AFFF Site
Utility Corridor
Building Footprint
1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. Bolded values indicate the result was detected greater than the limit of detection.
N
0
299'-3 3/4"
600
Feet
TYNDALL AIR FORCE BASE
FLORIDA
PFAS Sampling Locations
Groundwater Samples
WEG HQ
ARCADIS
FIGURE
14-B

Pace Analytical Services, LLC
7979 Innovation Park Road
Baton Rouge, LA 70809
(225) 678-1833

Pre-treatment sample

ANALYTICAL RESULTS

Project: Tyndall AFB HF221083
Pace Project No.: 20292068

Water from west corners of the building

Sample: TANK 5 **Lab ID: 20292068007** Collected: 09/28/23 15:25 Received: 10/05/23 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	763051-92-9	
3:3 FTCA	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 14:18	356-02-5	
4:2 FTS	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	757124-72-4	
5:3 FTCA	ND	ng/L	24.2	1	10/11/23 11:21	10/12/23 14:18	914637-49-3	
6:2 FTS	**1080**	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	27619-97-2	
7:3 FTCA	ND	ng/L	24.2	1	10/11/23 11:21	10/12/23 14:18	812-70-4	
8:2 FTS	**8.9**	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	39108-34-4	
9Cl-PF3ONS	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	756426-58-1	
ADONA	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	919005-14-4	
HFPO-DA	ND	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	13252-13-6	
NEtFOSAA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2991-50-6	
NEtFOSA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	4151-50-2	
NEtFOSE	ND	ng/L	9.7	1	10/11/23 11:21	10/12/23 14:18	1691-99-2	
NFDHA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	151772-58-6	
NMeFOSAA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2355-31-9	
NMeFOSA	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	31506-32-8	
NMeFOSE	ND	ng/L	9.7	1	10/11/23 11:21	10/12/23 14:18	24448-09-7	
Perfluorobutanesulfonic acid	**9.1**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-73-5	
Perfluorodecanoic acid	**1.8**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	335-76-2	
Perfluorohexanoic acid	**350**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	307-24-4	
PFBA	**114**	ng/L	3.9	1	10/11/23 11:21	10/12/23 14:18	375-22-4	
PFDS	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	335-77-3	
PFDoS	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	79780-39-5	
PFEESA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	113507-82-7	
PFHpS	**3.6**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-92-8	
PFMBA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	863090-89-5	
PFMPA	ND	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	377-73-1	
PFNS	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	68259-12-1	
PFOSA	**9.8**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	754-91-6	
PFPeA	**446**	ng/L	1.9	1	10/11/23 11:21	10/12/23 14:18	2706-90-3	
PFPeS	**9.3**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	307-55-1	
Perfluoroheptanoic acid	**79.1**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-85-9	
Perfluorohexanesulfonic acid	**206**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	355-46-4	
Perfluorononanoic acid	**12.9**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**221**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	1763-23-1	
Perfluorooctanoic acid (PFOA)	**26.4**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	376-06-7	
Perfluorotridecanoic acid	**1.3**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	72629-94-8	
Perfluoroundecanoic acid	**22.7**	ng/L	0.97	1	10/11/23 11:21	10/12/23 14:18	2058-94-8	
Surrogates								
13C2-PFDoA (S)	69	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C3HFPO-DA (S)	85	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C3-PFBS (S)	69	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C3-PFHxS (S)	66	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		
13C4-PFBA (S)	8	%.	20-150	1	10/11/23 11:21	10/12/23 14:18		S0

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
7979 Innovation Park Road
Baton Rouge, LA 70809
(225) 678-1833

ANALYTICAL RESULTS

Pre-treatment sample

Water from east corners of the building

Project: Tyndall AFB HF221083
Pace Project No.: 20292068

Sample: TANK 6 **Lab ID: 20292068003** Collected: 09/28/23 14:14 Received: 10/05/23 13:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	763051-92-9	
3:3 FTCA	ND	ng/L	6.1	1	10/11/23 11:21	10/12/23 13:14	356-02-5	
4:2 FTS	**56.4**	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	757124-72-4	
5:3 FTCA	ND	ng/L	30.3	1	10/11/23 11:21	10/12/23 13:14	914637-49-3	
6:2 FTS	**2280**	ng/L	24.2	5	10/11/23 11:21	10/12/23 14:35	27619-97-2	
7:3 FTCA	ND	ng/L	30.3	1	10/11/23 11:21	10/12/23 13:14	812-70-4	
8:2 FTS	**414**	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	39108-34-4	
9Cl-PF3ONS	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	756426-58-1	
ADONA	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	919005-14-4	
HFPO-DA	ND	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	13252-13-6	
NEtFOSAA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2991-50-6	
NEtFOSA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	4151-50-2	
NEtFOSE	ND	ng/L	12.1	1	10/11/23 11:21	10/12/23 13:14	1691-99-2	
NFDHA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	151772-58-6	
NMeFOSAA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2355-31-9	
NMeFOSA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	31506-32-8	
NMeFOSE	ND	ng/L	12.1	1	10/11/23 11:21	10/12/23 13:14	24448-09-7	
Perfluorobutanesulfonic acid	**53.3**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-73-5	
Perfluorodecanoic acid	**1.4**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	335-76-2	
Perfluorohexanoic acid	**1000**	ng/L	6.1	5	10/11/23 11:21	10/12/23 14:35	307-24-4	
PFBA	**463**	ng/L	4.8	1	10/11/23 11:21	10/12/23 13:14	375-22-4	
PFDS	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	335-77-3	
PFDoS	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	79780-39-5	
PFEESA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	113507-82-7	
PFHpS	**21.0**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-92-8	
PFMBA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	863090-89-5	
PFMPA	ND	ng/L	2.4	1	10/11/23 11:21	10/12/23 13:14	377-73-1	
PFNS	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	68259-12-1	
PFOSA	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	754-91-6	
PFPeA	**1570**	ng/L	12.1	5	10/11/23 11:21	10/12/23 14:35	2706-90-3	
PFPeS	**65.1**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	307-55-1	
Perfluoroheptanoic acid	**545**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-85-9	
Perfluorohexanesulfonic acid	**670**	ng/L	6.1	5	10/11/23 11:21	10/12/23 14:35	355-46-4	
Perfluorononanoic acid	**28.1**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**1310**	ng/L	6.1	5	10/11/23 11:21	10/12/23 14:35	1763-23-1	
Perfluorooctanoic acid (PFOA)	**230**	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	1.2	1	10/11/23 11:21	10/12/23 13:14	2058-94-8	
Surrogates								
13C2-PFDoA (S)	55	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C3HFPO-DA (S)	84	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C3-PFBS (S)	74	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C3-PFHxS (S)	61	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		
13C4-PFBA (S)	48	%.	20-150	1	10/11/23 11:21	10/12/23 13:14		

REPORT OF LABORATORY ANALYSIS

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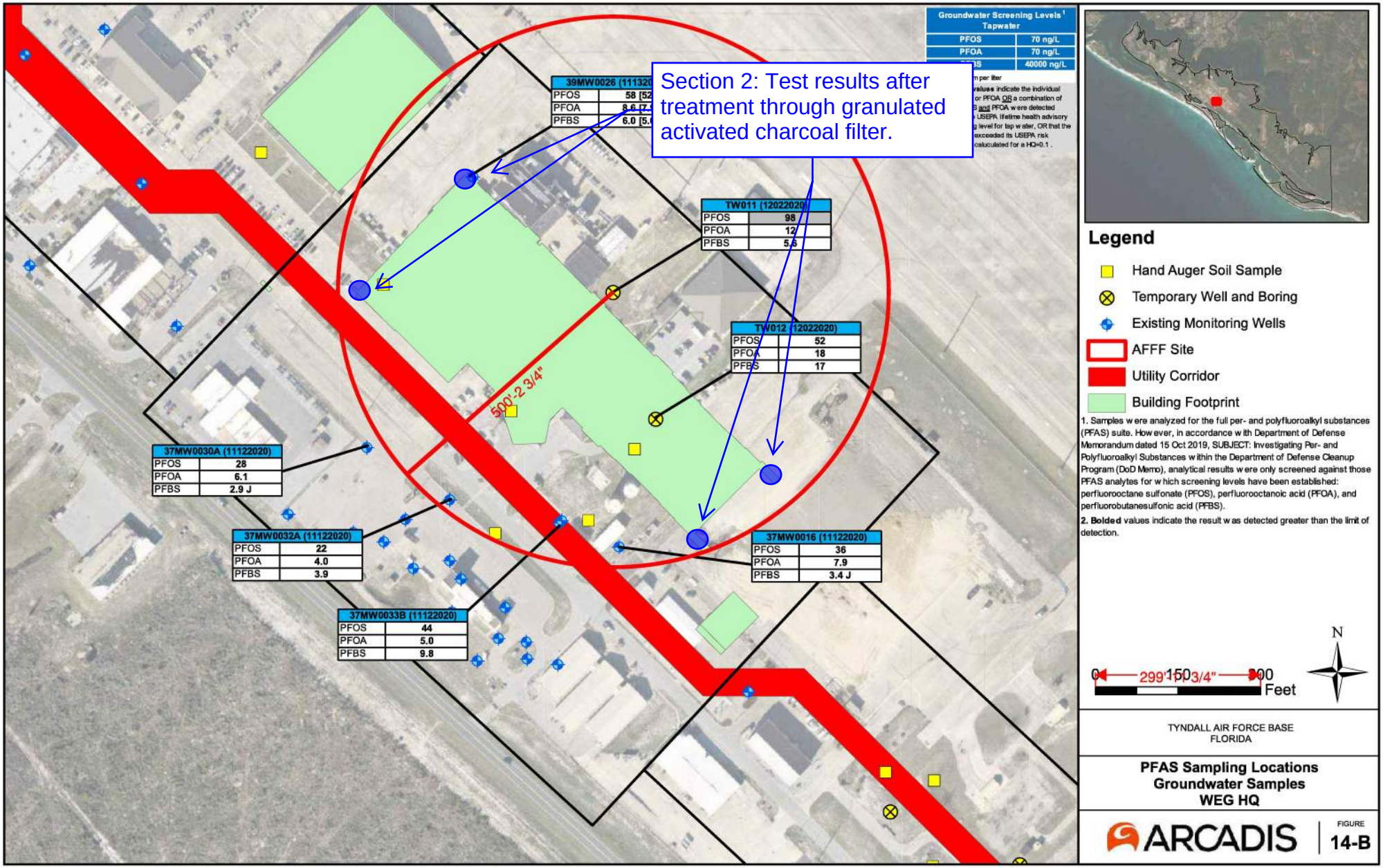
This Page Starts Treated Water Tests taken by Pace Analytical on 10/10/2023

(Section 2)

Section 2


Section 2: Test results after treatment through granulated activated charcoal filter.
Groundwater Screening Levels[1] Tapwater
PFOS 70 ng/L
PFOA 70 ng/L
40000 ng/L
39MW0026 (111320
PFOS 58 [52
PFOA 8.6 [7
PFBS 6.0 [5.
TW011 (12022020)
PFOS 98
PFOA 12
PFBS 5.6
TW012 (12022020)
PFOS 52
PFOA 18
PFBS 17
500'-2 3/4"
37MW0030A (11122020)
PFOS 28
PFOA 6.1
PFBS 2.9 J
37MW0032A (11122020)
PFOS 22
PFOA 4.0
PFBS 3.9
37MW0033B (11122020)
PFOS 44
PFOA 5.0
PFBS 9.8
37MW0016 (11122020)
PFOS 36
PFOA 7.9
PFBS 3.4 J
Legend
Hand Auger Soil Sample
Temporary Well and Boring
Existing Monitoring Wells
AFFF Site
Utility Corridor
Building Footprint
1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. Bolded values indicate the result was detected greater than the limit of detection.
N
0 150 300 Feet
TYNDALL AIR FORCE BASE
FLORIDA
PFAS Sampling Locations
Groundwater Samples
WEG HQ
ARCADIS
FIGURE
14-B

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

ANALYTICAL RESULTS

Previously Tank #5 water was pumped to tank #2 during the treatment process

Project: Tyndall AFB HF221083
Pace Project No.: 20293570

Sample: TANK 2 **Lab ID: 20293570002** Collected: 10/10/23 10:43 Received: 10/17/23 10:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633							
	Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	763051-92-9	
3:3 FTCA	ND	ng/L	7.0	1	10/25/23 13:51	10/26/23 17:50	356-02-5	
4:2 FTS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	757124-72-4	
5:3 FTCA	ND	ng/L	35.0	1	10/25/23 13:51	10/26/23 17:50	914637-49-3	
6:2 FTS	**229**	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	27619-97-2	
7:3 FTCA	ND	ng/L	35.0	1	10/25/23 13:51	10/26/23 17:50	812-70-4	
8:2 FTS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	39108-34-4	
9Cl-PF3ONS	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	756426-58-1	
ADONA	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	919005-14-4	
HFPO-DA	ND	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	13252-13-6	
NEtFOSAA	**5.2**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2991-50-6	
NEtFOSA	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	4151-50-2	
NEtFOSE	ND	ng/L	14.0	1	10/25/23 13:51	10/26/23 17:50	1691-99-2	
NFDHA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	151772-58-6	
NMeFOSAA	**5.5**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2355-31-9	
NMeFOSA	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	31506-32-8	
NMeFOSE	ND	ng/L	14.0	1	10/25/23 13:51	10/26/23 17:50	24448-09-7	
Perfluorobutanesulfonic acid	**2.3**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-73-5	
Perfluorodecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	335-76-2	
Perfluorohexanoic acid	**104**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	307-24-4	
PFBA	**37.2**	ng/L	5.6	1	10/25/23 13:51	10/26/23 17:50	375-22-4	
PFDS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	335-77-3	
PFDoS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	79780-39-5	
PFEESA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	113507-82-7	
PFHpS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-92-8	
PFMBA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	863090-89-5	
PFMPA	ND	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	377-73-1	
PFNS	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	68259-12-1	
PFOSA	**3.5**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	754-91-6	
PFPeA	**130**	ng/L	2.8	1	10/25/23 13:51	10/26/23 17:50	2706-90-3	
PFPeS	**2.3**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	307-55-1	
Perfluoroheptanoic acid	**20.4**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-85-9	
Perfluorohexanesulfonic acid	**39.4**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	355-46-4	
Perfluorononanoic acid	**3.2**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**53.2**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	1763-23-1	
Perfluorooctanoic acid (PFOA)	**8.1**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	72629-94-8	
Perfluoroundecanoic acid	**5.4**	ng/L	1.4	1	10/25/23 13:51	10/26/23 17:50	2058-94-8	
Surrogates								
13C2-PFDoA (S)	92	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C3HFPO-DA (S)	105	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C3-PFBS (S)	82	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C3-PFHxS (S)	93	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		
13C4-PFBA (S)	28	%.	20-150	1	10/25/23 13:51	10/26/23 17:50		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Tank #5 water was pumped to tank #17 during the treatment process

Project: Tyndall AFB HF221083
Pace Project No.: 20293570

Sample: TANK 6 **Lab ID: 20293570003** Collected: 10/10/23 12:46 Received: 10/17/23 10:09 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	763051-92-9	
3:3 FTCA	ND	ng/L	4.9	1	10/25/23 13:51	10/26/23 18:06	356-02-5	
4:2 FTS	**12.4**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	757124-72-4	
5:3 FTCA	ND	ng/L	24.4	1	10/25/23 13:51	10/26/23 18:06	914637-49-3	
6:2 FTS	**516**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	27619-97-2	
7:3 FTCA	ND	ng/L	24.4	1	10/25/23 13:51	10/26/23 18:06	812-70-4	
8:2 FTS	**80.0**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	39108-34-4	
9Cl-PF3ONS	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	756426-58-1	
ADONA	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	919005-14-4	
HFPO-DA	ND	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	13252-13-6	
NEtFOSAA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2991-50-6	
NEtFOSA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	4151-50-2	
NEtFOSE	ND	ng/L	9.7	1	10/25/23 13:51	10/26/23 18:06	1691-99-2	
NFDHA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	151772-58-6	
NMeFOSAA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2355-31-9	
NMeFOSA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	31506-32-8	
NMeFOSE	ND	ng/L	9.7	1	10/25/23 13:51	10/26/23 18:06	24448-09-7	
Perfluorobutanesulfonic acid	**12.8**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-73-5	
Perfluorodecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	335-76-2	
Perfluorohexanoic acid	**270**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	307-24-4	
PFBA	**128**	ng/L	3.9	1	10/25/23 13:51	10/26/23 18:06	375-22-4	
PFDS	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	335-77-3	
PFDoS	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	79780-39-5	
PFEESA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	113507-82-7	
PFHpS	**3.3**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-92-8	
PFMBA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	863090-89-5	
PFMPA	ND	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	377-73-1	
PFNS	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	68259-12-1	
PFOSA	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	754-91-6	
PFPeA	**425**	ng/L	1.9	1	10/25/23 13:51	10/26/23 18:06	2706-90-3	
PFPeS	**12.3**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	307-55-1	
Perfluoroheptanoic acid	**136**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-85-9	
Perfluorohexanesulfonic acid	**121**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	355-46-4	
Perfluorononanoic acid	**6.3**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	**236**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	1763-23-1	
Perfluorooctanoic acid (PFOA)	**53.0**	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	0.97	1	10/25/23 13:51	10/26/23 18:06	2058-94-8	
Surrogates								
13C2-PFDoA (S)	76	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C3HFPO-DA (S)	93	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C3-PFBS (S)	78	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C3-PFHxS (S)	82	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		
13C4-PFBA (S)	17	%.	20-150	1	10/25/23 13:51	10/26/23 18:06		S0

REPORT OF LABORATORY ANALYSIS

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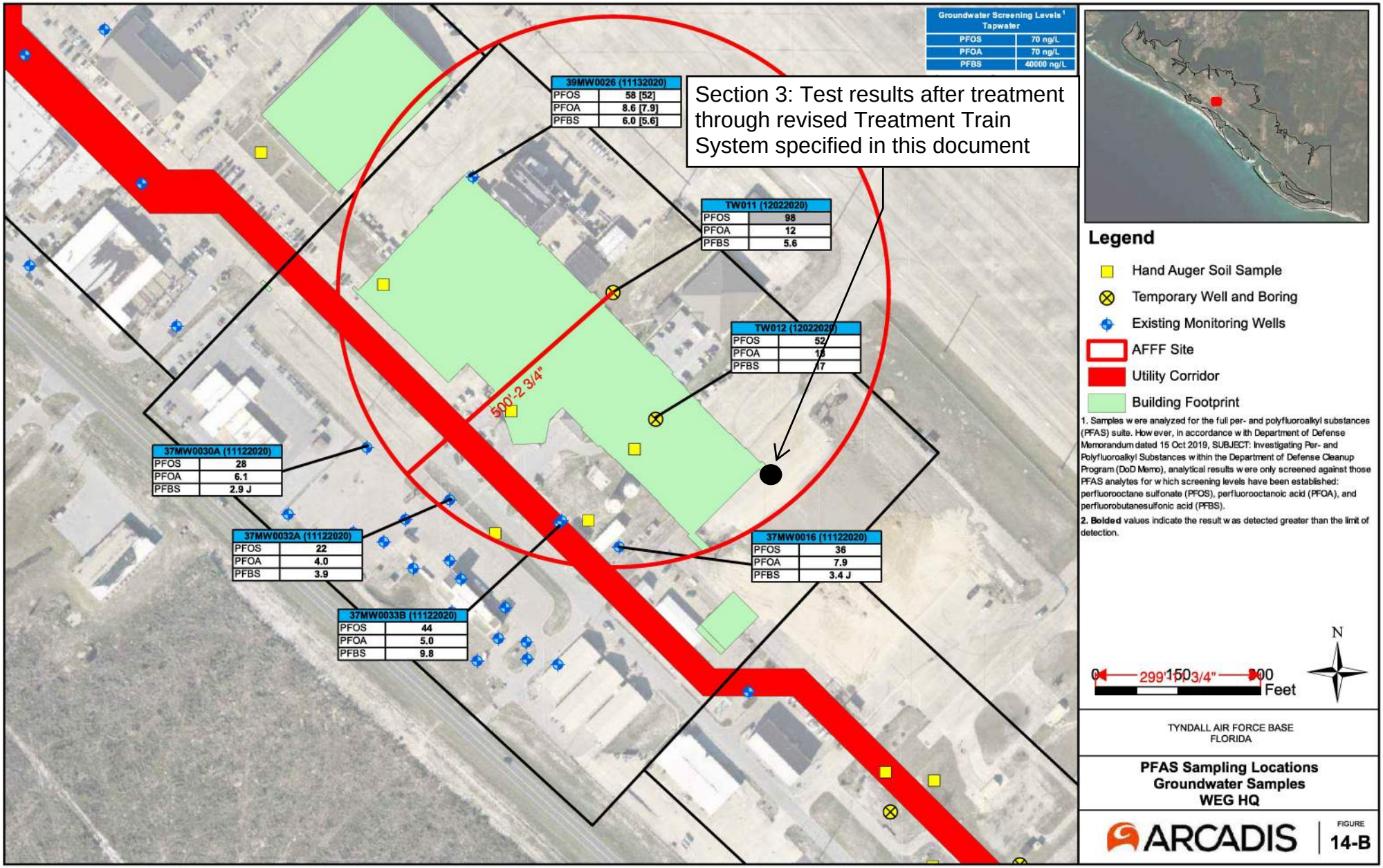
This Page Starts Treated Water Tests taken by Pace Analytical on 11/21/2023

(Section 3)

Section 3


Groundwater Screening Levels[1] Tapwater
PFOS 70 ng/L
PFOA 70 ng/L
PFBS 40000 ng/L
Section 3: Test results after treatment through revised Treatment Train System specified in this document
39MW0026 (11132020)
PFOS 58 [52]
PFOA 8.6 [7.9]
PFBS 6.0 [5.6]
TW011 (12022020)
PFOS 98
PFOA 12
PFBS 5.6
TW012 (12022020)
PFOS 52
PFOA 13
PFBS 17
500'-2 3/4"
37MW0030A (11122020)
PFOS 28
PFOA 6.1
PFBS 2.9 J
37MW0032A (11122020)
PFOS 22
PFOA 4.0
PFBS 3.9
37MW0033B (11122020)
PFOS 44
PFOA 5.0
PFBS 9.8
37MW0016 (11122020)
PFOS 36
PFOA 7.9
PFBS 3.4 J
Legend
Hand Auger Soil Sample
Temporary Well and Boring
Existing Monitoring Wells
AFFF Site
Utility Corridor
Building Footprint
1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. Bolded values indicate the result was detected greater than the limit of detection.
N
0 299'-11 3/4" 600 Feet
TYNDALL AIR FORCE BASE
FLORIDA
PFAS Sampling Locations
Groundwater Samples
WEG HQ
ARCADIS
FIGURE
14-B

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

December 20, 2023

Renee Eddins
Terracon
2930 Wellington Circle
Suite 201
Tallahassee, FL 32309

RE: Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Dear Renee Eddins:

Enclosed are the analytical results for sample(s) received by the laboratory on November 28, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Baton Rouge

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melissa MacNaughton

Melissa MacNaughton
melissa.macnaughton@pacelabs.com
(225) 769-4900
Project Manager

Enclosures

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CERTIFICATIONS

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Pace Analytical Services Baton Rouge
7979 Innovation Park Drive Ste A, Baton Rouge, LA 70820-7402
Louisiana Dept of Enviromental Quality (NELAC/LELAP): 01979
Florida Dept of Health (NELAC/FELAP): E87854
DoD ELAP (A2LA) #: 6429.01
Alabama DEM #: 41900
Alaska DEC-DW #: LA00024
Alaska DEC CS-LAP #: 21-001
Arkansas DEQ #: 88-0655
California ELAP #: 3063
Georgia DPD #: C050
Hawaii DOH State Laboratories Division
Illinois EPA #: 200048
Kansas DoHE #: E-10354
Kentucky DEP UST Branch #: 123054
Louisiana DOH #: LA036
Minnesota DOH #: 2233799
Mississippi State Dept of Health
Montana Department of Environmental Quality
Nebraska DHHS #: NE-OS-35.21
Nevada DCNR DEP #: LA00024
New York DOH #: 12149
North Carolina DEQ - WW & GW #: 618
North Dakota DEQ #: R195
Ohio EPA #: 87782
Oklahoma Dept of Environmental Quality #: 9403
Oregon ELAP #: 4168
Pennsylvania Dept of Environmental Protection #: 68-05973
South Carolina DHEC #: 73006001
Texas CEQ #: T104704178-23-15
Utah DOH #: LA00024
Virginia DCLS #: 6460215
Washington Dept of Ecology #: C929
Wisconsin DNR #: 399139510

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(225) 769-4900

SAMPLE SUMMARY

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20298341001	**POST TREATMENT TANK 8**	Water	11/21/23 08:30	11/28/23 09:40

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20298341001	**POST TREATMENT TANK 8**	EPA 1633	RMP	64

PASI-BR = Pace Analytical Services - Baton Rouge

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PROJECT NARRATIVE

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Date: December 20, 2023

POST TREATMENT TANK 8 (Lab ID: 20298341001)

- For method EPA 1633, the sample was extracted at a reduced volume due to clogging of the SPE cartridge. As a result, reporting limits are elevated.

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PROJECT NARRATIVE

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Method: **EPA 1633**
Description: PFAS in Water by EPA 1633
Client: TERRACON
Date: December 20, 2023

General Information:
1 sample was analyzed for EPA 1633 by Pace Analytical Services Baton Rouge. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 1633 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Treated proposed with JSS Treatment train

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Sample: POST TREATMENT TANK 8 **Lab ID: 20298341001** Collected: 11/21/23 08:30 Received: 11/28/23 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633							
	Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	763051-92-9	
3:3 FTCA	ND	ng/L	5000	1	12/18/23 10:00	12/20/23 07:07	356-02-5	
4:2 FTS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	757124-72-4	
5:3 FTCA	ND	ng/L	25000	1	12/18/23 10:00	12/20/23 07:07	914637-49-3	
6:2 FTS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	27619-97-2	
7:3 FTCA	ND	ng/L	25000	1	12/18/23 10:00	12/20/23 07:07	812-70-4	
8:2 FTS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	39108-34-4	
9Cl-PF3ONS	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	756426-58-1	
ADONA	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	919005-14-4	
HFPO-DA	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	13252-13-6	
NEtFOSAA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2991-50-6	
NEtFOSA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	4151-50-2	
NEtFOSE	ND	ng/L	10000	1	12/18/23 10:00	12/20/23 07:07	1691-99-2	
NFDHA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	151772-58-6	
NMeFOSAA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2355-31-9	
NMeFOSA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	31506-32-8	
NMeFOSE	ND	ng/L	10000	1	12/18/23 10:00	12/20/23 07:07	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-73-5	
Perfluorodecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	335-76-2	
Perfluorohexanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	307-24-4	
PFBA	ND	ng/L	4000	1	12/18/23 10:00	12/20/23 07:07	375-22-4	
PFDS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	335-77-3	
PFDoS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	79780-39-5	
PFEESA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	113507-82-7	
PFHpS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-92-8	
PFMBA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	863090-89-5	
PFMPA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	377-73-1	
PFNS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	68259-12-1	
PFOSA	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	754-91-6	
PFPeA	ND	ng/L	2000	1	12/18/23 10:00	12/20/23 07:07	2706-90-3	
PFPeS	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	355-46-4	
Perfluorononanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	1000	1	12/18/23 10:00	12/20/23 07:07	2058-94-8	
Surrogates								
13C2-PFDoA (S)	85	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
13C3HFPO-DA (S)	96	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C3-PFBS (S)	90	%.	40-135	1	12/18/23 10:00	12/20/23 07:07		
13C3-PFHxS (S)	88	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C4-PFBA (S)	92	%.	5-130	1	12/18/23 10:00	12/20/23 07:07		

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ANALYTICAL RESULTS

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Sample: POST TREATMENT TANK 8 **Lab ID: 20298341001** Collected: 11/21/23 08:30 Received: 11/28/23 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C4-PFHpA (S)	90	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C5-PFHxA (S)	92	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C5-PFPeA (S)	101	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C6-PFDA (S)	89	%.	20-150	1	12/18/23 10:00	12/20/23 07:07		
13C8-PFOA (S)	90	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C8-PFOS (S)	91	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C8-PFOSA (S)	84	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C9-PFNA (S)	92	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
d3-MeFOSAA (S)	94	%.	40-170	1	12/18/23 10:00	12/20/23 07:07		
d3-NMeFOSA (S)	68	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
d5-EtFOSAA (S)	86	%.	25-135	1	12/18/23 10:00	12/20/23 07:07		
d5-NEtFOSA (S)	74	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
d7-NMeFOSE (S)	72	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
d9-NEtFOSE (S)	70	%.	10-130	1	12/18/23 10:00	12/20/23 07:07		
13C24:2FTS (S)	92	%.	40-200	1	12/18/23 10:00	12/20/23 07:07		
13C26:2FTS (S)	98	%.	40-200	1	12/18/23 10:00	12/20/23 07:07		
13C28:2FTS (S)	102	%.	40-300	1	12/18/23 10:00	12/20/23 07:07		
13C7-PFUdA (S)	87	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		
13C2-PFTA (S)	82	%.	40-130	1	12/18/23 10:00	12/20/23 07:07		

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

QC Batch: 312002
QC Batch Method: EPA 1633
Analysis Method: EPA 1633
Analysis Description: BR PFAS in Water by EPA 1633
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20298341001

METHOD BLANK: 1494243 Matrix: Water
Associated Lab Samples: 20298341001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	ND	4.0	12/20/23 06:19	
3:3 FTCA	ng/L	ND	5.0	12/20/23 06:19	
4:2 FTS	ng/L	ND	4.0	12/20/23 06:19	
5:3 FTCA	ng/L	ND	25.0	12/20/23 06:19	
6:2 FTS	ng/L	ND	4.0	12/20/23 06:19	
7:3 FTCA	ng/L	ND	25.0	12/20/23 06:19	
8:2 FTS	ng/L	ND	4.0	12/20/23 06:19	
9Cl-PF3ONS	ng/L	ND	4.0	12/20/23 06:19	
ADONA	ng/L	ND	4.0	12/20/23 06:19	
HFPO-DA	ng/L	ND	4.0	12/20/23 06:19	
NEtFOSA	ng/L	ND	1.0	12/20/23 06:19	
NEtFOSAA	ng/L	ND	1.0	12/20/23 06:19	
NEtFOSE	ng/L	ND	10.0	12/20/23 06:19	
NFDHA	ng/L	ND	2.0	12/20/23 06:19	
NMeFOSA	ng/L	ND	1.0	12/20/23 06:19	
NMeFOSAA	ng/L	ND	1.0	12/20/23 06:19	
NMeFOSE	ng/L	ND	10.0	12/20/23 06:19	
Perfluorobutanesulfonic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorodecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorododecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluoroheptanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorohexanesulfonic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorohexanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorononanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorooctanesulfonic acid (PFOS)	ng/L	ND	1.0	12/20/23 06:19	
Perfluorooctanoic acid (PFOA)	ng/L	ND	1.0	12/20/23 06:19	
Perfluorotetradecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluorotridecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
Perfluoroundecanoic acid	ng/L	ND	1.0	12/20/23 06:19	
PFBA	ng/L	ND	4.0	12/20/23 06:19	
PFDoS	ng/L	ND	1.0	12/20/23 06:19	
PFDS	ng/L	ND	1.0	12/20/23 06:19	
PFEESA	ng/L	ND	2.0	12/20/23 06:19	
PFHpS	ng/L	ND	1.0	12/20/23 06:19	
PFMBA	ng/L	ND	2.0	12/20/23 06:19	
PFMPA	ng/L	ND	2.0	12/20/23 06:19	
PFNS	ng/L	ND	1.0	12/20/23 06:19	
PFOSA	ng/L	ND	1.0	12/20/23 06:19	
PFPeA	ng/L	ND	2.0	12/20/23 06:19	
PFPeS	ng/L	ND	1.0	12/20/23 06:19	

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

METHOD BLANK: 1494243 Matrix: Water
Associated Lab Samples: 20298341001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C2-PFDoA (S)	%.	76	10-130	12/20/23 06:19	
13C2-PFTA (S)	%.	75	40-130	12/20/23 06:19	
13C24:2FTS (S)	%.	81	40-200	12/20/23 06:19	
13C26:2FTS (S)	%.	86	40-200	12/20/23 06:19	
13C28:2FTS (S)	%.	92	40-300	12/20/23 06:19	
13C3-PFBS (S)	%.	77	40-135	12/20/23 06:19	
13C3-PFHxS (S)	%.	78	40-130	12/20/23 06:19	
13C3HFPO-DA (S)	%.	87	40-130	12/20/23 06:19	
13C4-PFBA (S)	%.	83	5-130	12/20/23 06:19	
13C4-PFHpA (S)	%.	80	40-130	12/20/23 06:19	
13C5-PFHxA (S)	%.	82	40-130	12/20/23 06:19	
13C5-PFPeA (S)	%.	90	40-130	12/20/23 06:19	
13C6-PFDA (S)	%.	79	20-150	12/20/23 06:19	
13C7-PFUdA (S)	%.	78	40-130	12/20/23 06:19	
13C8-PFOA (S)	%.	80	40-130	12/20/23 06:19	
13C8-PFOS (S)	%.	81	40-130	12/20/23 06:19	
13C8-PFOSA (S)	%.	76	40-130	12/20/23 06:19	
13C9-PFNA (S)	%.	78	40-130	12/20/23 06:19	
d3-MeFOSAA (S)	%.	87	40-170	12/20/23 06:19	
d3-NMeFOSA (S)	%.	60	10-130	12/20/23 06:19	
d5-EtFOSAA (S)	%.	84	25-135	12/20/23 06:19	
d5-NEtFOSA (S)	%.	63	10-130	12/20/23 06:19	
d7-NMeFOSE (S)	%.	71	10-130	12/20/23 06:19	
d9-NEtFOSE (S)	%.	69	10-130	12/20/23 06:19	

LABORATORY CONTROL SAMPLE: 1494244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	94.5	114	120	55-160	
3:3 FTCA	ng/L	125	128	102	65-130	
4:2 FTS	ng/L	93.9	105	112	70-145	
5:3 FTCA	ng/L	626	647	103	70-135	
6:2 FTS	ng/L	95.2	103	108	65-155	
7:3 FTCA	ng/L	626	671	107	50-145	
8:2 FTS	ng/L	96.4	107	111	60-150	
9Cl-PF3ONS	ng/L	93.9	114	121	70-155	
ADONA	ng/L	94.5	106	112	65-145	
HFPO-DA	ng/L	100	107	107	70-145	
NEtFOSA	ng/L	25	24.7	99	65-145	
NEtFOSAA	ng/L	25	25.6	102	70-145	
NEtFOSE	ng/L	250	258	103	70-135	
NFDHA	ng/L	50.1	54.8	109	50-150	
NMeFOSA	ng/L	25	24.9	99	60-150	
NMeFOSAA	ng/L	25	25.9	103	50-150	

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QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

LABORATORY CONTROL SAMPLE: 1494244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
NMeFOSE	ng/L	250	251	100	70-145	
Perfluorobutanesulfonic acid	ng/L	22.2	22.4	101	60-145	
Perfluorodecanoic acid	ng/L	25	25.6	102	70-150	
Perfluorododecanoic acid	ng/L	25	25.0	100	70-140	
Perfluoroheptanoic acid	ng/L	25	25.6	102	70-150	
Perfluorohexanesulfonic acid	ng/L	22.9	22.0	96	65-145	
Perfluorohexanoic acid	ng/L	25	25.6	102	70-145	
Perfluorononanoic acid	ng/L	25	25.5	102	70-150	
Perfluorooctanesulfonic acid (PFOS)	ng/L	23.2	22.8	98	55-150	
Perfluorooctanoic acid (PFOA)	ng/L	25	25.5	102	70-150	
Perfluorotetradecanoic acid	ng/L	25	25.8	103	60-145	
Perfluorotridecanoic acid	ng/L	25	25.3	101	65-140	
Perfluoroundecanoic acid	ng/L	25	24.9	100	70-145	
PFBA	ng/L	100	102	102	70-145	
PFDoS	ng/L	24.3	23.3	96	50-145	
PFDS	ng/L	24.2	25.0	103	60-145	
PFEESA	ng/L	44.6	48.3	108	70-145	
PFHpS	ng/L	23.9	24.0	101	70-150	
PFMBA	ng/L	50.1	46.2	92	60-150	
PFMPA	ng/L	50.1	54.5	109	55-140	
PFNS	ng/L	24.1	24.9	103	65-145	
PFOSA	ng/L	25	25.4	102	70-145	
PFPeA	ng/L	50.1	51.3	102	60-135	
PFPeS	ng/L	23.5	23.5	100	65-140	
13C2-PFDoA (S)	%.			80	10-130	
13C2-PFTA (S)	%.			77	40-130	
13C24:2FTS (S)	%.			76	40-200	
13C26:2FTS (S)	%.			84	40-200	
13C28:2FTS (S)	%.			88	40-300	
13C3-PFBS (S)	%.			80	40-135	
13C3-PFHxS (S)	%.			81	40-130	
13C3HFPO-DA (S)	%.			88	40-130	
13C4-PFBA (S)	%.			85	5-130	
13C4-PFHpA (S)	%.			84	40-130	
13C5-PFHxA (S)	%.			82	40-130	
13C5-PFPeA (S)	%.			92	40-130	
13C6-PFDA (S)	%.			84	20-150	
13C7-PFUdA (S)	%.			83	40-130	
13C8-PFOA (S)	%.			83	40-130	
13C8-PFOS (S)	%.			84	40-130	
13C8-PFOSA (S)	%.			77	40-130	
13C9-PFNA (S)	%.			83	40-130	
d3-MeFOSAA (S)	%.			87	40-170	
d3-NMeFOSA (S)	%.			62	10-130	
d5-EtFOSAA (S)	%.			84	25-135	
d5-NEtFOSA (S)	%.			65	10-130	
d7-NMeFOSE (S)	%.			65	10-130	

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REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

LABORATORY CONTROL SAMPLE: 1494244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
d9-NEtFOSE (S)	%.			65	10-130	

LABORATORY CONTROL SAMPLE: 1494245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	7.6	8.1	108	40-150	
3:3 FTCA	ng/L	10	9.6	96	40-150	
4:2 FTS	ng/L	7.5	7.9	106	40-150	
5:3 FTCA	ng/L	50	46.8	94	40-150	
6:2 FTS	ng/L	7.6	7.7	101	40-150	
7:3 FTCA	ng/L	50	48.4	97	40-150	
8:2 FTS	ng/L	7.7	8.6	111	40-150	
9Cl-PF3ONS	ng/L	7.5	8.4	112	40-150	
ADONA	ng/L	7.6	7.4	99	40-150	
HFPO-DA	ng/L	8	7.7	96	40-150	
NEtFOSA	ng/L	2	1.8	90	40-150	
NEtFOSAA	ng/L	2	2.0	99	40-150	
NEtFOSE	ng/L	20	18.9	94	40-150	
NFDHA	ng/L	4	4.4	110	40-150	
NMeFOSA	ng/L	2	1.9	96	40-150	
NMeFOSAA	ng/L	2	1.9	95	40-150	
NMeFOSE	ng/L	20	18.5	93	40-150	
Perfluorobutanesulfonic acid	ng/L	1.8	1.7	98	40-150	
Perfluorodecanoic acid	ng/L	2	2.0	100	40-150	
Perfluorododecanoic acid	ng/L	2	2.0	99	40-150	
Perfluoroheptanoic acid	ng/L	2	2.1	105	40-150	
Perfluorohexanesulfonic acid	ng/L	1.8	1.8	97	40-150	
Perfluorohexanoic acid	ng/L	2	2.1	103	40-150	
Perfluorononanoic acid	ng/L	2	2.0	99	40-150	
Perfluorooctanesulfonic acid	ng/L	1.9	1.9	104	40-150	
Perfluorooctanoic acid	ng/L	2	2.2	108	40-150	
Perfluorotetradecanoic acid	ng/L	2	2.0	98	40-150	
Perfluorotridecanoic acid	ng/L	2	2.0	101	40-150	
Perfluoroundecanoic acid	ng/L	2	2.0	98	40-150	
PFBA	ng/L	8	7.8	98	40-150	
PFDoS	ng/L	1.9	1.8	91	40-150	
PFDS	ng/L	1.9	1.8	95	40-150	
PFEESA	ng/L	3.6	3.7	104	40-150	
PFHpS	ng/L	1.9	1.9	100	40-150	
PFMBA	ng/L	4	3.5	88	40-150	
PFMPA	ng/L	4	4.3	107	40-150	
PFNS	ng/L	1.9	1.9	99	40-150	
PFOSA	ng/L	2	2.0	98	40-150	
PFPeA	ng/L	4	3.9	98	40-150	
PFPeS	ng/L	1.9	1.9	99	40-150	

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(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

LABORATORY CONTROL SAMPLE: 1494245

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
13C2-PFDoA (S)	%.			83	10-130	
13C2-PFTA (S)	%.			81	40-130	
13C24:2FTS (S)	%.			88	40-200	
13C26:2FTS (S)	%.			98	40-200	
13C28:2FTS (S)	%.			100	40-300	
13C3-PFBS (S)	%.			87	40-135	
13C3-PFHxS (S)	%.			85	40-130	
13C3HFPO-DA (S)	%.			95	40-130	
13C4-PFBA (S)	%.			91	5-130	
13C4-PFHpA (S)	%.			87	40-130	
13C5-PFHxA (S)	%.			91	40-130	
13C5-PFPeA (S)	%.			99	40-130	
13C6-PFDA (S)	%.			89	20-150	
13C7-PFUdA (S)	%.			83	40-130	
13C8-PFOA (S)	%.			89	40-130	
13C8-PFOS (S)	%.			90	40-130	
13C8-PFOSA (S)	%.			83	40-130	
13C9-PFNA (S)	%.			85	40-130	
d3-MeFOSAA (S)	%.			94	40-170	
d3-NMeFOSA (S)	%.			59	10-130	
d5-EtFOSAA (S)	%.			90	25-135	
d5-NEtFOSA (S)	%.			62	10-130	
d7-NMeFOSE (S)	%.			55	10-130	
d9-NEtFOSE (S)	%.			56	10-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494257 1494258

Parameter	Units	20298341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
11Cl-PF3OUdS	ng/L	ND	94500	94500	106000	114000	112	121	55-160	7	30	
3:3 FTCA	ng/L	ND	125000	125000	117000	127000	93	102	65-130	9	30	
4:2 FTS	ng/L	ND	93900	93900	94500	101000	101	107	70-145	6	30	
5:3 FTCA	ng/L	ND	626000	626000	567000	623000	91	100	70-135	9	30	
6:2 FTS	ng/L	ND	95200	95200	92900	105000	98	110	65-155	12	30	
7:3 FTCA	ng/L	ND	626000	626000	593000	662000	95	106	50-145	11	30	
8:2 FTS	ng/L	ND	96400	96400	101000	107000	104	111	60-150	6	30	
9Cl-PF3ONS	ng/L	ND	93900	93900	103000	114000	110	121	70-155	9	30	
ADONA	ng/L	ND	94500	94500	96200	106000	102	112	65-145	10	30	
HFPO-DA	ng/L	ND	100000	100000	99500	107000	99	107	70-145	7	30	
NEtFOSA	ng/L	ND	25000	25000	22400	24200	89	97	65-145	8	30	
NEtFOSAA	ng/L	ND	25000	25000	24500	25900	97	103	70-145	6	30	
NEtFOSE	ng/L	ND	250000	250000	240000	254000	96	101	70-135	6	30	
NFDHA	ng/L	ND	50100	50100	53600	54300	107	108	50-150	1	30	
NMeFOSA	ng/L	ND	25000	25000	23700	24900	95	99	60-150	5	30	
NMeFOSAA	ng/L	ND	25000	25000	22600	25800	90	103	50-150	13	30	

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(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494257 1494258

Parameter	Units	20298341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
NMeFOSE	ng/L	ND	250000	250000	236000	253000	94	101	70-145	7	30	
Perfluorobutanesulfonic acid	ng/L	ND	22200	22200	20800	22700	93	102	60-145	9	30	
Perfluorodecanoic acid	ng/L	ND	25000	25000	23200	25700	92	102	70-150	10	30	
Perfluorododecanoic acid	ng/L	ND	25000	25000	23200	25100	92	100	70-140	8	30	
Perfluoroheptanoic acid	ng/L	ND	25000	25000	22900	25800	91	103	70-150	12	30	
Perfluorohexanesulfonic acid	ng/L	ND	22900	22900	20100	22100	87	96	65-145	10	30	
Perfluorohexanoic acid	ng/L	ND	25000	25000	23800	25700	94	102	70-145	8	30	
Perfluorononanoic acid	ng/L	ND	25000	25000	22400	25100	89	100	70-150	12	30	
Perfluorooctanesulfonic acid	ng/L	ND	23200	23200	20800	22900	89	98	55-150	10	30	
Perfluorooctanoic acid	ng/L	ND	25000	25000	23300	24800	92	98	70-150	6	30	
Perfluorotetradecanoic acid	ng/L	ND	25000	25000	24100	25900	96	103	60-145	7	30	
Perfluorotridecanoic acid	ng/L	ND	25000	25000	23200	25300	92	101	65-140	9	30	
Perfluoroundecanoic acid	ng/L	ND	25000	25000	23000	25200	92	101	70-145	9	30	
PFBA	ng/L	ND	100000	100000	93300	101000	93	101	70-145	8	30	
PFDoS	ng/L	ND	24300	24300	22500	25300	92	104	50-145	12	30	
PFDS	ng/L	ND	24200	24200	22600	26000	93	107	60-145	14	30	
PFEESA	ng/L	ND	44600	44600	45500	46200	102	104	70-145	2	30	
PFHpS	ng/L	ND	23900	23900	21800	25400	91	106	70-150	15	30	
PFMBA	ng/L	ND	50100	50100	44500	45400	89	91	60-150	2	30	
PFMPA	ng/L	ND	50100	50100	52700	54300	105	108	55-140	3	30	
PFNS	ng/L	ND	24100	24100	22800	25700	94	106	65-145	12	30	
PFOSA	ng/L	ND	25000	25000	23200	25500	93	102	70-145	10	30	
PFPeA	ng/L	ND	50100	50100	47000	51200	94	102	60-135	9	30	
PFPeS	ng/L	ND	23500	23500	21700	23600	92	100	65-140	9	30	
13C2-PFDoA (S)	%.						89	80	10-130			
13C2-PFTA (S)	%.						83	76	40-130			
13C24:2FTS (S)	%.						83	74	40-200			
13C26:2FTS (S)	%.						90	77	40-200			
13C28:2FTS (S)	%.						95	81	40-300			
13C3-PFBS (S)	%.						86	75	40-135			
13C3-PFHxS (S)	%.						84	76	40-130			
13C3HFPO-DA (S)	%.						92	84	40-130			
13C4-PFBA (S)	%.						88	82	5-130			
13C4-PFHpA (S)	%.						86	79	40-130			
13C5-PFHxA (S)	%.						87	79	40-130			
13C5-PFPeA (S)	%.						95	87	40-130			
13C6-PFDA (S)	%.						87	77	20-150			
13C7-PFUdA (S)	%.						86	77	40-130			
13C8-PFOA (S)	%.						85	78	40-130			
13C8-PFOS (S)	%.						87	76	40-130			
13C8-PFOSA (S)	%.						77	74	40-130			
13C9-PFNA (S)	%.						89	77	40-130			
d3-MeFOSAA (S)	%.						91	79	40-170			

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(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1494257 1494258

Parameter	Units	20298341001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
d3-NMeFOSA (S)	%.						64	59	10-130			
d5-EtFOSAA (S)	%.						84	76	25-135			
d5-NEtFOSA (S)	%.						67	59	10-130			
d7-NMeFOSE (S)	%.						67	64	10-130			
d9-NEtFOSE (S)	%.						64	62	10-130			

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(225) 769-4900

QUALIFIERS

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

SAMPLE QUALIFIERS

Sample: 20298341001

[1] For method EPA 1633, the sample was extracted at a reduced volume due to clogging of the SPE cartridge. As a result, reporting limits are elevated.

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(225) 769-4900

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HF221083 Tyndall WEG Hanger
Pace Project No.: 20298341

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20298341001	**POST TREATMENT TANK 8**	EPA 1633	312002	EPA 1633	312515

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Pace® Location Requested (City/State):
Pace Analytical Baton Rouge
7979 Innovation Park Dr, Suite A
Baton Rouge, LA 70820

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

WO# : 20298341

20298341

Company Name:	TERRACON	Contact/Report To:	Renee Eddins
Street Address:	2930 Wellington Circle, Suite 201 Tallahassee, FL 32309	Phone #:	
		E-Mail:	renee.eddins@terracon.com
		Cc E-Mail:	
Customer Project #:		Invoice To:	Accounts Payable
Project Name:	HF221083 Tyndall WEG Hanger	Invoice E-Mail:	invoices@terracon.coupahost.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	
Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET		County / State origin of sample(s):	Florida

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other_____

Regulatory Program (DW, RCRA, etc.) as applicable:

Rush (Pre-approval required):
[ ] 2 Day [ ] 3 day [ ] 5 day [ ] Other_____

Date Results Requested:

DW PWSID # or WW Permit # as applicable:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Other (OT), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res. Cl2	Number & Type of Containers Plastic	Number & Type of Containers Glass	PFAS in Water by EPA 1633	PFAS-TSS screening	Specify Container Size **	Identify Container Preservative Type***	Analysis Requested	Sample Comment	Preservation non-conformance identified for sample.
Post Treatment Tank 8	G	GM	11/20/23	8:30	11/21/23	8:30		1		1	1				1	X

Lab Use Only
Proj. Mgr: Melissa MacNaughton
AcctNum / Client ID:
Table #:
Profile / Template: 18522
Prelog / Bottle Ord. ID: EZ 3016577

Customer Remarks / Special Conditions / Possible Hazards:

Collected By:
Printed Name: Matt Gibson
Signature: Matt Gibson

Additional Instructions from Pace®:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
		Oodie McCune	11-22-23 9:40	
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Delivered by: [ ] In-Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEX [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: 2 of 2

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace® Terms and Conditions found at https://www.pacelabs.com/resource-library/resource/pace-terms-and-conditions/

WO#: 20298341

PM: MM1 Due Date: 12/05/23

CLIENT: BR-TERRACON

Pace

Sample Condition Upon Reci

Workor

CLIEN

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: DJM / 11/22/23 9:40

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____

☑ Yes	☐ No			Were custody seals present on the cooler?
☑ Yes	☐ No	☐ NA		If custody seals were present, were they intact and unbroken?

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: EF2 IR Gun Correction Factor: +0 °C

Cooler #1	Cooler Temp °C: 1.2 (Actual/True)	Samples on ice ☑ Yes ☐ No	pH Strip Lot #
Cooler #2	Cooler Temp °C: _____ (Actual/True)		
~~Cooler #3~~	~~Cooler Temp °C:~~ _____ (Actual/True)	Method of coolant:	
~~Cooler #4~~	~~Cooler Temp °C:~~ _____ (Actual/True)	☐ Wet ☑ Ice Packs ☐ Dry Ice ☐ None	

Tracking #: 7081 4046 7751

☒ Yes	☐ No	☐ NA	Is a temperature blank present?	
~~☒ Yes~~	~~☐ No~~	~~☐ NA~~	~~Was a chain of custody (COC) recieved?~~	
☒ Yes	☐ No	☐ NA	Was the line and profile number listed on the COC?	
☒ Yes	☐ No	☐ NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.	
Yes	☒ No		Were proper custody procedures (relinquished/received) followed?	
☒ Yes	☐ No	☐ NA	Is the sampler name and signature on the COC?	
☒ Yes	☐ No		Were sample IDs listed on the COC and all sample containers?	
☒ Yes	☐ No		Was collection date & time listed on the COC and all sample containers?	
☐ Yes	☒ No		Did all container label information (ID, date, time) agree with the COC?	
☒ Yes	☐ No		Were tests to be performed listed on the COC?	
☒ Yes	☐ No		Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
~~☒ Yes~~	~~☐ No~~		~~Was adequate sample volume available?~~	
☒ Yes	☐ No		Were all samples received within ½ the holding time or 48 hours, whichever comes first?	
☒ Yes	☐ No		Were all samples containers accounted for? (No missing / excess)	
☐ Yes	☐ No	☐ NA	Were VOA, 8015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?	
☐ Yes	☐ No	☐ NA	Trip blank present?	
☐ Yes	☐ No	☐ NA	Filtered volume received for dissolved tests? *If no, list affected sample(s) in comments below.*	
☐ Yes	☐ No	☐ NA	Were all metals/nutrient samples received at a pH of < 2?	If No, was preservative added? ☐ Yes ☐ No If added, record lots. Dispenser/pipette lot #: _____
☐ Yes	☐ No	☐ NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?	HNO_3 _____ H_2SO_4 _____ NaOH _____ Date: _____ Time: _____

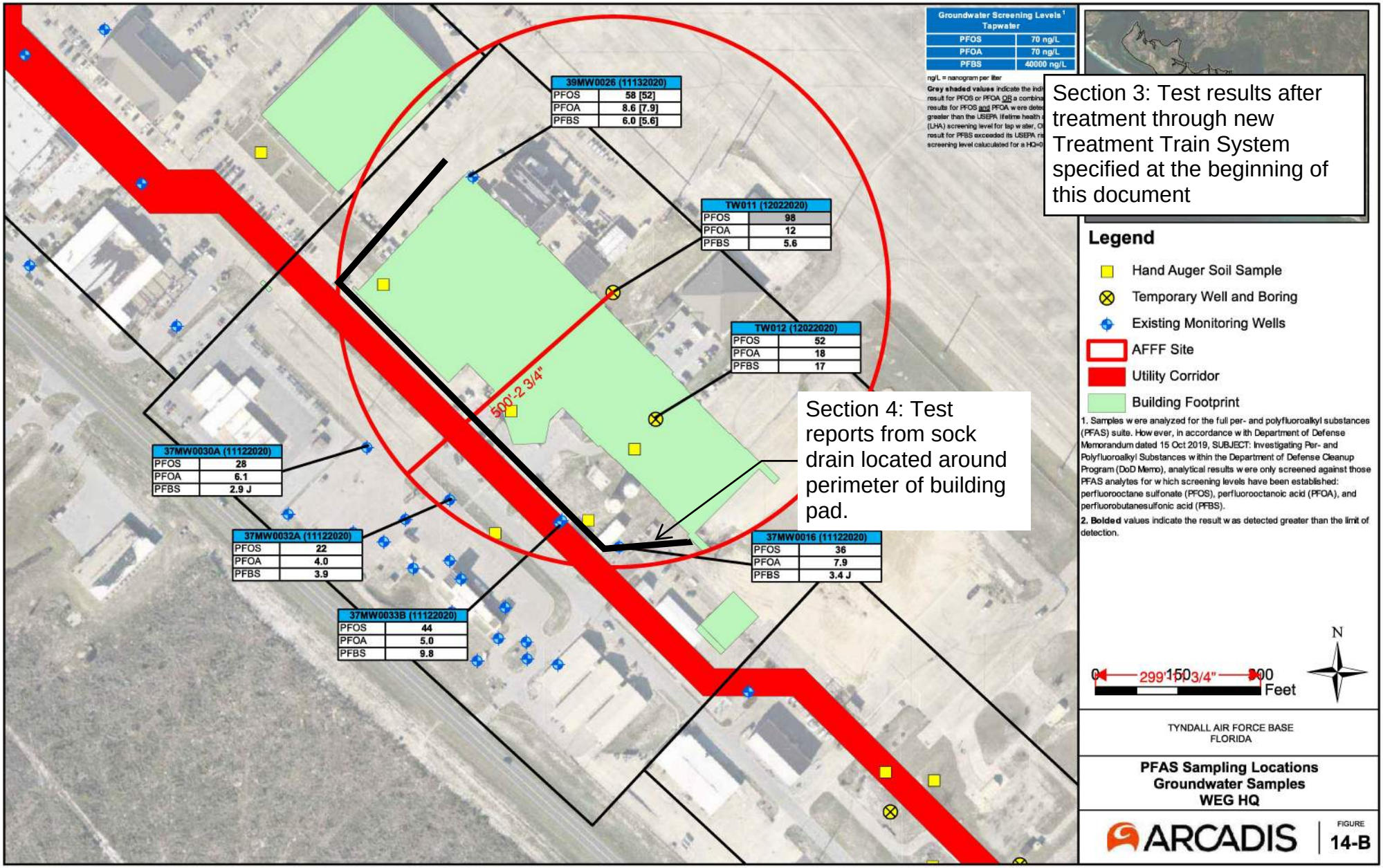
Comments:

Samples date + time do not match the chain. Logged per chain.

This Page Starts Treated Water Tests taken by Pace Analytical on 11/30/2023 - 12/8/2023

(Section 4)

Section 4


Groundwater Screening Levels[1] Tapwater
PFOS 70 ng/L
PFOA 70 ng/L
PFBS 40000 ng/L
ng/L = nanogram per liter
Grey shaded values indicate the indi
result for PFOS or PFOA OR a combina
results for PFOS and PFOA were dete
greater than the USEPA lifetime health
(LHA) screening level for tap water, O
result for PFBS exceeded its USEPA ris
screening level calculated for a HQ=0
39MW0026 (11132020)
PFOS 58 [52]
PFOA 8.6 [7.9]
PFBS 6.0 [5.6]
TW011 (12022020)
PFOS 98
PFOA 12
PFBS 5.6
TW012 (12022020)
PFOS 52
PFOA 18
PFBS 17
500'-2 3/4"
37MW0030A (11122020)
PFOS 28
PFOA 6.1
PFBS 2.9 J
37MW0032A (11122020)
PFOS 22
PFOA 4.0
PFBS 3.9
37MW0033B (11122020)
PFOS 44
PFOA 5.0
PFBS 9.8
37MW0016 (11122020)
PFOS 36
PFOA 7.9
PFBS 3.4 J
Section 3: Test results after treatment through new Treatment Train System specified at the beginning of this document
Section 4: Test reports from sock drain located around perimeter of building pad.
Legend
Hand Auger Soil Sample
Temporary Well and Boring
Existing Monitoring Wells
AFFF Site
Utility Corridor
Building Footprint
1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. Bolded values indicate the result was detected greater than the limit of detection.
N
0 150 300 Feet
TYNDALL AIR FORCE BASE
FLORIDA
PFAS Sampling Locations
Groundwater Samples
WEG HQ
ARCADIS
FIGURE
14-B

Section 3

Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

January 04, 2024

Renee Eddins
Terracon
2930 Wellington Circle
Suite 201
Tallahassee, FL 32309

RE: Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Dear Renee Eddins:

Enclosed are the analytical results for sample(s) received by the laboratory on December 09, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Baton Rouge

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Melissa MacNaughton

Melissa MacNaughton
melissa.macnaughton@pacelabs.com
(225) 769-4900
Project Manager

Enclosures

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CERTIFICATIONS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Pace Analytical Services Baton Rouge
7979 Innovation Park Drive Ste A, Baton Rouge, LA 70820-7402
Louisiana Dept of Enviromental Quality (NELAC/LELAP): 01979
Florida Dept of Health (NELAC/FELAP): E87854
DoD ELAP (A2LA) #: 6429.01
Alabama DEM #: 41900
Alaska DEC-DW #: LA00024
Alaska DEC CS-LAP #: 21-001
Arkansas DEQ #: 88-0655
California ELAP #: 3063
Georgia DPD #: C050
Hawaii DOH State Laboratories Division
Illinois EPA #: 200048
Kansas DoHE #: E-10354
Kentucky DEP UST Branch #: 123054
Louisiana DOH #: LA036
Minnesota DOH #: 2233799
Mississippi State Dept of Health
Montana Department of Environmental Quality
Nebraska DHHS #: NE-OS-35.21
Nevada DCNR DEP #: LA00024
New York DOH #: 12149
North Carolina DEQ - WW & GW #: 618
North Dakota DEQ #: R195
Ohio EPA #: 87782
Oklahoma Dept of Environmental Quality #: 9403
Oregon ELAP #: 4168
Pennsylvania Dept of Environmental Protection #: 68-05973
South Carolina DHEC #: 73006001
Texas CEQ #: T104704178-23-15
Utah DOH #: LA00024
Virginia DCLS #: 6460215
Washington Dept of Ecology #: C929
Wisconsin DNR #: 399139510

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SAMPLE SUMMARY

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Lab ID	Sample ID	Matrix	Date Collected	Date Received
20300170001	**POST TREATMENT**	Water	12/08/23 09:02	12/09/23 10:05
20300170002	**POST TREATMENT**	Water	12/06/23 11:00	12/09/23 10:05
20300170003	**POST TREATMENT**	Water	11/30/23 15:43	12/09/23 10:05
20300170004	**POST TREATMENT**	Water	12/01/23 13:50	12/09/23 10:05
20300170005	**POST TREATMENT**	Water	12/07/23 09:00	12/09/23 10:05
20300170006	**POST TREATMENT**	Water	12/04/23 12:22	12/09/23 10:05
20300170007	**POST TREATMENT**	Water	12/05/23 11:28	12/09/23 10:05

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SAMPLE ANALYTE COUNT

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Lab ID	Sample ID	Method	Analysts	Analytes Reported
20300170001	**POST TREATMENT**	EPA 1633	RMP	64
20300170002	**POST TREATMENT**	EPA 1633	RMP	64
20300170003	**POST TREATMENT**	EPA 1633	RMP	64
20300170004	**POST TREATMENT**	EPA 1633	RMP	64
20300170005	**POST TREATMENT**	EPA 1633	RMP	64
20300170006	**POST TREATMENT**	EPA 1633	RMP	64
20300170007	**POST TREATMENT**	EPA 1633	RMP	64

PASI-BR = Pace Analytical Services - Baton Rouge

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PROJECT NARRATIVE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Date: January 04, 2024

POST TREATMENT (Lab ID: 20300170001)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170002)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170003)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170004)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170005)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170006)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

POST TREATMENT (Lab ID: 20300170007)

- For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

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PROJECT NARRATIVE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Method: **EPA 1633**
Description: PFAS in Water by EPA 1633
Client: TERRACON
Date: January 04, 2024

General Information:
7 samples were analyzed for EPA 1633 by Pace Analytical Services Baton Rouge. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 1633 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 313623

1b: Analyte was detected in an associated instrument blank.

- POST TREATMENT (Lab ID: 20300170002)
  - Perfluorododecanoic acid
- POST TREATMENT (Lab ID: 20300170005)
  - Perfluorododecanoic acid

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PROJECT NARRATIVE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Method: **EPA 1633**
Description: PFAS in Water by EPA 1633
Client: TERRACON
Date: January 04, 2024

Analyte Comments:

QC Batch: 313623

2b: Analyte was detected in an associated instrument blank.

- BLANK (Lab ID: 1501490)
  - Perfluorododecanoic acid
- LCS (Lab ID: 1501491)
  - Perfluorododecanoic acid
- MS (Lab ID: 1501493)
  - Perfluorododecanoic acid
- MSD (Lab ID: 1501494)
  - Perfluorododecanoic acid
- POST TREATMENT (Lab ID: 20300170006)
  - Perfluorododecanoic acid
- POST TREATMENT (Lab ID: 20300170007)
  - Perfluorododecanoic acid
- SRM (Lab ID: 1501492)
  - Perfluorododecanoic acid

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Treated proposed with JSS Treatment train

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170001** Collected: 12/08/23 09:02 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	763051-92-9	
3:3 FTCA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:02	356-02-5	
4:2 FTS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	757124-72-4	
5:3 FTCA	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:02	914637-49-3	
6:2 FTS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	27619-97-2	
7:3 FTCA	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:02	812-70-4	
8:2 FTS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	39108-34-4	
9Cl-PF3ONS	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	756426-58-1	
ADONA	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	919005-14-4	
HFPO-DA	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	13252-13-6	
NEtFOSAA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2991-50-6	
NEtFOSA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	4151-50-2	
NEtFOSE	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:02	1691-99-2	
NFDHA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	151772-58-6	
NMeFOSAA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2355-31-9	
NMeFOSA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	31506-32-8	
NMeFOSE	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:02	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-73-5	
Perfluorodecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	335-76-2	
Perfluorohexanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	307-24-4	
PFBA	ND	ng/L	40.0	1	12/27/23 06:56	12/28/23 16:02	375-22-4	
PFDS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	335-77-3	
PFDoS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	79780-39-5	
PFEESA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	113507-82-7	
PFHpS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-92-8	
PFMBA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	863090-89-5	
PFMPA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	377-73-1	
PFNS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	68259-12-1	
PFOSA	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	754-91-6	
PFPeA	ND	ng/L	20.0	1	12/27/23 06:56	12/28/23 16:02	2706-90-3	
PFPeS	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	355-46-4	
Perfluorononanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	10.0	1	12/27/23 06:56	12/28/23 16:02	2058-94-8	
Surrogates								
13C2-PFDoA (S)	77	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
13C3HFPO-DA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C3-PFBS (S)	80	%.	40-135	1	12/27/23 06:56	12/28/23 16:02		
13C3-PFHxS (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C4-PFBA (S)	81	%.	5-130	1	12/27/23 06:56	12/28/23 16:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170001** Collected: 12/08/23 09:02 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C4-PFHpA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C5-PFHxA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C5-PFPeA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C6-PFDA (S)	82	%.	20-150	1	12/27/23 06:56	12/28/23 16:02		
13C8-PFOA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C8-PFOS (S)	81	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C8-PFOSA (S)	77	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C9-PFNA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
d3-MeFOSAA (S)	81	%.	40-170	1	12/27/23 06:56	12/28/23 16:02		
d3-NMeFOSA (S)	58	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
d5-EtFOSAA (S)	76	%.	25-135	1	12/27/23 06:56	12/28/23 16:02		
d5-NEtFOSA (S)	57	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
d7-NMeFOSE (S)	71	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
d9-NEtFOSE (S)	69	%.	10-130	1	12/27/23 06:56	12/28/23 16:02		
13C24:2FTS (S)	79	%.	40-200	1	12/27/23 06:56	12/28/23 16:02		
13C26:2FTS (S)	82	%.	40-200	1	12/27/23 06:56	12/28/23 16:02		
13C28:2FTS (S)	80	%.	40-300	1	12/27/23 06:56	12/28/23 16:02		
13C7-PFUdA (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		
13C2-PFTA (S)	76	%.	40-130	1	12/27/23 06:56	12/28/23 16:02		

Sample: POST TREATMENT **Lab ID: 20300170002** Collected: 12/06/23 11:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/28/23 14:04	12/30/23 05:19	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 05:19	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 05:19	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	756426-58-1	
ADONA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	919005-14-4	
HFPO-DA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 05:19	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 05:19	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-73-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170002** Collected: 12/06/23 11:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	307-24-4	
PFBA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 05:19	375-22-4	
PFDS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	377-73-1	
PFNS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 05:19	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	307-55-1	1b
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 05:19	2058-94-8	
Surrogates								
13C2-PFDoA (S)	83	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
13C3HFPO-DA (S)	92	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C3-PFBS (S)	92	%.	40-135	1	12/28/23 14:04	12/30/23 05:19		
13C3-PFHxS (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C4-PFBA (S)	83	%.	5-130	1	12/28/23 14:04	12/30/23 05:19		
13C4-PFHpA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C5-PFHxA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C5-PFPeA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C6-PFDA (S)	84	%.	20-150	1	12/28/23 14:04	12/30/23 05:19		
13C8-PFOA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C8-PFOS (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C8-PFOSA (S)	80	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
13C9-PFNA (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		
d3-MeFOSAA (S)	85	%.	40-170	1	12/28/23 14:04	12/30/23 05:19		
d3-NMeFOSA (S)	52	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
d5-EtFOSAA (S)	80	%.	25-135	1	12/28/23 14:04	12/30/23 05:19		
d5-NEtFOSA (S)	52	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
d7-NMeFOSE (S)	57	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
d9-NEtFOSE (S)	55	%.	10-130	1	12/28/23 14:04	12/30/23 05:19		
13C24:2FTS (S)	86	%.	40-200	1	12/28/23 14:04	12/30/23 05:19		
13C26:2FTS (S)	86	%.	40-200	1	12/28/23 14:04	12/30/23 05:19		
13C28:2FTS (S)	79	%.	40-300	1	12/28/23 14:04	12/30/23 05:19		
13C7-PFUdA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170002** Collected: 12/06/23 11:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C2-PFTA (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 05:19		

Sample: POST TREATMENT **Lab ID: 20300170003** Collected: 11/30/23 15:43 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/27/23 06:56	12/28/23 16:19	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:19	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:19	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	756426-58-1	
ADONA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	919005-14-4	
HFPO-DA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:19	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:19	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-73-5	
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	307-24-4	
PFBA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:19	375-22-4	
PFDS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	377-73-1	
PFNS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:19	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	1763-23-1	

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170003** Collected: 11/30/23 15:43 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:19	2058-94-8	
Surrogates								
13C2-PFDoA (S)	83	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
13C3HFPO-DA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C3-PFBS (S)	81	%.	40-135	1	12/27/23 06:56	12/28/23 16:19		
13C3-PFHxS (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C4-PFBA (S)	83	%.	5-130	1	12/27/23 06:56	12/28/23 16:19		
13C4-PFHpA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C5-PFHxA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C5-PFPeA (S)	85	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C6-PFDA (S)	82	%.	20-150	1	12/27/23 06:56	12/28/23 16:19		
13C8-PFOA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C8-PFOS (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C8-PFOSA (S)	78	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C9-PFNA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
d3-MeFOSAA (S)	82	%.	40-170	1	12/27/23 06:56	12/28/23 16:19		
d3-NMeFOSA (S)	67	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
d5-EtFOSAA (S)	78	%.	25-135	1	12/27/23 06:56	12/28/23 16:19		
d5-NEtFOSA (S)	64	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
d7-NMeFOSE (S)	73	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
d9-NEtFOSE (S)	71	%.	10-130	1	12/27/23 06:56	12/28/23 16:19		
13C24:2FTS (S)	82	%.	40-200	1	12/27/23 06:56	12/28/23 16:19		
13C26:2FTS (S)	85	%.	40-200	1	12/27/23 06:56	12/28/23 16:19		
13C28:2FTS (S)	79	%.	40-300	1	12/27/23 06:56	12/28/23 16:19		
13C7-PFUdA (S)	82	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		
13C2-PFTA (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:19		

Sample: POST TREATMENT **Lab ID: 20300170004** Collected: 12/01/23 13:50 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/27/23 06:56	12/28/23 16:35	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:35	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/27/23 06:56	12/28/23 16:35	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	756426-58-1	
ADONA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	919005-14-4	

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170004** Collected: 12/01/23 13:50 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
HFPO-DA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:35	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/27/23 06:56	12/28/23 16:35	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-73-5	
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	307-24-4	
PFBA	ND	ng/L	100	1	12/27/23 06:56	12/28/23 16:35	375-22-4	
PFDS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	377-73-1	
PFNS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/27/23 06:56	12/28/23 16:35	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	307-55-1	
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/27/23 06:56	12/28/23 16:35	2058-94-8	
Surrogates								
13C2-PFDoA (S)	80	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
13C3HFPO-DA (S)	84	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C3-PFBS (S)	86	%.	40-135	1	12/27/23 06:56	12/28/23 16:35		
13C3-PFHxS (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C4-PFBA (S)	85	%.	5-130	1	12/27/23 06:56	12/28/23 16:35		
13C4-PFHpA (S)	85	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C5-PFHxA (S)	87	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C5-PFPeA (S)	87	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C6-PFDA (S)	82	%.	20-150	1	12/27/23 06:56	12/28/23 16:35		
13C8-PFOA (S)	86	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C8-PFOS (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C8-PFOSA (S)	80	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C9-PFNA (S)	85	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
d3-MeFOSAA (S)	86	%.	40-170	1	12/27/23 06:56	12/28/23 16:35		

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170004** Collected: 12/01/23 13:50 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
d3-NMeFOSA (S)	70	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
d5-EtFOSAA (S)	80	%.	25-135	1	12/27/23 06:56	12/28/23 16:35		
d5-NEtFOSA (S)	67	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
d7-NMeFOSE (S)	77	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
d9-NEtFOSE (S)	74	%.	10-130	1	12/27/23 06:56	12/28/23 16:35		
13C24:2FTS (S)	85	%.	40-200	1	12/27/23 06:56	12/28/23 16:35		
13C26:2FTS (S)	87	%.	40-200	1	12/27/23 06:56	12/28/23 16:35		
13C28:2FTS (S)	85	%.	40-300	1	12/27/23 06:56	12/28/23 16:35		
13C7-PFUdA (S)	83	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		
13C2-PFTA (S)	81	%.	40-130	1	12/27/23 06:56	12/28/23 16:35		

Sample: POST TREATMENT **Lab ID: 20300170005** Collected: 12/07/23 09:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	763051-92-9	
3:3 FTCA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 06:08	356-02-5	
4:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	757124-72-4	
5:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:08	914637-49-3	
6:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	27619-97-2	
7:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:08	812-70-4	
8:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	39108-34-4	
9Cl-PF3ONS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	756426-58-1	
ADONA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	919005-14-4	
HFPO-DA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	13252-13-6	
NEtFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2991-50-6	
NEtFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	4151-50-2	
NEtFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:08	1691-99-2	
NFDHA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	151772-58-6	
NMeFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2355-31-9	
NMeFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	31506-32-8	
NMeFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:08	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-73-5	
Perfluorodecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	335-76-2	
Perfluorohexanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	307-24-4	
PFBA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:08	375-22-4	
PFDS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	335-77-3	
PFDoS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	79780-39-5	
PFEESA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	113507-82-7	
PFHpS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-92-8	
PFMBA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	863090-89-5	
PFMPA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	377-73-1	

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(225) 769-4900

ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170005** Collected: 12/07/23 09:00 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
PFNS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	68259-12-1	
PFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	754-91-6	
PFPeA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:08	2706-90-3	
PFPeS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	307-55-1	1b
Perfluoroheptanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	355-46-4	
Perfluorononanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:08	2058-94-8	
Surrogates								
13C2-PFDoA (S)	83	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
13C3HFPO-DA (S)	91	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C3-PFBS (S)	90	%.	40-135	1	12/28/23 14:04	12/30/23 06:08		
13C3-PFHxS (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C4-PFBA (S)	84	%.	5-130	1	12/28/23 14:04	12/30/23 06:08		
13C4-PFHpA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C5-PFHxA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C5-PFPeA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C6-PFDA (S)	84	%.	20-150	1	12/28/23 14:04	12/30/23 06:08		
13C8-PFOA (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C8-PFOS (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C8-PFOSA (S)	81	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C9-PFNA (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
d3-MeFOSAA (S)	86	%.	40-170	1	12/28/23 14:04	12/30/23 06:08		
d3-NMeFOSA (S)	54	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
d5-EtFOSAA (S)	82	%.	25-135	1	12/28/23 14:04	12/30/23 06:08		
d5-NEtFOSA (S)	54	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
d7-NMeFOSE (S)	58	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
d9-NEtFOSE (S)	56	%.	10-130	1	12/28/23 14:04	12/30/23 06:08		
13C24:2FTS (S)	84	%.	40-200	1	12/28/23 14:04	12/30/23 06:08		
13C26:2FTS (S)	79	%.	40-200	1	12/28/23 14:04	12/30/23 06:08		
13C28:2FTS (S)	77	%.	40-300	1	12/28/23 14:04	12/30/23 06:08		
13C7-PFUdA (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		
13C2-PFTA (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 06:08		

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(225) 769-4900

ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170006** Collected: 12/04/23 12:22 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	763051-92-9	
3:3 FTCA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 06:56	356-02-5	
4:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	757124-72-4	
5:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:56	914637-49-3	
6:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	27619-97-2	
7:3 FTCA	ND	ng/L	250	1	12/28/23 14:04	12/30/23 06:56	812-70-4	
8:2 FTS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	39108-34-4	
9Cl-PF3ONS	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	756426-58-1	
ADONA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	919005-14-4	
HFPO-DA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	13252-13-6	
NEtFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2991-50-6	
NEtFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	4151-50-2	
NEtFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:56	1691-99-2	
NFDHA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	151772-58-6	
NMeFOSAA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2355-31-9	
NMeFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	31506-32-8	
NMeFOSE	ND	ng/L	100	1	12/28/23 14:04	12/30/23 06:56	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-73-5	
Perfluorodecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	335-76-2	
Perfluorohexanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	307-24-4	
PFBA	ND	ng/L	40.0	1	12/28/23 14:04	12/30/23 06:56	375-22-4	
PFDS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	335-77-3	
PFDoS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	79780-39-5	
PFEESA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	113507-82-7	
PFHpS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-92-8	
PFMBA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	863090-89-5	
PFMPA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	377-73-1	
PFNS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	68259-12-1	
PFOSA	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	754-91-6	
PFPeA	ND	ng/L	20.0	1	12/28/23 14:04	12/30/23 06:56	2706-90-3	
PFPeS	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	307-55-1	2b
Perfluoroheptanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	355-46-4	
Perfluorononanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	10.0	1	12/28/23 14:04	12/30/23 06:56	2058-94-8	
Surrogates								
13C2-PFDoA (S)	84	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
13C3HFPO-DA (S)	96	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C3-PFBS (S)	91	%.	40-135	1	12/28/23 14:04	12/30/23 06:56		
13C3-PFHxS (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C4-PFBA (S)	88	%.	5-130	1	12/28/23 14:04	12/30/23 06:56		

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(225) 769-4900

ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170006** Collected: 12/04/23 12:22 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C4-PFHpA (S)	88	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C5-PFHxA (S)	90	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C5-PFPeA (S)	93	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C6-PFDA (S)	86	%.	20-150	1	12/28/23 14:04	12/30/23 06:56		
13C8-PFOA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C8-PFOS (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C8-PFOSA (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C9-PFNA (S)	88	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
d3-MeFOSAA (S)	88	%.	40-170	1	12/28/23 14:04	12/30/23 06:56		
d3-NMeFOSA (S)	57	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
d5-EtFOSAA (S)	79	%.	25-135	1	12/28/23 14:04	12/30/23 06:56		
d5-NEtFOSA (S)	54	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
d7-NMeFOSE (S)	61	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
d9-NEtFOSE (S)	59	%.	10-130	1	12/28/23 14:04	12/30/23 06:56		
13C24:2FTS (S)	90	%.	40-200	1	12/28/23 14:04	12/30/23 06:56		
13C26:2FTS (S)	87	%.	40-200	1	12/28/23 14:04	12/30/23 06:56		
13C28:2FTS (S)	80	%.	40-300	1	12/28/23 14:04	12/30/23 06:56		
13C7-PFUdA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		
13C2-PFTA (S)	86	%.	40-130	1	12/28/23 14:04	12/30/23 06:56		

Sample: POST TREATMENT **Lab ID: 20300170007** Collected: 12/05/23 11:28 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
11Cl-PF3OUdS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	763051-92-9	
3:3 FTCA	ND	ng/L	125	1	12/28/23 14:04	12/30/23 07:13	356-02-5	
4:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	757124-72-4	
5:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 07:13	914637-49-3	
6:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	27619-97-2	
7:3 FTCA	ND	ng/L	625	1	12/28/23 14:04	12/30/23 07:13	812-70-4	
8:2 FTS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	39108-34-4	
9Cl-PF3ONS	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	756426-58-1	
ADONA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	919005-14-4	
HFPO-DA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	13252-13-6	
NEtFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2991-50-6	
NEtFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	4151-50-2	
NEtFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 07:13	1691-99-2	
NFDHA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	151772-58-6	
NMeFOSAA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2355-31-9	
NMeFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	31506-32-8	
NMeFOSE	ND	ng/L	250	1	12/28/23 14:04	12/30/23 07:13	24448-09-7	
Perfluorobutanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-73-5	

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170007** Collected: 12/05/23 11:28 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Perfluorodecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	335-76-2	
Perfluorohexanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	307-24-4	
PFBA	ND	ng/L	100	1	12/28/23 14:04	12/30/23 07:13	375-22-4	
PFDS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	335-77-3	
PFDoS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	79780-39-5	
PFEESA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	113507-82-7	
PFHpS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-92-8	
PFMBA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	863090-89-5	
PFMPA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	377-73-1	
PFNS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	68259-12-1	
PFOSA	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	754-91-6	
PFPeA	ND	ng/L	50.0	1	12/28/23 14:04	12/30/23 07:13	2706-90-3	
PFPeS	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2706-91-4	
Perfluorododecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	307-55-1	2b
Perfluoroheptanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-85-9	
Perfluorohexanesulfonic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	355-46-4	
Perfluorononanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	375-95-1	
Perfluorooctanesulfonic acid (PFOS)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	1763-23-1	
Perfluorooctanoic acid (PFOA)	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	335-67-1	
Perfluorotetradecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	376-06-7	
Perfluorotridecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	72629-94-8	
Perfluoroundecanoic acid	ND	ng/L	25.0	1	12/28/23 14:04	12/30/23 07:13	2058-94-8	
Surrogates								
13C2-PFDoA (S)	82	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
13C3HFPO-DA (S)	89	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C3-PFBS (S)	88	%.	40-135	1	12/28/23 14:04	12/30/23 07:13		
13C3-PFHxS (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C4-PFBA (S)	82	%.	5-130	1	12/28/23 14:04	12/30/23 07:13		
13C4-PFHpA (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C5-PFHxA (S)	83	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C5-PFPeA (S)	87	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C6-PFDA (S)	81	%.	20-150	1	12/28/23 14:04	12/30/23 07:13		
13C8-PFOA (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C8-PFOS (S)	82	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C8-PFOSA (S)	78	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
13C9-PFNA (S)	85	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		
d3-MeFOSAA (S)	84	%.	40-170	1	12/28/23 14:04	12/30/23 07:13		
d3-NMeFOSA (S)	52	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
d5-EtFOSAA (S)	79	%.	25-135	1	12/28/23 14:04	12/30/23 07:13		
d5-NEtFOSA (S)	51	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
d7-NMeFOSE (S)	59	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
d9-NEtFOSE (S)	57	%.	10-130	1	12/28/23 14:04	12/30/23 07:13		
13C24:2FTS (S)	81	%.	40-200	1	12/28/23 14:04	12/30/23 07:13		
13C26:2FTS (S)	83	%.	40-200	1	12/28/23 14:04	12/30/23 07:13		
13C28:2FTS (S)	74	%.	40-300	1	12/28/23 14:04	12/30/23 07:13		
13C7-PFUdA (S)	84	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		

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ANALYTICAL RESULTS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Sample: POST TREATMENT **Lab ID: 20300170007** Collected: 12/05/23 11:28 Received: 12/09/23 10:05 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
PFAS in Water by EPA 1633	Analytical Method: EPA 1633 Preparation Method: EPA 1633 Pace Analytical Services - Baton Rouge							
Surrogates								
13C2-PFTA (S)	81	%.	40-130	1	12/28/23 14:04	12/30/23 07:13		

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

QC Batch: 313312
QC Batch Method: EPA 1633
Analysis Method: EPA 1633
Analysis Description: BR PFAS in Water by EPA 1633
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20300170001, 20300170003, 20300170004

METHOD BLANK: 1500266 Matrix: Water
Associated Lab Samples: 20300170001, 20300170003, 20300170004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	ND	4.0	12/28/23 15:14	
3:3 FTCA	ng/L	ND	5.0	12/28/23 15:14	
4:2 FTS	ng/L	ND	4.0	12/28/23 15:14	
5:3 FTCA	ng/L	ND	25.0	12/28/23 15:14	
6:2 FTS	ng/L	ND	4.0	12/28/23 15:14	
7:3 FTCA	ng/L	ND	25.0	12/28/23 15:14	
8:2 FTS	ng/L	ND	4.0	12/28/23 15:14	
9Cl-PF3ONS	ng/L	ND	4.0	12/28/23 15:14	
ADONA	ng/L	ND	4.0	12/28/23 15:14	
HFPO-DA	ng/L	ND	4.0	12/28/23 15:14	
NEtFOSA	ng/L	ND	1.0	12/28/23 15:14	
NEtFOSAA	ng/L	ND	1.0	12/28/23 15:14	
NEtFOSE	ng/L	ND	10.0	12/28/23 15:14	
NFDHA	ng/L	ND	2.0	12/28/23 15:14	
NMeFOSA	ng/L	ND	1.0	12/28/23 15:14	
NMeFOSAA	ng/L	ND	1.0	12/28/23 15:14	
NMeFOSE	ng/L	ND	10.0	12/28/23 15:14	
Perfluorobutanesulfonic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorodecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorododecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluoroheptanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorohexanesulfonic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorohexanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorononanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorooctanesulfonic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorooctanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorotetradecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluorotridecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
Perfluoroundecanoic acid	ng/L	ND	1.0	12/28/23 15:14	
PFBA	ng/L	ND	4.0	12/28/23 15:14	
PFDoS	ng/L	ND	1.0	12/28/23 15:14	
PFDS	ng/L	ND	1.0	12/28/23 15:14	
PFEESA	ng/L	ND	2.0	12/28/23 15:14	
PFHpS	ng/L	ND	1.0	12/28/23 15:14	
PFMBA	ng/L	ND	2.0	12/28/23 15:14	
PFMPA	ng/L	ND	2.0	12/28/23 15:14	
PFNS	ng/L	ND	1.0	12/28/23 15:14	
PFOSA	ng/L	ND	1.0	12/28/23 15:14	
PFPeA	ng/L	ND	2.0	12/28/23 15:14	
PFPeS	ng/L	ND	1.0	12/28/23 15:14	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

METHOD BLANK: 1500266 Matrix: Water
Associated Lab Samples: 20300170001, 20300170003, 20300170004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C2-PFDoA (S)	%.	89	10-130	12/28/23 15:14	
13C2-PFTA (S)	%.	87	40-130	12/28/23 15:14	
13C24:2FTS (S)	%.	93	40-200	12/28/23 15:14	
13C26:2FTS (S)	%.	96	40-200	12/28/23 15:14	
13C28:2FTS (S)	%.	91	40-300	12/28/23 15:14	
13C3-PFBS (S)	%.	88	40-135	12/28/23 15:14	
13C3-PFHxS (S)	%.	88	40-130	12/28/23 15:14	
13C3HFPO-DA (S)	%.	92	40-130	12/28/23 15:14	
13C4-PFBA (S)	%.	91	5-130	12/28/23 15:14	
13C4-PFHpA (S)	%.	90	40-130	12/28/23 15:14	
13C5-PFHxA (S)	%.	91	40-130	12/28/23 15:14	
13C5-PFPeA (S)	%.	93	40-130	12/28/23 15:14	
13C6-PFDA (S)	%.	89	20-150	12/28/23 15:14	
13C7-PFUdA (S)	%.	89	40-130	12/28/23 15:14	
13C8-PFOA (S)	%.	89	40-130	12/28/23 15:14	
13C8-PFOS (S)	%.	89	40-130	12/28/23 15:14	
13C8-PFOSA (S)	%.	87	40-130	12/28/23 15:14	
13C9-PFNA (S)	%.	90	40-130	12/28/23 15:14	
d3-MeFOSAA (S)	%.	91	40-170	12/28/23 15:14	
d3-NMeFOSA (S)	%.	69	10-130	12/28/23 15:14	
d5-EtFOSAA (S)	%.	86	25-135	12/28/23 15:14	
d5-NEtFOSA (S)	%.	68	10-130	12/28/23 15:14	
d7-NMeFOSE (S)	%.	83	10-130	12/28/23 15:14	
d9-NEtFOSE (S)	%.	80	10-130	12/28/23 15:14	

LABORATORY CONTROL SAMPLE: 1500267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	94.5	96.6	102	55-160	
3:3 FTCA	ng/L	125	139	111	65-130	
4:2 FTS	ng/L	93.9	90.0	96	70-145	
5:3 FTCA	ng/L	626	625	100	70-135	
6:2 FTS	ng/L	95.2	98.2	103	65-155	
7:3 FTCA	ng/L	626	616	98	50-145	
8:2 FTS	ng/L	96.4	98.8	102	60-150	
9Cl-PF3ONS	ng/L	93.9	92.0	98	70-155	
ADONA	ng/L	94.5	94.0	99	65-145	
HFPO-DA	ng/L	100	103	103	70-145	
NEtFOSA	ng/L	25	24.1	96	65-145	
NEtFOSAA	ng/L	25	25.1	100	70-145	
NEtFOSE	ng/L	250	245	98	70-135	
NFDHA	ng/L	50.1	52.2	104	50-150	
NMeFOSA	ng/L	25	23.5	94	60-150	
NMeFOSAA	ng/L	25	22.9	91	50-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1500267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
NMeFOSE	ng/L	250	245	98	70-145	
Perfluorobutanesulfonic acid	ng/L	22.2	21.3	96	60-145	
Perfluorodecanoic acid	ng/L	25	23.7	95	70-150	
Perfluorododecanoic acid	ng/L	25	24.1	96	70-140	
Perfluoroheptanoic acid	ng/L	25	24.1	96	70-150	
Perfluorohexanesulfonic acid	ng/L	22.9	21.6	94	65-145	
Perfluorohexanoic acid	ng/L	25	23.7	95	70-145	
Perfluorononanoic acid	ng/L	25	24.1	96	70-150	
Perfluorooctanesulfonic acid	ng/L	23.2	22.5	97	55-150	
Perfluorooctanoic acid	ng/L	25	23.5	94	70-150	
Perfluorotetradecanoic acid	ng/L	25	24.4	98	60-145	
Perfluorotridecanoic acid	ng/L	25	25.1	100	65-140	
Perfluoroundecanoic acid	ng/L	25	25.3	101	70-145	
PFBA	ng/L	100	97.8	98	70-145	
PFDoS	ng/L	24.3	22.9	94	50-145	
PFDS	ng/L	24.2	23.9	99	60-145	
PFEESA	ng/L	44.6	47.6	107	70-145	
PFHpS	ng/L	23.9	23.8	100	70-150	
PFMBA	ng/L	50.1	52.3	105	60-150	
PFMPA	ng/L	50.1	53.2	106	55-140	
PFNS	ng/L	24.1	23.7	99	65-145	
PFOSA	ng/L	25	24.4	98	70-145	
PFPeA	ng/L	50.1	48.8	97	60-135	
PFPeS	ng/L	23.5	23.8	101	65-140	
13C2-PFDoA (S)	%.			78	10-130	
13C2-PFTA (S)	%.			77	40-130	
13C24:2FTS (S)	%.			78	40-200	
13C26:2FTS (S)	%.			78	40-200	
13C28:2FTS (S)	%.			76	40-300	
13C3-PFBS (S)	%.			79	40-135	
13C3-PFHxS (S)	%.			79	40-130	
13C3HFPO-DA (S)	%.			80	40-130	
13C4-PFBA (S)	%.			81	5-130	
13C4-PFHpA (S)	%.			80	40-130	
13C5-PFHxA (S)	%.			80	40-130	
13C5-PFPeA (S)	%.			82	40-130	
13C6-PFDA (S)	%.			79	20-150	
13C7-PFUdA (S)	%.			78	40-130	
13C8-PFOA (S)	%.			81	40-130	
13C8-PFOS (S)	%.			78	40-130	
13C8-PFOSA (S)	%.			76	40-130	
13C9-PFNA (S)	%.			80	40-130	
d3-MeFOSAA (S)	%.			81	40-170	
d3-NMeFOSA (S)	%.			63	10-130	
d5-EtFOSAA (S)	%.			77	25-135	
d5-NEtFOSA (S)	%.			62	10-130	
d7-NMeFOSE (S)	%.			76	10-130	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1500267

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
d9-NEtFOSE (S)	%.			73	10-130	

LABORATORY CONTROL SAMPLE: 1500268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	7.6	7.0	93	40-150	
3:3 FTCA	ng/L	10	10.2	102	40-150	
4:2 FTS	ng/L	7.5	7.1	94	40-150	
5:3 FTCA	ng/L	50	45.9	92	40-150	
6:2 FTS	ng/L	7.6	7.6	99	40-150	
7:3 FTCA	ng/L	50	47.2	94	40-150	
8:2 FTS	ng/L	7.7	7.4	97	40-150	
9Cl-PF3ONS	ng/L	7.5	6.8	91	40-150	
ADONA	ng/L	7.6	7.1	94	40-150	
HFPO-DA	ng/L	8	7.6	95	40-150	
NEtFOSA	ng/L	2	1.8	92	40-150	
NEtFOSAA	ng/L	2	1.9	95	40-150	
NEtFOSE	ng/L	20	18.6	93	40-150	
NFDHA	ng/L	4	3.6	91	40-150	
NMeFOSA	ng/L	2	2.0	102	40-150	
NMeFOSAA	ng/L	2	2.2	111	40-150	
NMeFOSE	ng/L	20	18.4	92	40-150	
Perfluorobutanesulfonic acid	ng/L	1.8	1.8	102	40-150	
Perfluorodecanoic acid	ng/L	2	1.9	94	40-150	
Perfluorododecanoic acid	ng/L	2	1.9	93	40-150	
Perfluoroheptanoic acid	ng/L	2	1.9	97	40-150	
Perfluorohexanesulfonic acid	ng/L	1.8	1.7	95	40-150	
Perfluorohexanoic acid	ng/L	2	1.9	93	40-150	
Perfluorononanoic acid	ng/L	2	2.1	105	40-150	
Perfluorooctanesulfonic acid	ng/L	1.9	1.8	96	40-150	
Perfluorooctanoic acid	ng/L	2	2.0	101	40-150	
Perfluorotetradecanoic acid	ng/L	2	2.0	100	40-150	
Perfluorotridecanoic acid	ng/L	2	2.0	99	40-150	
Perfluoroundecanoic acid	ng/L	2	1.8	88	40-150	
PFBA	ng/L	8	7.5	94	40-150	
PFDoS	ng/L	1.9	1.8	92	40-150	
PFDS	ng/L	1.9	1.7	88	40-150	
PFEESA	ng/L	3.6	3.4	96	40-150	
PFHpS	ng/L	1.9	2.1	108	40-150	
PFMBA	ng/L	4	3.7	92	40-150	
PFMPA	ng/L	4	3.9	98	40-150	
PFNS	ng/L	1.9	1.7	86	40-150	
PFOSA	ng/L	2	2.0	101	40-150	
PFPeA	ng/L	4	3.7	92	40-150	
PFPeS	ng/L	1.9	1.9	100	40-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1500268

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
13C2-PFDoA (S)	%.			78	10-130	
13C2-PFTA (S)	%.			75	40-130	
13C24:2FTS (S)	%.			82	40-200	
13C26:2FTS (S)	%.			84	40-200	
13C28:2FTS (S)	%.			79	40-300	
13C3-PFBS (S)	%.			79	40-135	
13C3-PFHxS (S)	%.			78	40-130	
13C3HFPO-DA (S)	%.			81	40-130	
13C4-PFBA (S)	%.			81	5-130	
13C4-PFHpA (S)	%.			82	40-130	
13C5-PFHxA (S)	%.			82	40-130	
13C5-PFPeA (S)	%.			83	40-130	
13C6-PFDA (S)	%.			82	20-150	
13C7-PFUdA (S)	%.			80	40-130	
13C8-PFOA (S)	%.			82	40-130	
13C8-PFOS (S)	%.			79	40-130	
13C8-PFOSA (S)	%.			76	40-130	
13C9-PFNA (S)	%.			78	40-130	
d3-MeFOSAA (S)	%.			81	40-170	
d3-NMeFOSA (S)	%.			66	10-130	
d5-EtFOSAA (S)	%.			75	25-135	
d5-NEtFOSA (S)	%.			67	10-130	
d7-NMeFOSE (S)	%.			76	10-130	
d9-NEtFOSE (S)	%.			74	10-130	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

QC Batch: 313623
QC Batch Method: EPA 1633
Analysis Method: EPA 1633
Analysis Description: BR PFAS in Water by EPA 1633
Laboratory: Pace Analytical Services - Baton Rouge
Associated Lab Samples: 20300170002, 20300170005, 20300170006, 20300170007

METHOD BLANK: 1501490 Matrix: Water
Associated Lab Samples: 20300170002, 20300170005, 20300170006, 20300170007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
11Cl-PF3OUdS	ng/L	ND	4.0	12/30/23 04:31	
3:3 FTCA	ng/L	ND	5.0	12/30/23 04:31	
4:2 FTS	ng/L	ND	4.0	12/30/23 04:31	
5:3 FTCA	ng/L	ND	25.0	12/30/23 04:31	
6:2 FTS	ng/L	ND	4.0	12/30/23 04:31	
7:3 FTCA	ng/L	ND	25.0	12/30/23 04:31	
8:2 FTS	ng/L	ND	4.0	12/30/23 04:31	
9Cl-PF3ONS	ng/L	ND	4.0	12/30/23 04:31	
ADONA	ng/L	ND	4.0	12/30/23 04:31	
HFPO-DA	ng/L	ND	4.0	12/30/23 04:31	
NEtFOSA	ng/L	ND	1.0	12/30/23 04:31	
NEtFOSAA	ng/L	ND	1.0	12/30/23 04:31	
NEtFOSE	ng/L	ND	10.0	12/30/23 04:31	
NFDHA	ng/L	ND	2.0	12/30/23 04:31	
NMeFOSA	ng/L	ND	1.0	12/30/23 04:31	
NMeFOSAA	ng/L	ND	1.0	12/30/23 04:31	
NMeFOSE	ng/L	ND	10.0	12/30/23 04:31	
Perfluorobutanesulfonic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorodecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorododecanoic acid	ng/L	ND	1.0	12/30/23 04:31	2b
Perfluoroheptanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorohexanesulfonic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorohexanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorononanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorooctanesulfonic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorooctanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorotetradecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluorotridecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
Perfluoroundecanoic acid	ng/L	ND	1.0	12/30/23 04:31	
PFBA	ng/L	ND	4.0	12/30/23 04:31	
PFDoS	ng/L	ND	1.0	12/30/23 04:31	
PFDS	ng/L	ND	1.0	12/30/23 04:31	
PFEESA	ng/L	ND	2.0	12/30/23 04:31	
PFHpS	ng/L	ND	1.0	12/30/23 04:31	
PFMBA	ng/L	ND	2.0	12/30/23 04:31	
PFMPA	ng/L	ND	2.0	12/30/23 04:31	
PFNS	ng/L	ND	1.0	12/30/23 04:31	
PFOSA	ng/L	ND	1.0	12/30/23 04:31	
PFPeA	ng/L	ND	2.0	12/30/23 04:31	
PFPeS	ng/L	ND	1.0	12/30/23 04:31	

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(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

METHOD BLANK: 1501490 Matrix: Water
Associated Lab Samples: 20300170002, 20300170005, 20300170006, 20300170007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
13C2-PFDoA (S)	%.	74	10-130	12/30/23 04:31	
13C2-PFTA (S)	%.	77	40-130	12/30/23 04:31	
13C24:2FTS (S)	%.	79	40-200	12/30/23 04:31	
13C26:2FTS (S)	%.	73	40-200	12/30/23 04:31	
13C28:2FTS (S)	%.	70	40-300	12/30/23 04:31	
13C3-PFBS (S)	%.	83	40-135	12/30/23 04:31	
13C3-PFHxS (S)	%.	78	40-130	12/30/23 04:31	
13C3HFPO-DA (S)	%.	83	40-130	12/30/23 04:31	
13C4-PFBA (S)	%.	78	5-130	12/30/23 04:31	
13C4-PFHpA (S)	%.	77	40-130	12/30/23 04:31	
13C5-PFHxA (S)	%.	79	40-130	12/30/23 04:31	
13C5-PFPeA (S)	%.	81	40-130	12/30/23 04:31	
13C6-PFDA (S)	%.	78	20-150	12/30/23 04:31	
13C7-PFUdA (S)	%.	76	40-130	12/30/23 04:31	
13C8-PFOA (S)	%.	80	40-130	12/30/23 04:31	
13C8-PFOS (S)	%.	78	40-130	12/30/23 04:31	
13C8-PFOSA (S)	%.	73	40-130	12/30/23 04:31	
13C9-PFNA (S)	%.	81	40-130	12/30/23 04:31	
d3-MeFOSAA (S)	%.	76	40-170	12/30/23 04:31	
d3-NMeFOSA (S)	%.	45	10-130	12/30/23 04:31	
d5-EtFOSAA (S)	%.	73	25-135	12/30/23 04:31	
d5-NEtFOSA (S)	%.	43	10-130	12/30/23 04:31	
d7-NMeFOSE (S)	%.	47	10-130	12/30/23 04:31	
d9-NEtFOSE (S)	%.	46	10-130	12/30/23 04:31	

LABORATORY CONTROL SAMPLE: 1501491

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	94.5	108	115	55-160	
3:3 FTCA	ng/L	125	141	112	65-130	
4:2 FTS	ng/L	93.9	91.4	97	70-145	
5:3 FTCA	ng/L	626	605	97	70-135	
6:2 FTS	ng/L	95.2	98.6	104	65-155	
7:3 FTCA	ng/L	626	628	100	50-145	
8:2 FTS	ng/L	96.4	100	104	60-150	
9Cl-PF3ONS	ng/L	93.9	106	113	70-155	
ADONA	ng/L	94.5	98.2	104	65-145	
HFPO-DA	ng/L	100	112	112	70-145	
NEtFOSA	ng/L	25	23.7	94	65-145	
NEtFOSAA	ng/L	25	24.4	97	70-145	
NEtFOSE	ng/L	250	244	97	70-135	
NFDHA	ng/L	50.1	61.3	122	50-150	
NMeFOSA	ng/L	25	24.4	97	60-150	
NMeFOSAA	ng/L	25	24.2	97	50-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1501491

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
NMeFOSE	ng/L	250	251	100	70-145	
Perfluorobutanesulfonic acid	ng/L	22.2	21.3	96	60-145	
Perfluorodecanoic acid	ng/L	25	24.1	96	70-150	
Perfluorododecanoic acid	ng/L	25	23.4	93	70-140	2b
Perfluoroheptanoic acid	ng/L	25	23.3	93	70-150	
Perfluorohexanesulfonic acid	ng/L	22.9	22.3	97	65-145	
Perfluorohexanoic acid	ng/L	25	23.6	94	70-145	
Perfluorononanoic acid	ng/L	25	23.2	93	70-150	
Perfluorooctanesulfonic acid	ng/L	23.2	21.7	93	55-150	
Perfluorooctanoic acid	ng/L	25	22.7	91	70-150	
Perfluorotetradecanoic acid	ng/L	25	24.3	97	60-145	
Perfluorotridecanoic acid	ng/L	25	24.6	98	65-140	
Perfluoroundecanoic acid	ng/L	25	25.0	100	70-145	
PFBA	ng/L	100	96.8	97	70-145	
PFDoS	ng/L	24.3	20.2	83	50-145	
PFDS	ng/L	24.2	21.8	90	60-145	
PFEESA	ng/L	44.6	61.9	139	70-145	
PFHpS	ng/L	23.9	24.4	102	70-150	
PFMBA	ng/L	50.1	57.4	115	60-150	
PFMPA	ng/L	50.1	59.2	118	55-140	
PFNS	ng/L	24.1	23.2	96	65-145	
PFOSA	ng/L	25	24.3	97	70-145	
PFPeA	ng/L	50.1	48.0	96	60-135	
PFPeS	ng/L	23.5	23.3	99	65-140	
13C2-PFDoA (S)	%.			78	10-130	
13C2-PFTA (S)	%.			76	40-130	
13C24:2FTS (S)	%.			75	40-200	
13C26:2FTS (S)	%.			69	40-200	
13C28:2FTS (S)	%.			69	40-300	
13C3-PFBS (S)	%.			87	40-135	
13C3-PFHxS (S)	%.			80	40-130	
13C3HFPO-DA (S)	%.			88	40-130	
13C4-PFBA (S)	%.			82	5-130	
13C4-PFHpA (S)	%.			82	40-130	
13C5-PFHxA (S)	%.			86	40-130	
13C5-PFPeA (S)	%.			86	40-130	
13C6-PFDA (S)	%.			80	20-150	
13C7-PFUdA (S)	%.			78	40-130	
13C8-PFOA (S)	%.			83	40-130	
13C8-PFOS (S)	%.			83	40-130	
13C8-PFOSA (S)	%.			79	40-130	
13C9-PFNA (S)	%.			84	40-130	
d3-MeFOSAA (S)	%.			86	40-170	
d3-NMeFOSA (S)	%.			49	10-130	
d5-EtFOSAA (S)	%.			80	25-135	
d5-NEtFOSA (S)	%.			48	10-130	
d7-NMeFOSE (S)	%.			58	10-130	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1501491

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
d9-NEtFOSE (S)	%.			56	10-130	

LABORATORY CONTROL SAMPLE: 1501492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11Cl-PF3OUdS	ng/L	7.6	7.8	103	40-150	
3:3 FTCA	ng/L	10	9.6	96	40-150	
4:2 FTS	ng/L	7.5	6.9	92	40-150	
5:3 FTCA	ng/L	50	42.2	84	40-150	
6:2 FTS	ng/L	7.6	7.4	98	40-150	
7:3 FTCA	ng/L	50	41.7	83	40-150	
8:2 FTS	ng/L	7.7	7.7	100	40-150	
9Cl-PF3ONS	ng/L	7.5	7.4	98	40-150	
ADONA	ng/L	7.6	6.5	86	40-150	
HFPO-DA	ng/L	8	7.5	94	40-150	
NEtFOSA	ng/L	2	1.8	88	40-150	
NEtFOSAA	ng/L	2	1.9	97	40-150	
NEtFOSE	ng/L	20	18.3	91	40-150	
NFDHA	ng/L	4	3.9	97	40-150	
NMeFOSA	ng/L	2	1.8	91	40-150	
NMeFOSAA	ng/L	2	1.9	93	40-150	
NMeFOSE	ng/L	20	18.4	92	40-150	
Perfluorobutanesulfonic acid	ng/L	1.8	1.6	90	40-150	
Perfluorodecanoic acid	ng/L	2	1.9	96	40-150	
Perfluorododecanoic acid	ng/L	2	1.8	91	40-150	2b
Perfluoroheptanoic acid	ng/L	2	1.8	92	40-150	
Perfluorohexanesulfonic acid	ng/L	1.8	1.8	96	40-150	
Perfluorohexanoic acid	ng/L	2	1.9	94	40-150	
Perfluorononanoic acid	ng/L	2	1.8	90	40-150	
Perfluorooctanesulfonic acid	ng/L	1.9	1.8	98	40-150	
Perfluorooctanoic acid	ng/L	2	2.0	98	40-150	
Perfluorotetradecanoic acid	ng/L	2	1.8	88	40-150	
Perfluorotridecanoic acid	ng/L	2	1.9	97	40-150	
Perfluoroundecanoic acid	ng/L	2	1.8	88	40-150	
PFBA	ng/L	8	7.3	92	40-150	
PFDoS	ng/L	1.9	1.6	84	40-150	
PFDS	ng/L	1.9	1.8	91	40-150	
PFEESA	ng/L	3.6	4.0	112	40-150	
PFHpS	ng/L	1.9	1.9	97	40-150	
PFMBA	ng/L	4	3.6	89	40-150	
PFMPA	ng/L	4	3.7	93	40-150	
PFNS	ng/L	1.9	1.7	90	40-150	
PFOSA	ng/L	2	2.0	102	40-150	
PFPeA	ng/L	4	3.7	92	40-150	
PFPeS	ng/L	1.9	1.7	88	40-150	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

LABORATORY CONTROL SAMPLE: 1501492

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
13C2-PFDoA (S)	%.			79	10-130	
13C2-PFTA (S)	%.			77	40-130	
13C24:2FTS (S)	%.			80	40-200	
13C26:2FTS (S)	%.			75	40-200	
13C28:2FTS (S)	%.			72	40-300	
13C3-PFBS (S)	%.			83	40-135	
13C3-PFHxS (S)	%.			78	40-130	
13C3HFPO-DA (S)	%.			83	40-130	
13C4-PFBA (S)	%.			79	5-130	
13C4-PFHpA (S)	%.			77	40-130	
13C5-PFHxA (S)	%.			80	40-130	
13C5-PFPeA (S)	%.			81	40-130	
13C6-PFDA (S)	%.			79	20-150	
13C7-PFUdA (S)	%.			77	40-130	
13C8-PFOA (S)	%.			83	40-130	
13C8-PFOS (S)	%.			80	40-130	
13C8-PFOSA (S)	%.			73	40-130	
13C9-PFNA (S)	%.			79	40-130	
d3-MeFOSAA (S)	%.			82	40-170	
d3-NMeFOSA (S)	%.			48	10-130	
d5-EtFOSAA (S)	%.			77	25-135	
d5-NEtFOSA (S)	%.			46	10-130	
d7-NMeFOSE (S)	%.			58	10-130	
d9-NEtFOSE (S)	%.			55	10-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1501493 1501494

Parameter	Units	20300170002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
11Cl-PF3OUdS	ng/L	ND	2360	2360	2760	2580	117	109	55-160	7	30	
3:3 FTCA	ng/L	ND	3130	3130	2930	2820	94	90	65-130	4	30	
4:2 FTS	ng/L	ND	2350	2350	2300	2240	98	96	70-145	3	30	
5:3 FTCA	ng/L	ND	15600	15600	12600	12400	81	79	70-135	2	30	
6:2 FTS	ng/L	ND	2380	2380	2420	2380	102	100	65-155	2	30	
7:3 FTCA	ng/L	ND	15600	15600	13500	13100	86	83	50-145	3	30	
8:2 FTS	ng/L	ND	2410	2410	2500	2500	104	103	60-150	0	30	
9Cl-PF3ONS	ng/L	ND	2350	2350	2620	2460	111	105	70-155	6	30	
ADONA	ng/L	ND	2360	2360	2420	2230	102	95	65-145	8	30	
HFPO-DA	ng/L	ND	2500	2500	2730	2530	109	101	70-145	8	30	
NEtFOSA	ng/L	ND	626	626	606	628	97	100	65-145	4	30	
NEtFOSAA	ng/L	ND	626	626	634	591	101	94	70-145	7	30	
NEtFOSE	ng/L	ND	6260	6260	6150	6000	98	96	70-135	3	30	
NFDHA	ng/L	ND	1250	1250	1450	1150	115	92	50-150	23	30	
NMeFOSA	ng/L	ND	626	626	613	615	98	98	60-150	0	30	
NMeFOSAA	ng/L	ND	626	626	635	620	101	99	50-150	2	30	

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QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1501493 1501494

Parameter	Units	20300170002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
NMeFOSE	ng/L	ND	6260	6260	6230	6040	99	96	70-145	3	30	
Perfluorobutanesulfonic acid	ng/L	ND	556	556	530	507	95	91	60-145	4	30	
Perfluorodecanoic acid	ng/L	ND	626	626	578	554	92	88	70-150	4	30	
Perfluorododecanoic acid	ng/L	ND	626	626	581	576	92	91	70-140	1	30	2b
Perfluoroheptanoic acid	ng/L	ND	626	626	585	569	93	90	70-150	3	30	
Perfluorohexanesulfonic acid	ng/L	ND	573	573	538	537	93	93	65-145	0	30	
Perfluorohexanoic acid	ng/L	ND	626	626	595	563	94	89	70-145	6	30	
Perfluorononanoic acid	ng/L	ND	626	626	564	545	90	87	70-150	3	30	
Perfluorooctanesulfonic acid	ng/L	ND	581	581	552	512	94	88	55-150	8	30	
Perfluorooctanoic acid	ng/L	ND	626	626	582	539	92	85	70-150	8	30	
Perfluorotetradecanoic acid	ng/L	ND	626	626	617	597	99	95	60-145	3	30	
Perfluorotridecanoic acid	ng/L	ND	626	626	607	588	96	93	65-140	3	30	
Perfluoroundecanoic acid	ng/L	ND	626	626	613	593	98	95	70-145	3	30	
PFBA	ng/L	ND	2500	2500	2420	2320	97	93	70-145	4	30	
PFDoS	ng/L	ND	607	607	527	507	87	83	50-145	4	30	
PFDS	ng/L	ND	604	604	564	539	93	89	60-145	5	30	
PFEESA	ng/L	ND	1110	1110	1450	1150	130	103	70-145	23	30	
PFHpS	ng/L	ND	596	596	579	583	97	98	70-150	1	30	
PFMBA	ng/L	ND	1250	1250	1340	1040	107	83	60-150	25	30	
PFMPA	ng/L	ND	1250	1250	1370	1060	110	84	55-140	26	30	
PFNS	ng/L	ND	603	603	579	552	96	92	65-145	5	30	
PFOSA	ng/L	ND	626	626	596	570	95	91	70-145	4	30	
PFPeA	ng/L	ND	1250	1250	1190	1150	95	92	60-135	4	30	
PFPeS	ng/L	ND	588	588	559	572	95	97	65-140	2	30	
13C2-PFDoA (S)	%.						86	80	10-130			
13C2-PFTA (S)	%.						82	76	40-130			
13C24:2FTS (S)	%.						78	73	40-200			
13C26:2FTS (S)	%.						76	71	40-200			
13C28:2FTS (S)	%.						72	66	40-300			
13C3-PFBS (S)	%.						89	86	40-135			
13C3-PFHxS (S)	%.						85	79	40-130			
13C3HFPO-DA (S)	%.						89	84	40-130			
13C4-PFBA (S)	%.						85	80	5-130			
13C4-PFHpA (S)	%.						84	77	40-130			
13C5-PFHxA (S)	%.						87	80	40-130			
13C5-PFPeA (S)	%.						88	82	40-130			
13C6-PFDA (S)	%.						85	80	20-150			
13C7-PFUdA (S)	%.						81	78	40-130			
13C8-PFOA (S)	%.						88	83	40-130			
13C8-PFOS (S)	%.						86	79	40-130			
13C8-PFOSA (S)	%.						82	78	40-130			
13C9-PFNA (S)	%.						85	82	40-130			
d3-MeFOSAA (S)	%.						88	82	40-170			

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(225) 769-4900

QUALITY CONTROL DATA

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1501493 1501494

Parameter	Units	20300170002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
d3-NMeFOSA (S)	%.						56	50	10-130			
d5-EtFOSAA (S)	%.						81	77	25-135			
d5-NEtFOSA (S)	%.						55	49	10-130			
d7-NMeFOSE (S)	%.						60	55	10-130			
d9-NEtFOSE (S)	%.						57	52	10-130			

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(225) 769-4900

QUALIFIERS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The Nelac Institute

SAMPLE QUALIFIERS

Sample: 20300170001
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170002
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170003
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170004
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170005
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170006
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

Sample: 20300170007
[1] For method EPA 1633, the sample was extracted at a reduced volume based on observation of potential matrix interference. As a result, reporting limits are elevated.

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Pace Analytical Services, LLC
7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALIFIERS

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

ANALYTE QUALIFIERS

1b	Analyte was detected in an associated instrument blank.
2b	Analyte was detected in an associated instrument blank.

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7979 Innovation Park Drive
Baton Rouge, LA 70820
(225) 769-4900

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: HF221083 TYNDALL WEG HANGAR
Pace Project No.: 20300170

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
20300170001	**POST TREATMENT**	EPA 1633	313312	EPA 1633	313679
20300170002	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834
20300170003	**POST TREATMENT**	EPA 1633	313312	EPA 1633	313679
20300170004	**POST TREATMENT**	EPA 1633	313312	EPA 1633	313679
20300170005	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834
20300170006	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834
20300170007	**POST TREATMENT**	EPA 1633	313623	EPA 1633	313834

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Pace® Location Requested (City/State):
Pace Analytical Baton Rouge
7979 Innovation Park Dr, Suite A
Baton Rouge, LA 70820

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

WO# : 20300170

20300170

Company Name:	TERRACON	Contact/Report To:	Renee Eddins
Street Address:	2930 Wellington Circle, Suite 201 Tallahassee, FL 32309	Phone #:	
		E-Mail:	renee.eddins@terracon.com
		Cc E-Mail:	
Customer Project #:		Invoice To:	Accounts Payable
Project Name:	HF221083 Tyndall WEG Hanger	Invoice E-Mail:	invoices@terracon.coupahost.com
Site Collection Info/Facility ID (as applicable):		Purchase Order # (if applicable):	
		Quote #:	
Time Zone Collected: [ ] AK [ ] PT [ ] MT [ ] CT [ ] ET		County / State origin of sample(s):	Florida

Data Deliverables:
[ ] Level II [ ] Level III [ ] Level IV
[ ] EQUIS
[ ] Other_____

Regulatory Program (DW, RCRA, etc.) as applicable:

Rush (Pre-approval required):
[ ] 2 Day [ ] 3 day [ ] 5 day [ ] Other_____

Date Results Requested:

DW PWSID # or WW Permit # as applicable:

Field Filtered (if applicable): [ ] Yes [ ] No

Analysis:

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Other (OT), Surface Water (SW),Sediment (SED), Sludge (SL), Caulk

Specify Container Size **

Identify Container Preservative Type***

Analysis Requested

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only

Proj. Mgr: Melissa MacNaughton
AcctNum / Client ID:
Table #:
Profile / Template: 18522
Prelog / Bottle Ord. ID: EZ 3033015

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res. CL2	Number & Type of Containers Plastic	Number & Type of Containers Glass	PFAS in Water by EPA 1633	PFAS-TSS screening	Sample Comment	Preservation non-conformance identified for sample.
Post treatment					12-8-23	9:02						1	
Post treatment					12-6-23	11:00						2	
Post treatment					11-30-23	15:48						3	
					12-1-23	13:50						4	
					12-7-23	9:00						5	
					12-4-23	12:22						6	
					12-5-23	11:28						7	

Customer Remarks / Special Conditions / Possible Hazards:

Collected By:
Printed Name:
Signature:

Additional Instructions from Pace®:

# Coolers:	Thermometer ID:	Correction Factor (°C):	Obs. Temp. (°C)	Corrected Temp. (°C)

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Tracking Number:
	12/9/23 1005		12/12/23 1005	
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time: 1300	Delivered by: [ ] In- Person [ ] Courier
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	[ ] FedEx [ ] UPS [ ] Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	Page: 1 of 2

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace® Terms and Conditions found at https://www.pacelabs.com/resource-library/resource/pace-terms-and-conditions/

Pace

Sample Condition Upon Reciept (S

Workorder

WO#: 20300170

PM: MM1 Due Date: 12/18/23

CLIENT: BR-TERRACON

7979 Innovation Park Dr. Baton Rouge, LA 70806

Cooler Inspected by/date: BRP / 12/12/23

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other: _____				
☑ Yes	☐ No		Were custody seals present on the cooler?	
☑ Yes	☐ No	☐ NA	If custody seals were present, were they intact and unbroken?	
Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 6171 IR Gun Correction Factor: 0 °C				
Cooler #1 Cooler Temp °C: 1.7 (Actual/True)			Samples on ice ☑ Yes ☐ No	pH Strip Lot #
Cooler #2 Cooler Temp °C: _____ (Actual/True)				
Cooler #3 Cooler Temp °C: _____ (Actual/True)			Method of coolant: ☑ Wet ☐ Ice Packs ☐ Dry Ice ☐ None	
Cooler #4 Cooler Temp °C: _____ (Actual/True)				
Tracking #:				
☐ Yes	☑ No	☐ NA	Is a temperature blank present?	
☑ Yes	☐ No	☐ NA	Was a chain of custody (COC) recieved?	
☑ Yes	☐ No	☐ NA	Was the line and profile number listed on the COC?	
☑ Yes	☐ No	☐ NA	Were all coolers received at or below 6.0°C? If no, notify Project Manager notified via email.	
☑ Yes	☐ No		Were proper custody procedures (relinquished/received) followed?	
☐ Yes	☑ No	☐ NA	Is the sampler name and signature on the COC?	
☑ Yes	☐ No		Were sample IDs listed on the COC and all sample containers?	
☑ Yes	☐ No		Was collection date & time listed on the COC and all sample containers?	
☑ Yes	☐ No		Did all container label information (ID, date, time) agree with the COC?	
☑ Yes	☐ No		Were tests to be performed listed on the COC?	
☑ Yes	☐ No		Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?	
☑ Yes	☐ No		Was adequate sample volume available?	
☑ Yes	☐ No		Were all samples received within ½ the holding time or 48 hours, whichever comes first?	
☑ Yes	☐ No		Were all samples containers accounted for? (No missing / excess)	
☐ Yes	☐ No	☑ NA	Were VOA, 8015C (GRO/VPH), and RSK-175 samples free of bubbles > "pea size" (1/4" or 6mm in diameter) in any of the VOA vials?	
☐ Yes	☐ No	☑ NA	Trip blank present?	
☐ Yes	☐ No	☑ NA	Filtered volume received for dissolved tests? *If no, list affected sample(s) in comments below.*	
☐ Yes	☐ No	☑ NA	Were all metals/nutrient samples received at a pH of < 2?	If No, was preservative added? ☐ Yes ☐ No If added, record lots. Dispenser/pipette lot #: _____
☐ Yes	☐ No	☑ NA	Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?	HNO_3_____ H_2SO_4 _____ NaOH_____ Date: _____ Time:_____

Comments:

From: [redacted] USARMY CESAM (USA)
To: [redacted] USARMY CEHNC (USA)
Subject: FW: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area
Date: Thursday, May 30, 2024 4:24:24 PM
Importance: High

From: [redacted] USAF AFMC AFCEC/CZOE [redacted]
Sent: Tuesday, January 17, 2023 1:26 PM
To: [redacted] USAF AFMC AFCEC/CZRE [redacted]; [redacted] USARMY CESAM (USA) [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZOE [redacted]; [redacted] USARMY CESAM (USA) [redacted]; [redacted] USAF AFMC AFCEC/CZRE [redacted]; [redacted] (USA) [redacted]; [redacted] USARMY CESAM (USA) [redacted]
Subject: RE: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

We also need to resolve the boundary for the Silver Flag Fire Training Site. Tetra Tech has submitted a possible boundary for us to approve to send to USACE-Mobile staff working on the Tyndall MILCON-Rebuild (i.e. [redacted]).

From: [redacted] USAF AFMC AFCEC/CZRE [redacted]
Sent: Tuesday, January 17, 2023 1:09 PM
To: [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZOE [redacted]>; [redacted] USAF AFMC AFCEC/CZOE [redacted]; [redacted] USARMY CESAM (USA) [redacted]>; [redacted] USAF AFMC AFCEC/CZRE [redacted]>; [redacted] (USA) [redacted]; [redacted] USARMY CESAM (USA) [redacted]
Subject: RE: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

[redacted],

We require a discussion on the language of the RFP before it is issued, that was the point made in our meeting last Wednesday. We requested and you agreed on facilitating a 15-30 minute meeting with you and Contracting to clear up future concerns the AF has that do not appear to have not been alleviated with the current version of the RFP.

Largest issue: how can we introduce language to alleviate future mods as the MILCON footprint changes over the years. All this current RFP does is limit boundaries given the current snapshot in time. We want to make sure that we are using the contract to its full potential with 'living boundaries' as MILCON and ERA projects evolve.

The AF does not concur with the distribution of the RFP until this occurs as we were not consulted on the final version of the RFP. All of this should and can be resolved relatively quickly.

Thanks,

[redacted]

//SIGNED//

[redacted]
Restoration Program Manager
Air Force Civil Engineering Center
Environmental Restoration, Eastern Branch (CZRE)
3515 S General McMullen Dr
San Antonio, TX 78226
[redacted]
[redacted]

Physical mail services not provided to my unit. Request electronic mail only.

From: [redacted] USARMY CESAM (USA) [redacted]
Sent: Tuesday, January 17, 2023 12:53 PM
To: [redacted] USAF AFMC AFCEC/CZRE [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZOE [redacted]>; [redacted] USAF AFMC AFCEC/CZOE [redacted]; [redacted] USARMY CESAM (USA) [redacted]>; [redacted] USAF AFMC AFCEC/CZRE [redacted]; [redacted] (USA) [redacted]; [redacted] USARMY CESAM (USA) [redacted]
Subject: RE: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

[redacted]

This has been discussed with the KO and the preference is to issue the RFP so they can be aware of the changes and they can then plan accordingly. The SOW was submitted to ENTS last week and the RFP is in their queue. We will provide an update as soon as possible and a copy of the RFP as soon as it is issued.
Thanks,
[redacted]

From: [redacted] USAF AFMC AFCEC/CZRE [redacted]
Sent: Tuesday, January 17, 2023 11:10 AM
To: [redacted] USARMY CESAM (USA) [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZOE [redacted]; [redacted]

[redacted] USAF AFMC AFCEC/CZOE [redacted]>; [redacted] USARMY CESAM (USA) [redacted]>; [redacted] USAF AFMC AFCEC/CZRE [redacted]>; [redacted] (USA) [redacted]
Subject: FW: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

[redacted]

Per our meeting last week, please let us know our meeting options for tomorrow with USACE Contracting and yourself ASAP. If [redacted] is unavailable, please help us discuss with one of his specialists or someone else in acting in his place during his absence.

Thanks,

[redacted]

//SIGNED//

[redacted]
Restoration Program Manager
Air Force Civil Engineering Center
Environmental Restoration, Eastern Branch (CZRE)
3515 S General McMullen Dr
San Antonio, TX 78226
[redacted]
[redacted]

Physical mail services not provided to my unit. Request electronic mail only.

From: [redacted] USAF AFMC AFCEC/CZOE [redacted]
Sent: Tuesday, January 17, 2023 9:31 AM
To: [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZRE [redacted]; [redacted]; [redacted] USARMY CESAM (USA) [redacted]; [redacted]
Subject: RE: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

Hey [redacted].

The boundary you provided is appropriate. Thanks for getting it over to us so quickly. I will be sure we get the boundary you have drawn hooked into the Silver Flag Spray Field northern boundary line so we have some continuity with these two sites.

As I mentioned during the recent bi-weekly meeting, and based on comments from USACE-Mobile staff ([redacted]), we plan to add language to the upcoming Mod that will allow us to fully delineate PFAS sites where the MILCON-Rebuild activities end in Zones our sites are encroaching on. The Silver Flag Fire Training Area site is one of those sites.

I'm sure we will bring Tetra Tech into the discussion of the language for this Mod before it is finalized for your review and comment.

[redacted]

From: [redacted]
Sent: Monday, January 16, 2023 2:45 PM
To: [redacted] USAF AFMC AFCEC/CZOE [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZRE [redacted]; [redacted]; [redacted] USARMY CESAM (USA) [redacted]>; [redacted]
Subject: [Non-DoD Source] RE: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

Hello [redacted]

For reference, attached is the partnering slide showing the historical PFAS concentrations at the Silver Flag Fire Training Area. Also attached is a figure with a topography overlay to illustrate surface water/groundwater flow direction. I added a dotted line to show what I anticipate to be the minimum area where we would need to sample, however, I would not be surprised if PFAS exceedances extended much farther east and west into these drainage features.

So the overall question would be, is there any way to avoid adding a limiting boundary to this area? These are the highest PFAS concentrations on base, by an order of magnitude. I think this is going to be one of the, if not the largest groundwater plume. It would be beneficial if we could avoid any limiting boundary for this area, if possible.

I am available most of the day tomorrow if you would like to discuss further.

Thanks!

[redacted] | Operations Manager | Sr. Project Manager
[redacted]

Tetra Tech | *Leading with Science*®
63 South Royal Street, Suite 1106, Mobile, Alabama 36602
www.tetratech.com | NASDAQ:TTEK

From: [redacted] USAF AFMC AFCEC/CZOE [redacted]
Sent: Friday, January 13, 2023 10:46 AM

To: [redacted]
Cc: [redacted] USAF AFMC AFCEC/CZRE [redacted]; [redacted]; [redacted] USARMY CESAM (USA) [redacted]
Subject: Please submit to me a figure outlining a PFAS site boundary for the Silver Flag Fire Training Area

Hey [redacted].

Please submit to me a figure that outlines our expectation of the PFAS site boundary for the Silver Flag Fire Training Area.

[redacted] relayed to me that we should put something together that we think best depicts this boundary and then submit it to her for review and approval.

Please have this figure ready for a possible meeting on Wednesday, January 18 (submit by 0830 on January 18). Thanks.

[redacted]

[redacted]
AFCEC/CZOE, Environmental Restoration Program Manager
Tyndall AFB RPM
[redacted]
[redacted]

CS Beatty
CONSTRUCTION

DEWATERING PLAN

FLIGHTLINE AIRCRAFT SHELTERS

TYNDALL AIR FORCE BASE, FL

CONTRACT NO. W9127823F0424

19 FEB 2024

CS Beatty

1 Civitan Place
Birmingham, AL 35213

(205) 879-5788
www.csbeatty.com

CS Beatty
CONSTRUCTION

PROJECT OVERVIEW

[redacted]

Based on the geotechnical report conducted by Thompson Engineering on May 20, 2022, it was concluded that the groundwater within the footprint of the project was discovered at approximately three feet below existing grade at the time of sampling. Due to the depth of subgrade removal and repair activities, as well as installation of new shelter footings, we believe that dewatering efforts will need to be installed and sustained throughout the majority of the duration of the project.

DEWATERING PROCEDURES

[redacted] Due to the location and extents of the shelters, each shelter will require its own dewatering system. The dewatering systems will consist of a wellpoint and header system that will span the perimeter of each shelter. Each wellpoint will be inserted to a maximum depth of ten feet, with wellpoint spacing of approximately three to five feet apart. Each wellpoint will have a vertical cone of influence of 1.5 times the depth of the wellpoint, please reference 'Diagram B' on page 17 for approximate zone of influence illustration. Localized wellpoints will not extract groundwater below the maximum depth of the wellpoint insertion, which will help to minimize the zone of influences disturbance outside of the system. Each shelter's dewatering system will run to a centralized pump that will discharge to the approved effluent discharge zone at the West end of the taxiway. Through efficient project scheduling and sequencing, we plan on relocating the wellpoint system from each shelter to the next as construction progresses to minimize the disturbance to the site as well as limit the amount of effluent groundwater discharged into the re-filtration zone. Locations, product data and equipment used for the wellpoint dewatering system, as well as installation diagrams, are shown on pages 15-19.

The projected time frame of dewatering activities will endure the majority of the project, which is estimated to be February of 2024 to April of 2025. Through the process of conducting our pilot study, as outlined in the following paragraphs, we were able to estimate our expected rate of dewatering to be within the range of one to five-thousand gallons per hour. The expected duration of dewatering is two months for each shelter which would total to twelve months of dewatering. Therefore, in total, we expect to generate in the range of nine to forty-four million gallons of effluent throughout the duration of the project. Due to the initial drawdown of dewatering activities at each shelter, and addition to the ongoing dewatering activities at the existing neighboring project to the south, we expect this total volume to be at the lower end of

our estimated range. The effluent discharged at the estimated average rate of 2,500 gallons per hour will be discharged into the re-infiltration gallery as outlined below in this plan.

AFFF CONTAMINANT PILOT STUDY

Due to the Tyndall Flightline Aircraft Shelters project being located within a known AFFF contaminated zone, a groundwater sampling pilot study was conducted to determine the current contaminant levels as they exist on site. The approved sampling plan and reported findings are shown as attachments A and B to this plan.

This pilot study consisted of installing dewatering wellpoints, 18 to 20 foot in depth, at two locations on site. Locations for these wellpoints were determined by analyzing the test reports and groundwater studies shown in the "Arcadis April 2021 AFFF Soil and Groundwater Sampling Report" as well the "Aerostar September 2018 Final Site Inspections Report of Fire Fighting Foam Usage". We determined that the area of most concern, shown as test 15MW0017 on Exhibit C of the plan, was along the southern most limits of our project, thus the reason for the two wellpoint locations within the pilot study. Groundwater was extracted through the wellpoint system for a 24-hour duration and stored on site within a contained holding tank. Once extracted, the groundwater was sent through a granular activated carbon system to be treated. Samples were taken on the influent and effluent groundwater to determine the contaminant levels of the existing groundwater, as well as the effectiveness of the GAC treatment system. Samples were taken by NOVA Engineering and Environmental and tested to determine the influent and effluent levels of PFOA/PFOS, results of these tests are shown in attachment B.

By conducting the pilot study, we were also able to determine the estimated amount of groundwater that we expect to encounter throughout construction activities. Groundwater extracted in the pilot study was pumped for a duration of 24-hours and pulled an estimated five-thousand gallons of groundwater. Due to the limited number of wellpoints installed for the pilot study compared to the wellpoint system planned for construction, we can only assume that our estimated volume rate of pumping will range from one to five-thousand gallons an hour. This is subject to fluctuate based on the size of wellpoint system needed, weather conditions, and the rate of drawdown within the dewatering zone. Once the drawdown of each shelter has been achieved, we believe that the volume of encountered influent will be lessened and the dewatering system will be able to sustain the subjected area at a lower rate.

GROUNDWATER CONTAMINANTS

The limits of the Flightline Aircraft Shelters projects lie within a known AFFF Contaminant Area and buffer zone described as the F-15 Jet Fuel Fire Response Zone (AFFF Area 5), as shown on page 6. Areas within this zone have been identified as being affected with per- and polyfluoroalkyl. The project limits also occur within the Installation Restoration Program (IRP) sites SS015 and SS026, as shown on pages 8-10. Portions of these sites have been identified to contain soil and groundwater affected with petroleum-related and chlorinated solvent

contaminants. Upon analyzing the Arcadis April 2021 AFFF Soil and Groundwater Sampling Report, it was found that the most concentrated levels of contaminants within our project limits, as shown as test point 15MW0017 on page 11, report that the levels of PFOS/PFOA at the time of sampling were 930 and 110 parts per trillion respectively. Due to the ongoing construction activities within Zone 1, directly south of our project, we believe will have an advantageous effect on the level of contaminants, as well as volume of groundwater, that we will encounter on our project. This was enforced through the results of our pilot study as shown in attachment B. The laboratory analytical results of the test samples from the pilot study revealed contaminant levels of PFOS/PFOA as a combined 40 ng/L of the influent sample and 6.3 ng/L of the effluent sample post GAC treatment. Both of which lie below the EPA Health Advisory limits for PFOA and/or PFOS of 70 nanograms per liter (ng/L). Dewatering activities will occur within 500 feet of various known contaminants, per the Arcadis PFAS Sampling points, but our pilot study has shown that the existing levels of contaminants is much lower than as shown in the report. Effluent discharge that is pulled from our wellpoint system will be sampled and tested for PFOS/PFOA at a DOD ELAP certified lab through the following regime to ensure that throughout the duration of dewatering procedures, we are not extracting contaminants from areas outside of our intended zone of influence. Upon analyzing results of the following sampling schedule, we can better determine what adjustments need to be made moving forward so that PFOS/PFOA contaminants, if encountered, remain contained within their respective zones. The effluent sampling regime will be followed as outlined below, if no excessive constituents are encountered, prior to proceeding to the next described step:

- 1 Sample per Day for 5 Continuous Days
- 1 Sample per Week for 4 Continuous Weeks
- 1 Sample per Month for 3 Continuous Months
- 1 Sample Every Other Month Until Completion of Dewatering Activities

GROUNDWATER MANAGEMENT AND RE-INFILTRATION

As outlined in the Installation Restoration Program and Aqueous Film Forming Foam Guidelines for Tyndall MILCON-Rebuild Report dated November 8, 2021, Section 14 paragraph b, states that dewatering within a contaminated groundwater plume or an area with known contamination is allowed as long as effluent percolates back into the know plume areas per specification 01 57 19. Due to the location of the shelters within the active taxiway, discharging into the same plume will not be feasible without disruption of the current airfield activities. In order to limit any disturbance to flightline procedures, we plan to discharge the effluent into the approved re-infiltration zone as shown on page 15, which lies directly west of the project limits. Due to our groundwater pilot study results, it was determined that we have no contaminants above their respective GCTLs, so pumping to this designated area will still fall within the criteria of the MILCON IRP Rebuild requirements. This outlined discharge area is not located in a known wetland or permitted stormwater area and has been approved by the USACE Contracting Officer and Air Force Base Environmental Management. Within this zone, a re-infiltration pond will be constructed with a poly-lined berm around the perimeter to house the effluent groundwater. A falling head test was conducted by NOVA Environmental and

CS Beatty
CONSTRUCTION

Engineering to determine the rate of re-infiltration of the existing soils to determine the required area of the re-infiltration gallery footprint. The results of this falling head test can be seen on page 16, which outlines the permeability of the existing soil at eight feet per day. Based on the results of the permeability test, we have determined that the size of the re-infiltration pond, based on our expected rate of dewatering, will need to be at a minimum of seventy-five feet by seventy-five feet and four feet in depth. With a fifty percent buffer in our volume calculation, this will allow us to pump the estimated volume from the wellpoint system without interruption of ongoing airfield activities and minimize potential ponding scenarios. Constant monitoring of the re-infiltration gallery will be conducted to ensure that there is no effluent discharged outside of this zone. Frac tanks will be staged next to this zone as a secondary containment should there be a need that the discharge pond will not hold any additional effluent. Surrounding storm sewer inlets and existing surface discharge areas will be protected against silt and debris caused by effluent discharge in the event of berm failure.

[redacted]

Legend

- AFFF Inspection Area
- Installation Boundary

N

0 0.5 1

Miles

Tyndall Air Force Base
Bay County, Florida

Figure 2
Tyndall AFB AFFF
Areas (Northwest)

Aerostar SES LLC

Drawn: tmorse | Date: 2/8/2018

Service Layer Credits: Esri ArcGIS Online Aerial Photography

G:\M2032_0001_Savannah\Tyndall\MXD\SI Report\Figure 2_Site_Location_AFFF.mxd; Date: 2/8/2018

[redacted]

ZONES
ZONE 4
ARCADIS 500ft BUFFER
IRP/PFAS 500ft BUFFER
ARCADIS Sample Locations
PFOS 70 ppt and Over
GW FLOW SHALLOW
PFAS VALIDATED
IRP Open
IRP Closed
MMRP Open
MMRP Closed

Tyndall AFB
Reconstruction Zone Projects
ARCADIS Sample Locations
Select 500ft Buffer

Scale: 1:11,000

Coordinate System: WGS 1984 World Mercator
Imagery Date: April 15, 2019

ARCADIS New Wells
Reconstruction
MMRP, IRP and PFAS/OA
For Planning Purposes Only

Cooperative Agreement Number:
W9126G-14-2-0018 -
W9126G-20-2-0004

[redacted]

Prepared By:
[redacted]
CSU-CEMML GIS Analyst
[redacted]
Last Save Date: 6/16/2021

DRAFT

CONTROLLED BY CENTER FOR ENVIRONMENTAL MANAGEMENT OF MILITARY LANDS & AIR FORCE CIVIL ENGINEER CENTER, ENVIRONMENTAL GIS PROGRAM OFFICE

Map created for presentation purposes only. Although efforts have been made to verify data, accuracy cannot be guaranteed

Document Path: C:\Users\CSLOCUM\Desktop\CEMML\GIS\Work\MAPS\Tyndall\Restoration\ZoneMaps\June2021Maps\Overview_Reconstruction Zones_PFOS_IRP_Samples_500ftBuf_ARCADIS NewWells3_.mxd

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[redacted]

bhate | ZAPATA

AECOM

Uniform Federal Policy
Supplemental Remedial Investigation

[redacted]

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
60652015	As Shown	1/12/2023	NS

VOC & Pesticides Exceedances of PALs
Shallow Zone Monitoring Wells

Figure 4

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[redacted]

Uniform Federal Policy – Quality Assurance Project Plan
Supplemental Remedial Investigation Work Plan

[redacted]

bhate | ZAPATA

AECOM

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
60652015	As Shown	1/12/2023	NS

VOC Exceedances of PALs
Intermediate Zone Monitoring Wells

Figure 5

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[redacted]

bhate | ZAPATA

AECOM

Uniform Federal Policy
Supplemental Remedial Investigation

[redacted]

PROJECT NO:	SCALE:	DATE:	DRAWN BY:
60652015	As Shown	12/14/2022	NS

VOC Exceedances of PALs
Deep Zone Monitoring Wells

Figure 6

[redacted]

Legend

- Hand Auger Soil Sample
- Temporary Well and Boring
- Existing Monitoring Wells
- AFFF Site
- Utility Corridor
- Building Footprint

1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).

2. **Bolded** values indicate the result was detected greater than the limit of detection.

N

0 200 400 Feet

TYNDALL AIR FORCE BASE
FLORIDA

PFAS Sampling Locations
Groundwater Samples

[redacted]

ARCADIS

FIGURE
12-B

[redacted]

[redacted]

Legend

- Hand Auger Soil Sample Location
- Temporary Well and Boring
- Existing Monitoring Wells
- AFFF Site
- Utility Corridor
- Building Footprint

1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).

2. **Bolded** values indicate the result was detected greater than the limit of detection.

N

0 150 300 Feet

TYNDALL AIR FORCE BASE
FLORIDA

PFAS Sampling Locations
Groundwater Samples
[redacted]

ARCADIS

FIGURE
11-B

[redacted]

[redacted]

Legend

- Hand Auger Soil Sample
- Temporary Well Location
- Temporary Well and Boring
- Existing Monitoring Wells
- AFFF Site
- Utility Corridor
- Building Footprint

1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).
2. **Bolded** values indicate the result was detected greater than the limit of detection.

0 200 400 Feet

N

TYNDALL AIR FORCE BASE
FLORIDA

PFAS Sampling Locations
Groundwater Samples

[redacted]

ARCADIS

FIGURE
13-B

[redacted]

Legend

- DPT Boring Surface Soil, Subsurface Soil, and Groundwater Samples
- AFFF Inspection Area
- Installation Boundary
- Groundwater Elevation Contour
- Surface Water Flow Direction
- Groundwater Flow Direction

TYNDL05-001
(9.48) = Groundwater Elevation (ft NAVD 88) measured on June 6, 2017.

N

0 150
Feet

Tyndall Air Force Base
Bay County, Florida

Figure 8

[redacted]

Aerostar SES LLC

Drawn: tmorse | Date: 8/2/2018

Service Layer Credits: Esri ArcGIS Online Aerial Photography

G:\M2032_0001_Savannah\Tyndall\MXD\SI Report\Figure_8_AFFF_5_SI.mxd; Date: 8/2/2018

PERMEABILITY, -200 SIEVE WASH, AND MOISTURE CONTENT

PROJECT: TAFB Flightline Aircraft Shelters **NOVA PROJECT #:** 10111-1023381

DATE: 1/15/2024 **ASSIGNED BY:** [redacted] **TESTED BY:** [redacted]

Sample LOCATION / BORING NO.	(30.07493, -85.58929)
Sample NUMBER / DEPTH	2' - 3'

PERMEABILITY TESTING SUMMARY			
PERMEABILITY (K_V)	→	8	ft/day
Corresponding K_h	→	11	ft/day
DRY DENSITY	→	100	lbs/ft^3
MOISTURE CONTENT	→	4	%
-200 FINES CONTENT	→	5	%

FALLING HEAD PERMEABILITY (ASTM D 5084)

No. of LAYERS:	3	Wt. of MOLD (lbs):	9.31
BLOWS/LAYER:	15	Wt. of MOLD/SOIL (lbs):	12.80

HEIGHT (FT)	TRIAL #1 (SEC)	TRIAL #2 (SEC)	PERMEABILITY
5	0.0	0.0	
4	14.0	14.7	2.77E-03
3	18.4	19.1	2.73E-03
2	27.4	28.4	2.59E-03
1	47.0	50.4	2.53E-03
Average Permeability		2.7E-03	cm/sec

NUMBER OF INCHES MOLD WAS SHORT? 0.000 INCHES

PERMEABILITY CONSTANT USED WAS → 0.41 (Includes 1/2"ID tubing)

(ZERO INCHES IS DEFAULT)

MOISTURE CONTENT (ASTM D 2216)

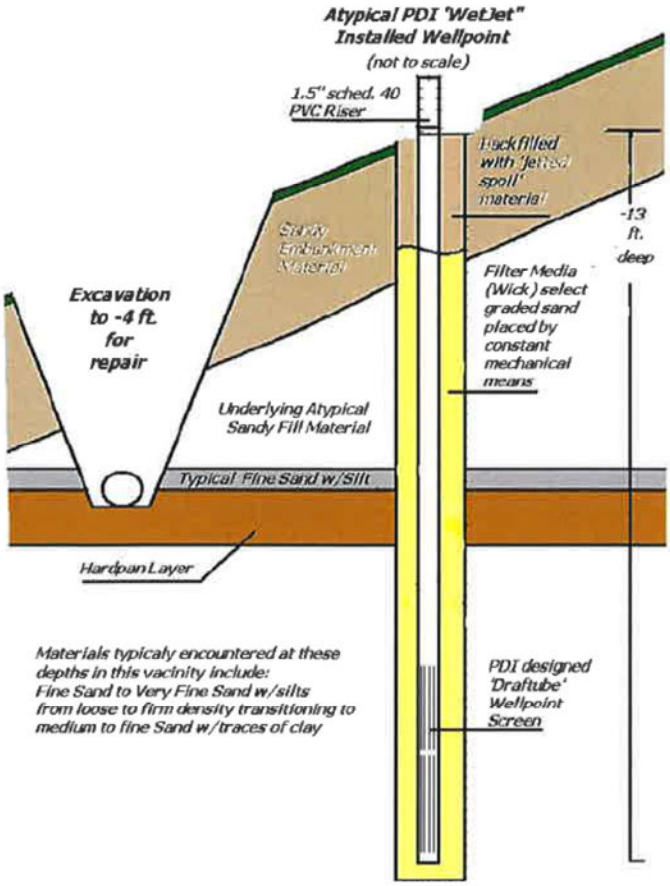
Pan NUMBER	24
Wt. of WET SOIL & PAN (g)	194.9
Wt. of DRY SOIL & PAN (g)	188.7
Wt. of PAN (g)	50.8
Wt. of Water (g)	6.2
Wt. of Dry Soil (g)	137.9
MOISTURE CONTENT (%)	4.5

-200 SIEVE WASH (ASTM D 1140)

Pan NUMBER	24
Wt. of DRY SOIL & PAN (g)	154.5
Wt. of WASH SOIL & PAN (g)	149.8
Wt. of PAN (g)	50.8
Wt. of Original Dry Sample (g)	103.7
Wt. of -200 Material (g)	4.7
Wt. of Washed Dry Sample (g)	99.0
-200 FINES CONTENT (%)	4.6

TYPICAL WELLPOINT DETAIL

DIAGRAM A



Notes regarding proposed Dewatering System

1. *System to be 'powered' by primary and seconday pumps configured into an 'either-or' setup so that if the 'primary' were to fail the 'secondary' would be able to immediately be activated with no additional connections to keep that portion of the system, or the entirity depending on circumstance, active and performing to spec.*
2. *Considering the situation of embankment slopes comprised primarily of sand-topsoil and the critical nature of maintaining the integrety of this embankment no excessive 'washout' of material durring jetting, especialy when penitrating the known Hardpan material is allowed.*
3. *Also in regards to maintaining integrety of embankment and underlying materials extreme care is to be taken in utilizing and placing discharge hose or pipe so that no leaks that could erode or undermine are present.*

Typical Dewatering System layout with Primary and Secondary Pumps

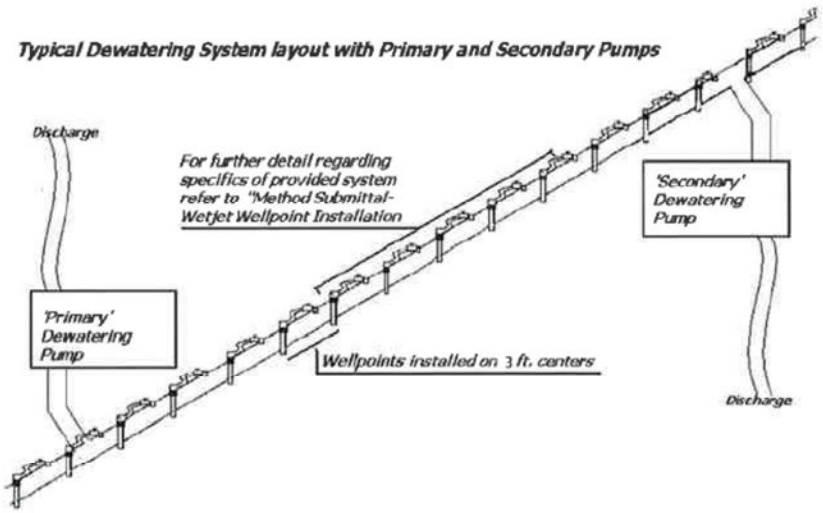
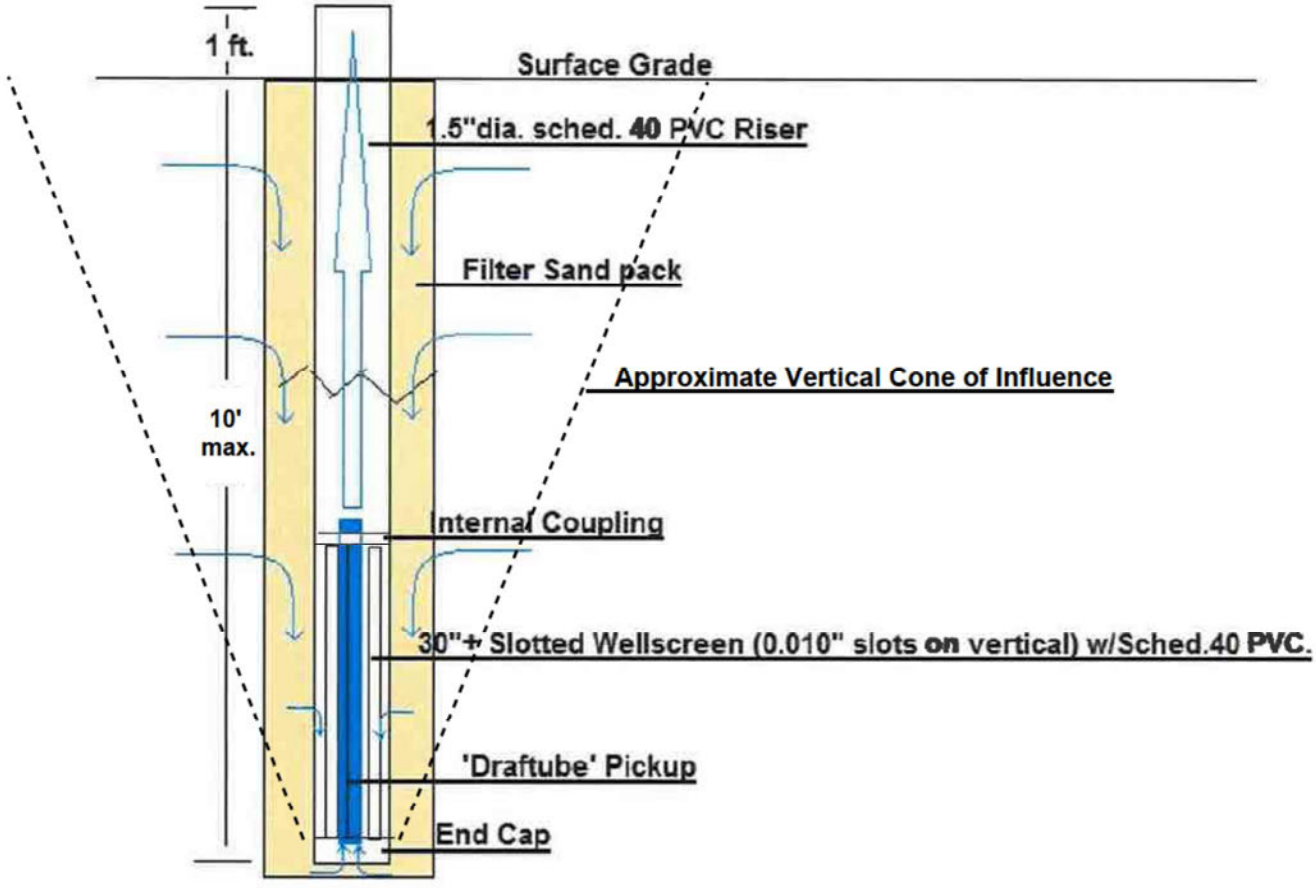


DIAGRAM B



THOMPSON PUMP
EXPERIENCE INNOVATION

Name: 8" Rotary Wellpoint Pump

Model: 8RW

The Thompson Rotary Wellpoint Pump is the original rotary wellpoint pump trusted by contractors worldwide for more than 40 years. The state-of-the-art 8RW is specifically designed and engineered for wellpoint and sock dewatering with high air handling, large water volume and high vacuum capability.

Photo shown may not be exact model.

Consult factory for other versions & options including site trailers, sound attenuation, etc.

Pump End Materials	
Type	Positive displacement, low-pulsation, self-priming, rotary lobe.
Rotor	Four-lobe, single piece design with carbon steel shaft and welded carbon steel fins with polyurethane coating.
Rotor Housing	Rugged, heavy-duty cast Aluminum.
Mechanical Seal	Oil lubricated with bronze rotating and steel stationary faces. Single inside mounted, non-pusher type with self-adjusting elastomeric bellows.
Suction Tank	A36 steel with permanent solids screen, 1-1/2" drain port, adjustable vacuum breaker valve and vacuum gauge for system diagnostics.
Discharge Tank	A36 steel with canvas reinforced neoprene weighted flapper style check valve; built-in reservoir with pressure relief and 1-1/2" drain port.
Wear Plate	Replaceable, 304 stainless-steel.
Bearings	Heavy-duty, oil bath-pressure lubricated, cylindrical roller type.
Bearing Housing	Heavy-duty cast Aluminum.

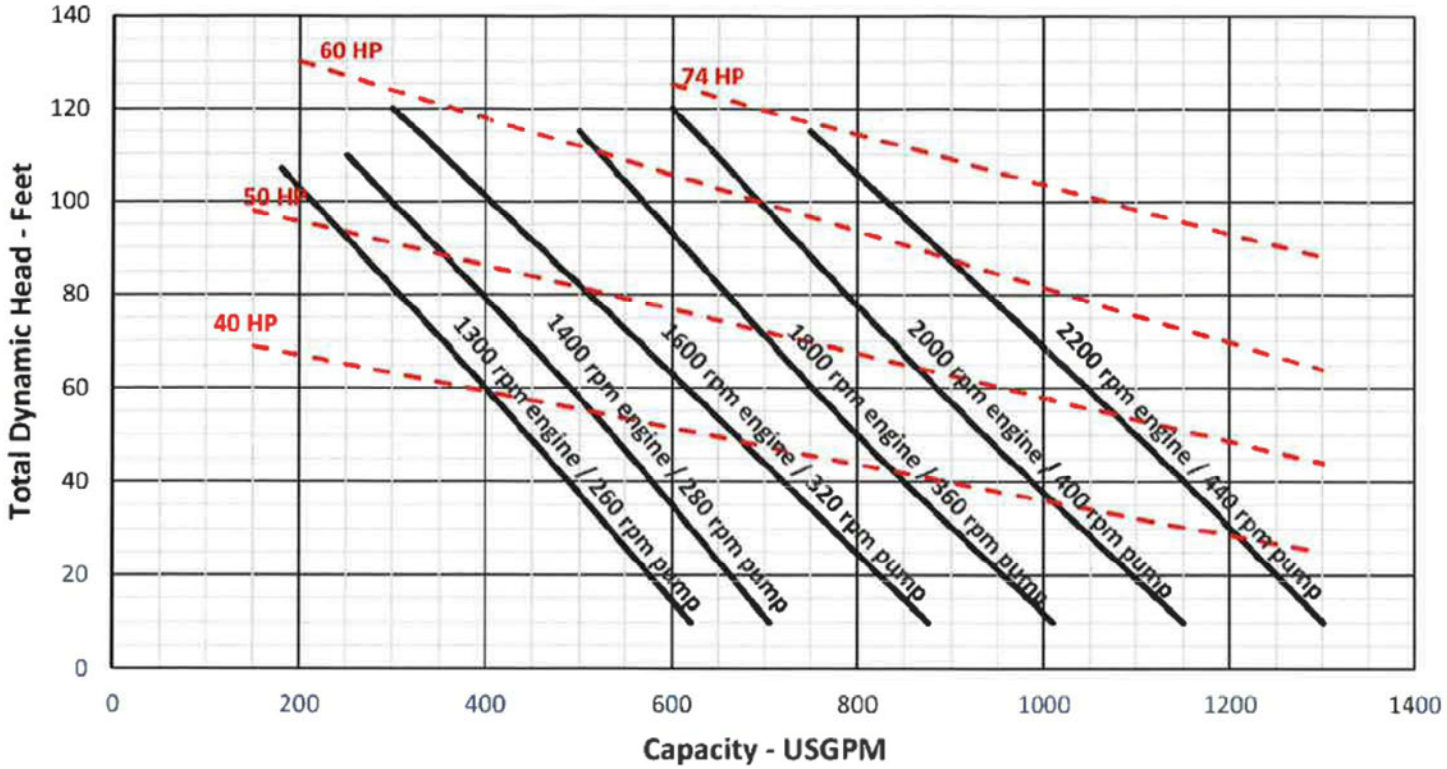
Technical Specifications			
Suction Size	8 in (20.32 cm)	Approximate Dry Weight	4,250 lbs (1,927.77 kg)
Discharge Size	8 in (20.32 cm)	Maximum Operating Speed	2,200 rpm
Maximum Solids Handling	Clear Water Only	Displacement Volume	250 cfm
Maximum Operating Temperature	200° F (93.33° C)	Maximum Operating Pressure	51.9 psi (358.17 kPa)

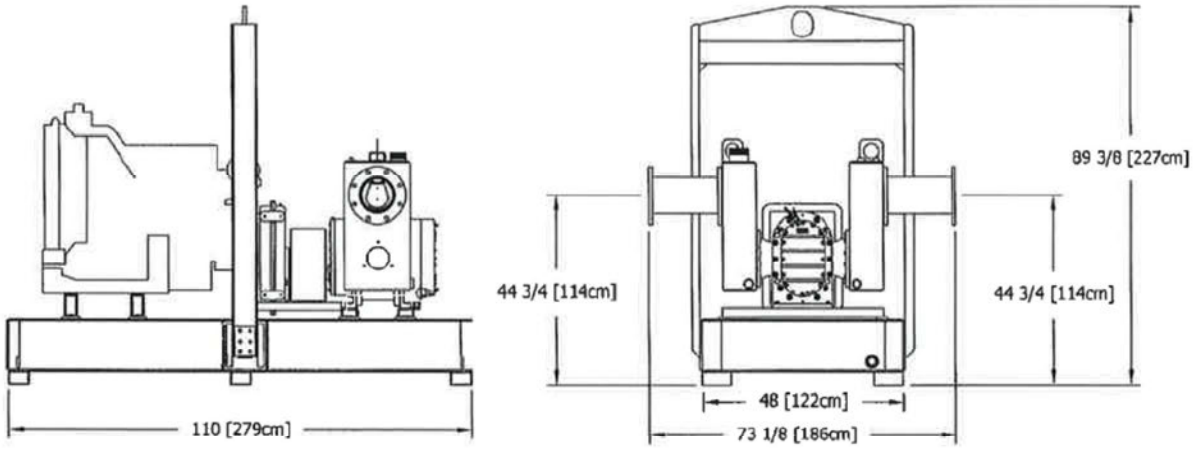
Fuel Tank Options*		Deutz
Modular (M)	127 Gal	34 Hours
Double-Wall (D)	94 Gal	25 Hours
Modular Large Capacity (X)	200 Gal	54 Hours
Double-Wall Large Capacity (Z)	150 Gal	40 Hours

*Contact factory for fuel tank sizes not listed above.

Thompson Pump and Manufacturing Co., Inc.
4620 City Center Drive, Port Orange, FL 32129 USA
www.thompsonpump.com

Nationwide 800-767-7310 • International +1-386-767-7310
sales@thompsonpump.com





Deutz TD3.6L4—74 hp @ 2,300 rpm				
Typical Operating Speed	2,200 rpm	**Engine Speed**	**Fuel Economy**	**Run Time***
Maximum Head	120 ft (36.58 m)	2,200 rpm	0.374 lb/hp-hr	32 hrs
Maximum Flow Capacity	2,200 gpm (499.4 m^3/hr)	2,000 rpm	0.362 lb/hp-hr	33 hrs
Maximum Fuel Consumption	4.05 gph (15.1 L/hr)	1,800 rpm	0.359 lb/hp-hr	34 hrs

*Engine run times calculated based on a 127 gallon fuel tank.

Specifications and illustrations are subject to revision without notice and without incurring any obligation for previous or subsequent equipment sold. Thompson Pump (ISO 9001:2015) makes no representation regarding the completeness or accuracy of this information and is not liable for any direct or indirect damages arising from or relating to this information or its use. Capacity & Head are shown for comparative purposes. Consult Thompson factory for exact capabilities.

ATTACHMENT A

CS Beatty
CONSTRUCTION

AFFF PILOT STUDY

FLIGHTLINE AIRCRAFT SHELTERS

TYNDALL AIR FORCE BASE, FL

CONTRACT NO. W9127823F0424

12/15/2023

CS Beatty

1 Civitan Place
Birmingham, AL 35213

(205) 879-5788
www.csbeatty.com

CSBeatty
CONSTRUCTION

PLAN OVERVIEW

Due to the Tyndall Flightline Aircraft Shelters project at the Tyndall Air Force Base being located within a known AFFF contaminated zone, we are proposing to conduct the following groundwater sampling pilot study to determine the current contaminant levels as they exist on site. The limits of the projects extend into the known F-15 Jet Fuel Fire Response (AFFF Area 5) AFFF contaminant zone as shown attached in Exhibit A.

This pilot study will be conducted by installing dewatering wellpoints, 18 to 20 foot in depth, at the locations shown in Exhibit B. Locations for these wellpoints were determined by analyzing the test reports and groundwater studies shown in the "Arcadis April 2021 AFFF Soil and Groundwater Sampling Report" as well the "Aerostar September 2018 Final Site Inspections Report of Fire Fighting Foam Usage". We have determined that the area of most concern, shown as test 15MW0017 on Exhibit C, is along the southern most limits of our project, thus the reason for wellpoint locations #1 & #2. Due to the groundwater flow shown from plan south to north and east to west, we have determined that sampling in the most contaminated known area, that of test 15MW0017, will allow us to gather a sufficient representative sampling data set that we will be able to treat and study the results for enabling treatment of lower contamination areas on site.

Groundwater will be pumped from the ground through the wellpoint system and stored within a holding tank held on site. The pumping duration and volume of stored water will be documented to help determine treatment opportunities in future dewatering activities. Samples will be taken and sent to a DOD ELAP certified lab for testing and results will be provided for approval prior to treatment, if required, and release back into the AFFF Area 5 zone limits. Pending the return of test results, the extracted groundwater will be stored on site in frac tanks until receiving the certified results to determine the next steps for release.

TREATMENT

Upon extraction, the groundwater will be sent through an activated granular charcoal system to be treated where samples will be taken prior to and post treatment to determine the effectiveness of the carbon treatment system. Typically, the granular activated carbon treatment systems have a lifespan of 6-8 months depending on concentration of the contaminants. Once treated, the groundwater will then be stored again in a clean frac tank until receiving the DOD ELAP certified results showing the treated water is below the acceptable 70 parts per trillion threshold. Extracted groundwater will not be released into the AFFF Area 5 until receiving test results confirming acceptable AFFF contaminant levels. Upon treatment of extracted groundwater and confirmation of treated results, the groundwater will be released into the approved dewatering discharge zone West of Shelter 1 as shown in Exhibit B.

EXHIBIT A

[redacted]

Legend

AFFF Inspection Area

Installation Boundary

N

0 0.5 1

Miles

Tyndall Air Force Base
Bay County, Florida

Figure 2
Tyndall AFB AFFF
Areas (Northwest)

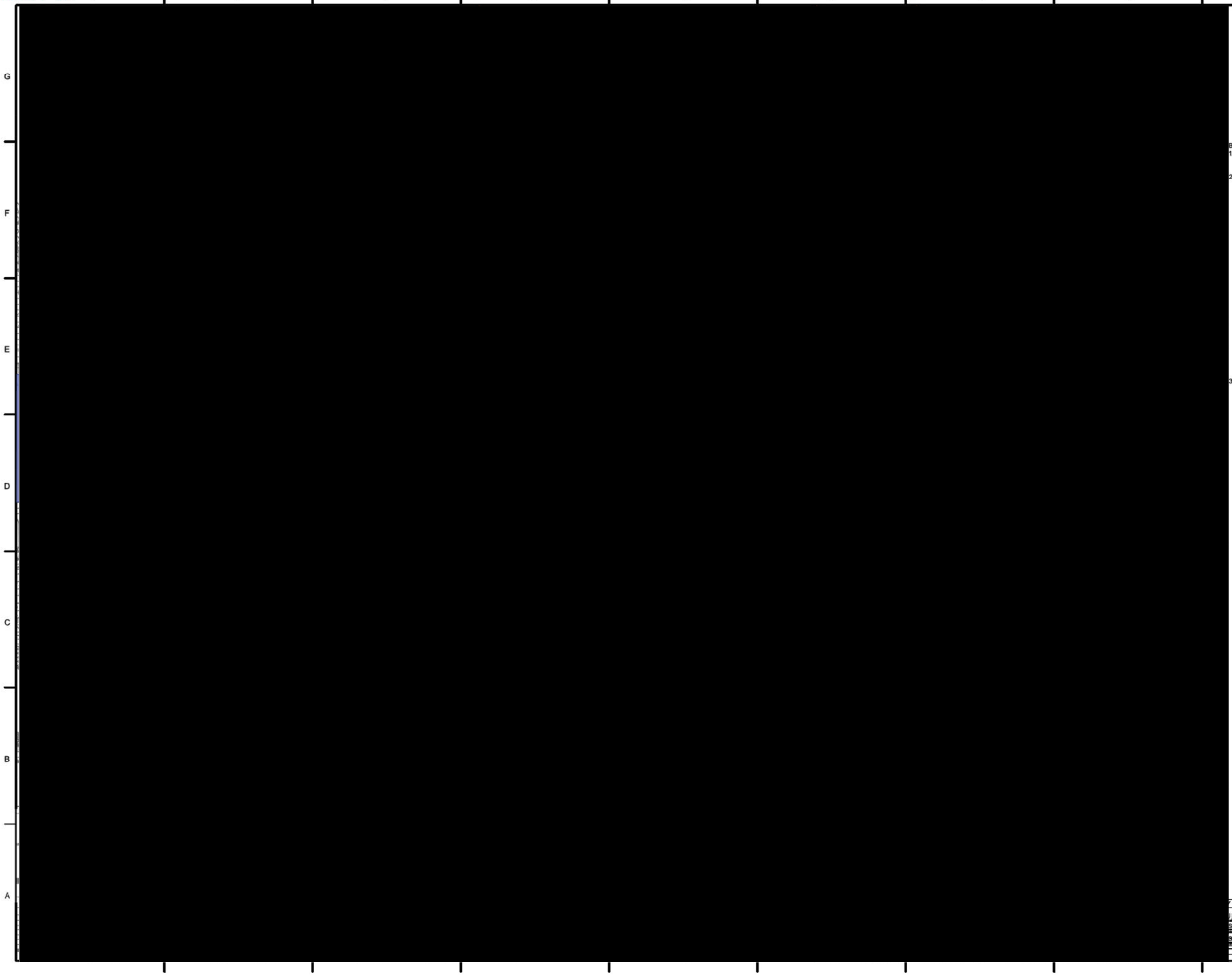
Aerostar SES LLC

Drawn: tmorse | Date: 2/8/2018

Service Layer Credits: Esri ArcGIS Online Aerial Photography

G:\M2032_0001_Savannah\Tyndall\MXD\SI Report\Figure 2_Site_Location_AFFF.mxd; Date: 2/8/2018

EXHIBIT B



0 100 200 Feet

BORING LOCATION PLAN NOTES:

1. FOR LOGS OF BORINGS AND TEST DATA, SEE ATTACHED PROJECT SPECIFICATIONS AND APPENDIXES.
2. WATER FROM CONSTRUCTION DEWATERING ACTIVITIES SHALL BE RETURNED TO THE SOURCE LOCATION VIA RE-INFILTRATION AT REBUILD LOCATIONS (ZONES), AS NEEDED. THE CONTRACTOR SHALL INCLUDE IN ITS PROPOSAL THE LOCATION(S) AND SIZE OF TEMPORARY RE-INFILTRATION BASINS AT, OR AS NEAR AS POSSIBLE, TO THE SOURCE LOCATION/POINT OF GENERATION. SUCH BASINS WILL BE SIZED ADEQUATELY TO FACILITATE DEWATERING OPERATIONS. PRIOR TO DEWATERING ACTIVITIES, THE CONTRACTOR WILL COORDINATE APPROVAL OF SUCH WITH THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE 325TH/AFCEC ENVIRONMENTAL RESTORATION PROGRAM. UPON APPROVAL, THE CONTRACTOR WILL CONSTRUCT THE BASINS AND MAINTAIN EROSIONAL CONTROLS DURING DEWATERING ACTIVITIES TO ENSURE THE INTEGRITY OF THE BASINS. UPON COMPLETION OF DEWATERING ACTIVITIES, THE TEMPORARY RE-INFILTRATION BASINS WILL BE REMOVED WITH THE ENVIRONMENTAL RESTORATION PROGRAM GUIDELINES, USACE MILCON BUILD-OUT, DATED 12 NOV 2019.
3. THE BORING AND CPT LOGS ARE FROM GEOTECHNICAL REPORT, GM HILL ENGINEERING, SUNSHADES PROJECT, TYNDALL AIR FORCE BASE, FLORIDA, DATED 20 MAY 2022, PREPARED BY THOMPSON ENGINEERING, PROJECT NO. 21-1101-0260.

CIVIL/SURVEY BY
thompson ENGINEERING
4830 MAIN STREET, SUITE G-212
ORANGE BEACH, ALABAMA 36561
251-666-2443

US ARMY CORPS OF ENGINEERS

MARK	DESCRIPTION	DATE

ISSUE DATE:
06 JUNE 2023
DACA01-2-20-00
W912TR-15-D-0045/0008

DESIGN BY: TEL
DRAWN BY: TEL
CHECKED BY: CW
CONTRACT NO: W9127821F0421
SUBMITTED BY: DAL
CATEGORY CODE:
SIZE: ANSI D
FILE NAME: B100 BORING LOCATION PLAN

US ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
102 ST. JOSEPH ST. MOBILE, AL 36602

GM HILL ENGINEERING INC.
9700 PHILIPS HWY SUITE 101
JACKSONVILLE, FL 32256
TEL: 904-550-0294

TYNDALL AFB, FL
FLIGHT LINE F-35 SUNSHADES
W31KNJ12657099

BORING LOCATION PLAN

SHEET ID
B-100

RTA DESIGN SUBMITTAL

EXHIBIT C

[redacted]

[redacted]

Legend

- Hand Auger Soil Sample
- Temporary Well and Boring
- Existing Monitoring Wells
- AFFF Site
- Utility Corridor
- Building Footprint

1. Samples were analyzed for the full per- and polyfluoroalkyl substances (PFAS) suite. However, in accordance with Department of Defense Memorandum dated 15 Oct 2019, SUBJECT: Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program (DoD Memo), analytical results were only screened against those PFAS analytes for which screening levels have been established: perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS).

2. Bolded values indicate the result was detected greater than the limit of detection.

N

0 200 400 Feet

TYNDALL AIR FORCE BASE
FLORIDA

PFAS Sampling Locations
Groundwater Samples

[redacted]

ARCADIS

FIGURE
12-B

PFAS by LC/MS/MS

Client: **Arcadis U.S., Inc.** Laboratory ID: **VK17003-013**

Description: **15MW0017(11102020)** Matrix: **Aqueous**

Date Sampled: **11/10/2020 1442**

Date Received: **11/14/2020**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	SOP SPE	PFAS by ID SOP QSM B-15	1	12/01/2020 2123	MMM	11/30/2020 1020	74959
2	SOP SPE	PFAS by ID SOP QSM B-15	5	12/02/2020 1920	SES	11/30/2020 1020	74959

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	LOD	DL	Units	Run
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	3.7	U	7.4	3.7	1.8	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	**27619-97-2**	**PFAS by ID SOP**	**5.4**	**J**	**7.4**	3.7	**1.8**	**ng/L**	**1**
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)	2991-50-6	PFAS by ID SOP	3.7	U	7.4	3.7	1.8	ng/L	1
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)	2355-31-9	PFAS by ID SOP	3.7	U	7.4	3.7	1.8	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**8.2**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**37**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**30**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	**335-76-2**	**PFAS by ID SOP**	**48**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	1.9	U	3.7	1.9	0.92	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**66**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-hexanoic acid (PFHxA)	**307-24-4**	**PFAS by ID SOP**	**61**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	**375-95-1**	**PFAS by ID SOP**	**60**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-octanoic acid (PFOA)	**335-67-1**	**PFAS by ID SOP**	**110**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**61**		**3.7**	1.9	**0.92**	**ng/L**	**1**
Perfluoro-n-tetradecanoic acid (PFTeDA)	376-06-7	PFAS by ID SOP	1.9	U	3.7	1.9	0.92	ng/L	1
Perfluoro-n-tridecanoic acid (PFTrDA)	72629-94-8	PFAS by ID SOP	1.9	U	3.7	1.9	0.92	ng/L	1
Perfluoro-n-undecanoic acid (PFUdA)	2058-94-8	PFAS by ID SOP	1.9	U	3.7	1.9	0.92	ng/L	1
Perfluorooctanesulfonic acid (PFOS)	**1763-23-1**	**PFAS by ID SOP**	**930**		**18**	9.0	**4.6**	**ng/L**	**2**

Surrogate	Run 1 Q	Run 1 % Recovery	Run 1 Acceptance Limits	Run 2 Q	Run 2 % Recovery	Run 2 Acceptance Limits
13C2_6:2FTS		95	50-150		121	50-150
13C2_8:2FTS		92	50-150		98	50-150
13C2_PFDoA		85	50-150		116	50-150
13C2_PFTeDA		80	50-150		114	50-150
13C3_PFBS		84	50-150		104	50-150
13C3_PFHxS		81	50-150		107	50-150
13C4_PFBA		86	50-150		111	50-150
13C4_PFHpA		96	50-150		110	50-150
13C5_PFHxA		98	50-150		110	50-150
13C5_PFPeA		94	50-150		110	50-150
13C6_PFDA		87	50-150		103	50-150
13C7_PFUdA		87	50-150		107	50-150
13C8_PFOA		85	50-150		113	50-150
13C8_PFOS		70	50-150		106	50-150
13C9_PFNA		83	50-150		109	50-150
d5-EtFOSAA		85	50-150		110	50-150
d3-MeFOSAA		93	50-150		113	50-150

LOQ = Limit of Quantitation
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
DL = Detection Limit
Q = Surrogate failure
U = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
J = Estimated result < LOQ and ≥ DL
L = LCS/LCSD failure
H = Out of holding time
W = Reported on wet weight basis
LOD = Limit of Detection
S = MS/MSD failure

Pace Analytical Services, LLC *(formerly Shealy Environmental Services, Inc.)*
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

EXHIBIT D

[redacted]

Legend

- DPT Boring Surface Soil, Subsurface Soil, and Groundwater Samples
- AFFF Inspection Area
- Installation Boundary
- Groundwater Elevation Contour
- Surface Water Flow Direction
- Groundwater Flow Direction

TYNDL05-001
(9.48) = Groundwater Elevation (ft NAVD 88) measured on June 6, 2017.

N

0 150
Feet

Tyndall Air Force Base
Bay County, Florida

Figure 8

[redacted]

Aerostar SES LLC

Drawn: tmorse | Date: 8/2/2018

Service Layer Credits: Esri ArcGIS Online Aerial Photography

G:\M2032_0001_Savannah\Tyndall\MXD\SI Report\Figure_8_AFFF_5_SI.mxd; Date: 8/2/2018

EXHIBIT E

[redacted]

ZONES
ZONE 4
ARCADIS 500ft BUFFER
IRP/PFAS 500ft BUFFER
ARCADIS Sample Locations
PFOS 70 ppt and Over
GW FLOW SHALLOW
PFAS VALIDATED
IRP Open
IRP Closed
MMRP Open
MMRP Closed

Tyndall AFB

Reconstruction Zone Projects
ARCADIS Sample Locations
Select 500ft Buffer

Scale: 1:11,000

Coordinate System: WGS 1984 World Mercator
Imagery Date: April 15, 2019

ARCADIS New Wells
Reconstruction
MMRP, IRP and PFAS/OA
For Planning Purposes Only

Cooperative Agreement Number:
W9126G-14-2-0018 -
W9126G-20-2-0004

[redacted]

Prepared By:
[redacted]
CSU-CEMML GIS Analyst
[redacted]

Last Save Date: 6/16/2021

DRAFT

CONTROLLED BY CENTER FOR ENVIRONMENTAL MANAGEMENT OF MILITARY LANDS & AIR FORCE CIVIL ENGINEER CENTER, ENVIRONMENTAL GIS PROGRAM OFFICE

Map created for presentation purposes only. Although efforts have been made to verify data, accuracy cannot be guaranteed

Document Path: C:\Users\CBLOSSOM\Desktop\CEMML\GIS\Work\MAPS\Tyndall\Restoration\ZoneMaps\June2021Maps\Overview_Reconstruction Zones_PFOS_IRP_Sample_500ftBuf_ARCADIS NewWells3_.mxd

ATTACHMENT B

NOVA

January 10, 2024

[redacted]
BL Harbert International
Tyndall Air Force Base
Panama City, FL 32403

Subject: **AFF Pilot Study – Dewatering Sampling and Analysis Report**
Flightline Aircraft Shelters
Tyndall Air Force Base
Bay County, Florida
NOVA Project No. 10111-3023095

Dear [redacted]:

On December 19, 2023, NOVA personnel mobilized to the above referenced facility to collect two (2) water samples from the dewatering system including one (1) pretreatment dewatering water sample (Influent) and one (1) post treatment dewatering water sample (Effluent). Both samples were submitted to a State certified laboratory for analysis of per- and polyfluoroalkyl substances (PFAS), specifically perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), using modified EPA Method 537.

The EPA has developed a drinking water health advisory level (HAL) for PFOA and/or PFOS of 70 nanogram per liter (ng/L). The laboratory analytical results revealed PFOA concentrations of 25 ng/L for the Influent sample and 6.3 ng/L for the Effluent sample, both below the applicable EPA HAL of 70 ng/L. The laboratory analytical results for PFOS concentrations in the Influent sample were 15 ng/L which is below the applicable EPA HAL of 70 ng/L. The laboratory analytical results for PFOS concentrations in the Effluent sample were at the lab method detection limit.

NOVA appreciates the opportunity to provide the above services. Please contact the undersigned at [redacted] if you have any questions or if we may be of further service.

Sincerely,

NOVA ENGINEERING AND ENVIRONMENTAL, LLC

[redacted]
Staff Scientist
Environmental Services

[redacted]
Principal Technical Professional
Environmental Services

Attachments: Laboratory Analytical Results and Chain of Custody Record

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

[redacted]

Nova Engineering & Environmental LLC
136 Industrial Boulevard
Pensacola, Florida 32505

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JOB DESCRIPTION

Tyndall AFB - Flightline Construction

JOB NUMBER

680-244680-1

Eurofins Savannah
5102 LaRoche Avenue
Savannah GA 31404

See page two for job notes and contact information.

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Southeast, LLC Project Manager.

Authorization

[redacted]

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1/8/2024 4:42:41 PM

Authorized for release by

[redacted]

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Sample Summary

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-244680-1	Influent	Water	12/19/23 00:00	12/20/23 09:05
680-244680-2	Effluent	Water	12/19/23 00:00	12/20/23 09:05

Detection Summary

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

Client Sample ID: Influent — Lab Sample ID: 680-244680-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
PFOA	25		10	4.3	ng/L	1		537 (modified)	Total/NA
PFOS	15		10	2.7	ng/L	1		537 (modified)	Total/NA

Client Sample ID: Effluent — Lab Sample ID: 680-244680-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
PFOA	6.3	I	10	4.3	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

Client Sample ID: Influent

Lab Sample ID: 680-244680-1

Date Collected: 12/19/23 00:00
Matrix: Water
Date Received: 12/20/23 09:05

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PFOA	**25**		10	4.3	ng/L		01/02/24 13:00	01/05/24 05:33	1
PFOS	**15**		10	2.7	ng/L		01/02/24 13:00	01/05/24 05:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*103*		*25 - 150*	*01/02/24 13:00*	*01/05/24 05:33*	*1*
13C4 PFOS	*99*		*25 - 150*	*01/02/24 13:00*	*01/05/24 05:33*	*1*

Client Sample ID: Effluent

Lab Sample ID: 680-244680-2

Date Collected: 12/19/23 00:00
Matrix: Water
Date Received: 12/20/23 09:05

Method: EPA 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PFOA	**6.3**	**I**	10	4.3	ng/L		01/02/24 13:00	01/05/24 05:44	1
PFOS	2.7	U	10	2.7	ng/L		01/02/24 13:00	01/05/24 05:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*99*		*25 - 150*	*01/02/24 13:00*	*01/05/24 05:44*	*1*
13C4 PFOS	*99*		*25 - 150*	*01/02/24 13:00*	*01/05/24 05:44*	*1*

Qualifiers

LCMS

Qualifier	Qualifier Description
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
U	Indicates that the compound was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 680-244680-1 — Eurofins Savannah

Job Narrative
680-244680-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 12/20/2023 9:05 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice.

PFAS
Method PFC_IDA: The following samples in preparation batch 320-730937 were light yellow in color following extraction. Influent (680-244680-1) and Effluent (680-244680-2)

Method: 3535 PFC
Matrix: Water

Method PFC_IDA: Due to insufficient volume, the initial volumes used for the following samples deviated from the standard procedure: Influent (680-244680-1) and Effluent (680-244680-2). A 5x dilution was made on the sample, then fortified with IDA and extracted. The reporting limits (RLs) have been adjusted proportionately.

Method: 3535 PFC
Matrix: Water

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Method Summary

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
3535	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Isotope Dilution Summary

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	PFOA (25-150)	PFOS (25-150)								
680-244680-1	Influent	103	99								
680-244680-2	Effluent	99	99								
LCS 320-730937/2-A	Lab Control Sample	103	98								
MB 320-730937/1-A	Method Blank	103	100								

Surrogate Legend

PFOA = 13C4 PFOA
PFOS = 13C4 PFOS

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-730937/1-A
Matrix: Water
Analysis Batch: 731462

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 730937

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
PFOA	0.85	U	2.0	0.85	ng/L		01/02/24 13:00	01/05/24 05:10	1
PFOS	0.54	U	2.0	0.54	ng/L		01/02/24 13:00	01/05/24 05:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*103*		*25 - 150*	*01/02/24 13:00*	*01/05/24 05:10*	*1*
13C4 PFOS	*100*		*25 - 150*	*01/02/24 13:00*	*01/05/24 05:10*	*1*

Lab Sample ID: LCS 320-730937/2-A
Matrix: Water
Analysis Batch: 731462

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 730937

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
PFOA			40.0	39.0		ng/L		97	70 - 130		
PFOS			37.2	37.2		ng/L		100	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*103*		*25 - 150*
13C4 PFOS	*98*		*25 - 150*

QC Association Summary

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

LCMS

Prep Batch: 730937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-244680-1	Influent	Total/NA	Water	3535	
680-244680-2	Effluent	Total/NA	Water	3535	
MB 320-730937/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-730937/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 731462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-244680-1	Influent	Total/NA	Water	537 (modified)	730937
680-244680-2	Effluent	Total/NA	Water	537 (modified)	730937
MB 320-730937/1-A	Method Blank	Total/NA	Water	537 (modified)	730937
LCS 320-730937/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	730937

Lab Chronicle

Client: Nova Engineering & Environmental LLC
Project/Site: Tyndall AFB - Flightline Construction

Job ID: 680-244680-1

Client Sample ID: Influent

Lab Sample ID: 680-244680-1

Date Collected: 12/19/23 00:00
Matrix: Water
Date Received: 12/20/23 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			50.0 mL	10.0 mL	730937	01/02/24 13:00	M1G	EET SAC
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	731462	01/05/24 05:33	C1P	EET SAC
	Instrument ID: A23									

Client Sample ID: Effluent

Lab Sample ID: 680-244680-2

Date Collected: 12/19/23 00:00
Matrix: Water
Date Received: 12/20/23 09:05

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			50.0 mL	10.0 mL	730937	01/02/24 13:00	M1G	EET SAC
Total/NA	Analysis	537 (modified)		1	1 mL	1 mL	731462	01/05/24 05:44	C1P	EET SAC
	Instrument ID: A23									

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Chain of Custody Record

Lab Report No.:

Company: NOVA	**Gulf Coast LabNet, Inc.** An Environmental Lab Services Co.	Modified from DEP Form #: 62-770.900(2) — Page 1 of 1
Address: 5001 Commerce Park Cir. Pensacola, FL 32505	Phone: (251) 625-1331 www.GCLabNet.com	FDEP Facility No.: / Project Name: Tyndall Shelters / Location: / Project No.: 10111-302 3095
[redacted] Phone [redacted] Fax:		
Sampled by [Print Name]/Affiliation [redacted] Sampler Signature		

Item No.	Field ID No.	Sampled Date	Sampled Time	Grab or Comp.	Matrix Codes	No. Cont.	537 PFOA PFOS H	←Preservative / ←Analysis / REQUESTED DUE DATE	Remarks	Lab. No.
1	Influent	12/19	12:35	G	GW	2	X			
2	Effluent	12/19	13:20	G	GW	2	X			

680-244680 Chain of Custody

4 ←Total Number of Containers

Shipment Method		Item #	Relinquished by / Affiliation	Date	Time	Accepted by / Affiliation	Date	Time
Out: / /	Via:		EMPTY CONTAINERS			[redacted]	12/20/23	0945
Returned: / /	Via:							

Additional Comments: DoD 11198

Cooler No.(s) / Temperature(s) (°C)	Sampling Kit No. 19502	Equipment ID No.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) O = Other (specify)

PRESERVATIVE CODES: H = Hydrochloric acid + ice I = Ice only N = Nitric acid + ice S = Sulfuric acid + ice O = Other (specify)

5.3°C

Accreditation/Certification Summary

Client: Nova Engineering & Environmental LLC
Job ID: 680-244680-1
Project/Site: Tyndall AFB - Flightline Construction

Laboratory: Eurofins Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Energy	L2468.01	01-20-24
Florida	NELAP	E87570	06-30-24

Login Sample Receipt Checklist

Client: Nova Engineering & Environmental LLC

Job Number: 680-244680-1

Login Number: 244680

List Source: Eurofins Savannah

List Number: 1

Creator: [redacted]

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

Login Sample Receipt Checklist

Client: Nova Engineering & Environmental LLC

Job Number: 680-244680-1

Login Number: 244680
List Number: 2
Creato [redacted]

List Source: Eurofins Sacramento
List Creation: 12/20/23 04:25 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	2366473
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	5.3c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Exhibit 17 - Tyndall AFB PFAS RI contract modification to restrict investigation site boundaries

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
J	1 | 68

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
P00004	15-Feb-2023	SEE SCHEDULE	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
ENDIST MOBILE CONTRACTING DIVISION 109 ST JOSEPH ST MOBILE AL 36602	W91278	See Item 6	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
TETRA TECH, INC. 3475 EAST FOOTHILL BOULEVARD PASADENA CA 91107-6024		9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
	X	10A. MOD. OF CONTRACT/ORDER NO. W9127821F0424
	X	10B. DATED (SEE ITEM 13) 27-Sep-2021
CODE 078E8	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☐ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer ☐ is extended, ☐ is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

☐ A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

☐ B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

X C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
FAR 52.243-4 Changes

☐ D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☒ is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
Modification Control Number: k5ct9dlm23604

a. This modification is hereby determined to be in-scope.
b. The purpose of this modification is to revise the Statement of Work per attached Statement of Revisions, and to add a Point of Contact for Tyndall Air Force Base. Please see attached Statement of Work and Statement of Revisions for full detail of changes agreed to herein.
c. The contract completion date remains unchanged by this modification.
d. This is a no cost modification, as a result the contract value remains unchanged.

In consideration of this modifcation agreed to herein as a complete equitable adjustment for the above changes, the contractor hereby releases the Government from any and all liability under this modification for further equitable adjustments attributable to such factors or circumstances giving rise to the proposal for adjustment.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)	16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)
[redacted], Senior Program Manager	TEL: EMAIL:

15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
[redacted] (Signature of person authorized to sign)	February 10, 2023	BY [redacted]	2/15/2023

APPENDIX E: AFFF Site Boundary Figures (*Shape File(s) will be provided digitally)

STATEMENT OF REVISIONS

STATEMENT OF REVISIONS

**PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS), PHASE I REMEDIAL INVESTIGATION (RI)
FOR HOMESTEAD ARB AND TYNDALL AFB, FLORIDA
RFP NO. W91278-20-D-0026-0005
TASK ORDER NO. W9127821F0424, MODIFICATION P00004**

CHANGE IN TASK ORDER OBLIGATION:

To be determined (TBD)

TOTAL TASK ORDER AMOUNT (Including this modification):

Initial Task Order	$	5,837,603.95
Modification 01	$	0.00
Modification 02	$	6,350,545.17
Modification 03	$	3,251,434.35
Modification 04	$	TBD
Total Task Order	$	TBD (including all modifications)

CHANGES:

Additions are shown on the attached Appendix A with red text. Deletions are shown with ~~strikethrough~~ text.

Add the following to the end of paragraph 3 under item 1.0 Scope and Purpose.

For Remedial Investigation (RI) efforts at Tyndall AFB, lateral extent of investigations shall be completed in a progressive manner to accommodate Tyndall rebuild efforts. The initial stage of this progression shall limit the lateral extent of investigation for specific sites to the MILCON approved PFAS site boundaries that are located in Appendix E of this SOW. Changes to the investigative limits will be determined during subsequent stages by receiving official documentation from the authorized MILCON representative and the approval of the COR. Any resources not utilized for this task order will be de-obligated during task order closeout.

Add the following to the end of item a. under item 4.1 Remedial Investigation.

* However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW.

Update the points of contract under item 7.3.1 USACE Project Delivery Team (PDT).

i) Technical Manager (HARB): [redacted] CESAM-EN-GE
[redacted]

j) Technical Manager (TAFB): [redacted] CESAM-EN-GE
[redacted]

Update the points of contract under item 9.2 USACE Technical Manager.

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Update the first paragraph under item 1.2 General Intent under II. Part B – Technical Requirements.

This task order includes the PFAS RI at HARB and TAFB. All sites within each installation shall be fully delineated both horizontally and vertically, and any un-allocated resources required for delineation at an installation can be moved to other sites within that Installation as needed to achieve the final Phase-I RI requirements. However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW. Variations in delineation requirements may be approved by the PM/COR and AF RPMs.

Add the following to the end of item 1) under item 1.2 General Intent under II. Part B – Technical Requirements.

However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW.

Update the paragraph under item 2.13 Phase I Remedial Investigation CLIN Structure under II. Part B – Technical Requirements.

The SOW includes the tasks required to complete a Phase I RI (in accordance with CERCLA) for each installation at the release area sites included in Appendix A. This task order does not include completing a Risk Assessment or FS. The Phase I RI shall be completed in accordance with the most recent EPA guidance and 40 CFR § 300.430(d), and the additional requirements stated in this SOW. All release areas shall be fully delineated both horizontally and vertically for affected media (soil, groundwater, surface water, sediment) and contaminant migration pathways. However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW. Details of the actual scope required to fulfill the Phase I RI requirement will be determined in DQO scoping meetings with AF, the USACE, and environmental regulators.

Add Appendix E: AFFF Site Boundary Figures.

STATEMENT OF WORK

Per- and PolyFluoroalkyl Substances (PFAS)
Phase I Remedial Investigation (RI)

For

Homestead ARB, Florida
Tyndall AFB, Florida

US Army Corps of Engineers (USACE) - Mobile District
Contract: ~~TBD~~ W9127820D0026
Task Order: ~~TBD~~ W9127821F0424

~~August 2022~~ January 2023

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I. GENERAL REQUIREMENTS

1.0 SCOPE AND PURPOSE

The goals and purpose of this Contract are to accomplish two (2) separate RIs at two (2) different AF installations under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that characterizes environmental conditions and defines the nature and extent of per- and PolyFluoroalkyl substances (PFAS) contaminants.

The U.S. Army Corps of Engineers (USACE), Mobile District has been designated as the service center to conduct Phase I RI's at Homestead ARB, FL (HARB) and Tyndall AFB, FL (TAFB) for the Air Force Civil Engineering Center (AFCEC). This Statement of Work (SOW) defines requirements for services in support of the AFCEC environmental program area to conduct a Phase I RI at the aforementioned Air Force (AF) installations. The PFAS Phase I Remdial Investigations are being conducted as the subsequent investigative task following the previously completed Site Investigations (SI), which were completed under a similarly grouped contract.

The Phase I RI will consist of site characterization efforts to include lateral and vertical extent of PFAS contamination in all impacted media resulting from past aqueous film-forming foam (AFFF) releases and the update or development of a Conceptual Site Model (CSM). For Remedial Investigation (RI) efforts at Tyndall AFB, lateral extent of investigations shall be completed in a progressive manner to accommodate Tyndall rebuild efforts. The initial stage of this progression shall limit the lateral extent of investigation for specific sites to the MILCON approved PFAS site boundaries that are located in Appendix E of this SOW. Changes to the investigative limits will be determined during subsequent stages by receiving official documentation from the authorized MILCON representative and the approval of the COR. Any resources not utilized for this task order will be de-obligated during task order closeout.

Based on the CSM resulting from Phase I, subsequent RI efforts will consist of any additional tasks such as but not limited to quantifying human health and ecological risks, preparing the corresponding baseline risk assessment reports, and evaluating remedial alternatives. The Phase I RI shall be designed to minimize future work in subsequent phases.

This SOW includes base work to delineate nature and extent, and options for additional tasks that might be required to complete full lateral and vertical delineation. The baseline Human Health and Ecological Risk Assessments components of the RI's will be performed under a separate contract. To the extent practicable, data collected to delineate nature and extent for this Phase I RI should also be usable for risk assessment purposes.

Services conducted under this contract for the Phase I RI shall be sufficient to:

Develop a comprehensive understanding of the vertical and lateral extent of PFAS contamination in soil, groundwater, sediment, and surface water, as applicable, resulting from past PFAS use,
Determine the source-strength of residual soil contamination within unsaturated source zones, and
Update or develop a comprehensive CSM to include identifying potential exposure pathways and recommend sample requirements for follow-on RI efforts.

The AE is expected to complete activities such as:

a. Develop and update plans documenting the methods and procedures that will be used to conduct the 2 RI's including defining the nature and extent of PFAS contamination.

b. Collect and analyze geologic, geophysical, hydrogeological, chemical, physical, and hydrologic data, as well as appropriate environmental samples such as groundwater, soil, surface water, sediment, and drinking water.
c. Manage and dispose of investigation derived waste (IDW) and other waste generated during the execution of the investigation activities.
d. Develop and/or refine the CSM using validated environmental data to describe hydrogeological conditions and identify migration pathways and potential receptors.
e. Perform a source strength assessment of PFAS-impacted vadose zone sources.
f. Prepare a Phase I RI report for each installation in accordance with appropriate USEPA guidance.
g. Support meetings such as public, stakeholder, and regulatory interface.
h. Support updating the CERCLA administrative record (AR) and information repository with applicable work products and reports.

The AE shall furnish all services, materials, supplies, plans, labor, studies, management, travel, and other resources as required to successfully complete the Phase I RI as specified in this SOW. The AE shall conduct all field and office activities required to successfully complete the Phase I RI as required under the CERCLA. Required activities include project management, scoping, records review, generation of planning documents, update or generation of a Conceptual Site Model (CSM), source area investigation, groundwater plume delineation through the installation and sampling of monitoring wells, migration-to-groundwater investigation through the installation and sampling of lysimeters, where appropriate, or if technically impracticable, use of other techniques to evaluate potential continued leaching from source areas; evaluation of PFAS impact to surface water and sediment; data validation and interpretation; and generation of reports including tables, figures, and analyses. The CSM may be updated from the Site Inspection (SI) CSM or developed using existing data and data collected during the Phase I RI, as needed, and shall include PFAS release locations installation-wide, comingling of contamination, interaction with legacy contamination, geologic and hydrogeological conditions, and migration in the environment. This includes understanding the role and interaction of the geologic units, groundwater-bearing units, and surface water, as well as any man-made structures that may affect contaminant migration. Human Health and Ecological Risk Assessments will not be performed as part of the Phase I RI. The AE shall be responsible for additional activities in support of this contract such as assisting the Installations and/or AFCEC with public relations and access agreements.

The AE shall be responsible for obtaining and maintaining all registrations and certifications required by the various federal, state, and local regulatory agencies, and any other registrations, certifications, licenses, permits, warrants, or other credentials or permissions required to perform the required tasks. All work shall be conducted in a professional manner by credentialed members of architectural, planning, science, and engineering professions such as toxicologist, ecologist, hydrologist, geologist, chemist, architect, landscape architect, environmental engineer and scientist, planner, cost estimator, Computer Assisted Design and Drafting technician, publication writers/editor, technical writer, graphic artist, and Geographic Information System (GIS) analyst. These individuals are expected to possess and maintain the knowledge and experience to accomplish the specified tasks.

Generally, a credentialed professional (a) is licensed (e.g., registered professional engineer or geologist) to practice in the state where an installation/facility is located and (b) commands the necessary expertise, in terms of knowledge and experience, to undertake the specified task. An environmental professional's specific expertise may also be evinced through certification such as a Certified Hazardous Materials Manager (CHHM), Qualified Environmental Professional, or Certified Industrial Hygienist (CIH).

This contract will be awarded as a Firm-Fixed Price Contract to execute the SOW requirements and achieve a final Phase I RI for each of the aforementioned AF installations. The AE shall provide

necessary and authorized resources to perform this work to applicable engineering, safety, and construction standards, in the timeliest manner possible, and with optimal cost containment.

This SOW includes the requirements and standards expected of the AE to complete the Phase I requirements for each site. Upon contract award, this SOW is legally binding upon the AE and the U.S. Government.

NOTE: For purposes of this contract, the term "Government" includes the AF and USACE. While regulators are a governmental entity, they are also a third party over whom the AF has no control and, as such, will be referred to as "Regulators."

2.0 AUTHORITIES, RESPONSIBILITIES, AND GOVERNING GUIDANCE

2.1 Authorized Service Center (USACE – Mobile District)

The Contracting Officer (KO), USACE – Mobile District has fully designated responsibility for execution of this contract on behalf of the AF. In turn, the KO has designated the Contracting Officer's Representative (COR) as the official Technical Manager (TM) with approval authority on all technical and contractual matters. This function will be executed by the Project Manager (PM) and/or COR as determined by the USACE.

The PM/COR does not have the authority to direct the AE on contractual changes outside the approved contract; however, the PM/COR has authority to ensure the elements of the contract, SOW, etc. are fully executed. The PM/COR will ensure AE compliance with the contract through surveillance, routine meetings, and evaluation of reports. The KO is the official line of communication with the AE concerning legal and contractual matters. The KO is the only person with authority to negotiate and enter contracts and to obligate funds.

2.2 Responsibilities

The AF has established its requirements in the Solicitation and this SOW. The implementation of this Contract requires cooperation between the AE, the Installation Restoration Program Managers (RPMs), the AFCEC Program Manager (PgM), and the USACE – Mobile District in order to execute this SOW. Roles and responsibilities include:

The AF RPMs shall:

- Ensure AF requirements relating to execution of RIs for PFAS compounds are fully met
- Facilitate regulatory interactions to achieve regulatory acceptance/concurrence
- Coordinate access for AE's services at the project sites
- Ensure review of deliverables by AF Subject Matter Experts (SMEs) and Legal
- Facilitate the processing of AE's site access/badges with base agencies
- Provide guidance to the AE on the dig permit process with base agencies
- In coordination with the base Public Affairs Representative and Base Commander, respond to inquiries from a variety of sources to include congressional inquiries, public inquiries, media inquiries, and other federal government inquiries, as appropriate.

The AFCEC Program Manager (PgM) shall:

- Plan, program, budget, and execute funding for this contract and out-years
- When needed, coordinate with the AF RPMs to respond to inquiries from a variety of sources to include congressional inquiries, public inquiries, media inquiries, and other federal government inquiries, as appropriate.

The USACE-Mobile District shall:

- Be responsible for executing the contract and overseeing the technical and administrative aspects of the contract
- Ensure AE compliance with contractual requirements, monitor and manage AE performance including, PMP, IMS, etc.
- Respond to inquiries from all the AF Installations and AFCEC, and
- Assist the AF installations and AFCEC in planning, programming, budget, and execution of funding for this contract and out-years.

The AE shall:

- Adhere to the terms of the contract and execute the SOW to complete the Phase I RIs for each installation;
- Ensure high quality technical performance and end products;
- Manage project risk and proactively communicate with stakeholders regarding issues and remedies;
- Accurately and promptly manage, track and report contract performance;
- Provide support to the USACE and AF in response to inquiries from a variety of sources to include congressional inquiries, media inquiries, and other federal government inquiries;
- Ensure protection of human health and the environment during contract performance;
- Meet all applicable regulatory requirements associated with environmental restoration during contract performance; and
- Directly supervise all subcontractors, including but not limited to, technical, quality, health, and safety, etc.

2.3 Regulatory Agency

The RI of environmental contamination by PFAS compounds is authorized under CERCLA (42 USC § 9601(33)) as a release of "pollutants or contaminants" that "may present an imminent and substantial danger to the public health or welfare." Interaction with regulatory agencies is expected. The AF RPM serves as the sole point of contact between the AE and the regulatory agencies, and will be present for all meetings, teleconferences, etc. The AE shall discuss all issues that require coordination or communication with regulatory agencies with the AF RPM and PM/COR before regulatory agencies are contacted. Any contact with the regulatory agencies will be initiated by the AF RPM, and an AF Team member will be present for all meetings, teleconferences, etc. The AE or subcontractors shall not communicate directly with a regulatory authority regarding this task order without the explicit authorization of the AF RPM.

2.4 Applicable Documents and Governing Guidance

The AE shall conduct this project in accordance with CERCLA and as amended by the Superfund Amendments and Reauthorization Act (SARA) and appropriate Resource Conservation and Recovery Act (RCRA) guidance as it pertains to the Installation's regulatory requirements. Work performed shall follow the requirements of the National Oil and Hazardous Substances Contingency Plan (NCP). In addition, all work performed under this contract shall follow the guidance and policy outlined in Management Guidance for the Defense Environmental Restoration Program, (Office of the Deputy Under Secretary of Defense, Sept 2001, or most recent version) and all applicable guidance documents. All definitions not specifically addressed in section 4 shall be defined as referenced in Management Guidance for the Defense Environmental Restoration Program, (Office of the Deputy Under Secretary of Defense, Sept 2001, or most recent version).

The AE shall identify and comply with all applicable Federal, State, and local statutes; AF/Military/ instructions, manuals, handbooks, regulations, guidance, and policy letters; Executive Orders (EOs); American Petroleum Institute (API) Codes; National Association of Corrosions Engineers (NACE); National Fire Protection Association (NFPA); Steel Structures and Painting Counsel (SSPC); National Electrical Code (NEC); Uniform Fire Code (UFC); and International Building Code (IBC) including all changes and amendments in effect on the date of issuance of this Contract . It is the AE's responsibility to identify and comply with all applicable requirements. In addition, the AE shall refer to the current versions of the Department of Defense (DoD) Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing and the United States AF Construction Management Implementation Guide.

The AE shall identify and comply with all applicable documents including but not limited to, Preliminary Assessments, Site Investigations/Inspections, Records of Decision (RODs), ROD Amendments, Statements of Basis (SoBs), Explanation of Significant Differences (ESDs), RCRA Permits, FFA, SMP, and subsequent modifications, and other Decision Documents.

The AE is solely responsible for reviewing all publicly available information and forming their independent, professional conclusions/interpretation of site conditions and requirements to meet the objectives of this contract. The information provided in this SOW is not intended as a substitute for complete analysis of technical data available, nor is it intended to be a guide on how the AE should address achievement of the AF's objectives.

The AE shall conduct PFAS activities in accordance with all guidelines and references identified in Table 1 and any additional PFAS guidance, regulations, or requirements available at the time of this contract. As policies are refined and updated, the AE shall be responsible for accommodating those updates. Where conflicts appear to occur between the RFP and applicable regulations, the AE shall abide by the stricter of the requirements, and when in doubt, shall be responsible for contacting the USACE during the RFI period so clarity can be provided.

Table 1: Guidance Documents, References, and Technical Resources

Reference Publication	Date of Publication
Air Force Instruction (AFI) 32-7020, Environmental Restoration Program	11 March 2020
Air Force Memorandum: SAF/IE Policy on per Fluorinated Compounds (PFCs) of Concern	11 August 2016
Argonne National Laboratory Draft PFAS Ecological Screening Values	Spring 2020
Assistant Secretary of Defense Memorandum, Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program	6 July 2022
Assistant Secretary of Defense Memorandum, Establishing a Consistent Methodology for the Analysis of Per- and PolyFluoroalkyl Substances in Media Other than Drinking Water	7 December 2021
ASTM Standard Guide for Developing Conceptual Site Models for Contaminated Sites, ASTM E1689 95	May 2014
Department of Defense (DoD), Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories, version 5.3, or most current version	V5.4 or most current
Department of Defense, General Data Validation Guidelines, Environmental Data Quality Workgroup, most current version	04 November 2019
Department of Defense Instruction (DoDI) Number 4715.18, Emerging Chemicals of Concern	4 September 2019

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	**Date of Publication**
DoDI 4715.15 Environmental Quality Systems, Publication April 17, 2017 Change 3	8 July 2019
DoD Manual, 4715.20. Defense Environmental Restoration Program Management (Incorporating Change 1, August 31, 2018)	9 March 2012
EPA EcoUpdate Series http://www.epa.gov.oswer.riskassessment/ecoup	1991-2008
EPA Guidelines for Ecological Risk Assessment	1998
EPA Interim Final Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments	1997
EPA Risk Assessment Guidance (RAGS) https://www.epa.gov/risk/risk-assessment-guidance-superfund-rags-part	NA
EPA RSL Calculator for Risk Assessment https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search	NA
FDEP Contaminated Site Cleanup Criteria F.C.A. 62-780	02 Feb 2017
ITRC PFAS Technical Guidance https://pfas-1.itrcweb.org/	17 April 2020
OSWER Directive 9272.0-17: Implementation of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) at Federal Facility Hazardous Waste Sites	June 7, 2005
USEPA Draft Method 1633 and Revised Errata Sheets	2022
Perfluoroalkyl and PolyFluoroalkyl Substances (PFAS) Methods and guidance for sampling and analyzing water and other environmental media (EPA/600/F-17/022h)	January 2020
USEPA Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites	December 2002
USEPA Drinking Water Health Advisory for PFOA, EPA 822-R-16-005, Office of Water	May 2016
USEPA Drinking Water Health Advisory for PFOS, EPA 822-R-16-004, Office of Water	May 2016
USEPA Exposure Factors Handbook: 2011 Edition	September 2011
USEPA Fact Sheet – PFOA & PFOS Drinking Water Health Advisories, USEPA 800-F-16-003	May 2016
USEPA Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA	October 1988
USEPA Guidance for Conducting Remedial Investigations https://www.epa.gov/superfund/superfund-remedial-investigationfeasibility-study-site-characterization	Various dates
USEPA Guidance for Data Usability in Risk Assessment (Parts A and B)	December 1991 and May 1992
USEPA Guidelines for Carcinogen Risk Assessment	March 2005
USEPA Guidelines for Exposure Assessment	May 1992
USEPA Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors	February 2014
USEPA Human Health Toxicity Values in Superfund Risk Assessments	March 2005

Table 1: Guidance Documents, References, and Technical Resources	
Reference Publication	**Date of Publication**
USEPA Office of Land and Emergency Management Memorandum regarding Interim Recommendations to Address Groundwater Contaminated with perFluooroctanoic Acid and perFluorooctanesulfonate, Directive No. 9283.1-47	December 2019
USEPA ProUCL Version 5.1 Technical Guidance Statistical Software for Environmental Applications for Data Sets with and without non-detect Observations	November 2015
USEPA Regional Screening Levels https://www.epa.gov/risk/regional-screening-levels-rsls	Various dates
USEPA Risk Characterization Program	March 1995
USEPA Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions	9 April 1991
USEPA Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	March 2005
USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites	December 16, 2002

3.0 GOVERNMENT-FURNISHED INFORMATION, EQUIPMENT, AND PROPERTY

3.1 Services

The Government (USACE, AF Installations, and/or AFCEC) will provide coordination for access to the base and work sites and for badging of field staff. The Government will facilitate coordination with other AEs to exchange information and to organize field efforts. The Government will also coordinate access to other locations on and off the installations.

3.2 Facilities

The Government will not provide any facilities. The Government may provide a lay down area for AE's/subcontractor's equipment if requested. AE or subcontractor damage to any Government infrastructure shall be repaired or replaced at no cost to the Government.

3.3 Utilities

The Government will not provide any utilities.

3.4 Equipment

The Government will not provide equipment.

3.5 Materials

The Government will not provide materials.

4.0 GENERAL DEFINITIONS as Described in the DERP Manual

4.1 Remedial Investigation

As defined in 40 CFR § 300.430(d), CERCLA

The AF has developed an approach to characterize the nature and extent of PFAS contamination generally following the CERCLA Remedial Investigation process. The Phase I RI consist of 5 major components: 1) Site Characterization, 2) Conceptual Site Model (CSM), 3) Human Health Risk Assessment, 4) Ecological Risk Assessment, and 5) Final Report. The AF plans to utilize a phased RI approach as the PFAS science emerges and regulations are updated. The first phase will consist of Site Characterization, CSM, and a Phase I RI report. Work plans, reports, and other document requirements are presented in Section 7. The Phase II RI will include the HHRA, ERA, and a Phase II RI report. The Phase II RI will be executed under a separate contract. Although the scope of work for this contract does not include completion of the HHRA or ERA, the AE is responsible for collecting data of sufficient quantity and quality in order to minimize or eliminate any future data gap sampling to address HHRA and ERA needs.

a. Site Characterization: In this component, the lateral and vertical extent of PFAS (e.g. PFOS, PFOA, and PFBS) contamination is determined. The site characterization effort shall be conducted by the AE to provide a holistic understanding of the delineation of contamination in environment (e.g. soil, groundwater, surface water, sediment, etc.). Delineation of contamination shall include all applicable media; groundwater, surface water, soil, and sediment. The statement of work and site-specific details for each site at each installation is presented in Appendix A.
   * However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW.
b. Conceptual Site Model (CSM): – The conceptual site model shall encompass PFAS release locations installation-wide to acquire a holistic understanding of the PFAS release, comingling of contamination interaction with legacy contamination, geologic and hydrogeological conditions, and migration in the environment. Conceptual site model development may include data collection on and off AF property.
c. Human Health Risk Assessment: - Not included in this SOW.
d. Ecological Risk Assessment: - Not included in this SOW.
e. Phase I RI Report: This shall be a comprehensive RI report following CERCLA guidance detailing components of the investigation excluding the risk assessment and FS.

4.2 Facility

Defined in section 9601 of CERCLA

4.3 Site

In general, the “Site” is the location where a contaminant release has occurred and includes the lateral and vertical extent of contamination including; source of contamination and areas where contamination has migrated or has the potential to migrate in soil, sediments, surface water, or groundwater, prior to initiation of this contract. The “Site” will be defined for all locations to be addressed under this SOW.

5.0 MANAGEMENT, PLANNING, AND REPORTING

The AE shall implement a full range of construction and engineering activities as required to meet objectives of this contract and in accordance with all applicable installation, regulatory, and site requirements. The AE shall supply all labor, equipment, and materials necessary to accomplish the work. The AE shall perform management and planning functions, including performance measurement and fund status reporting.

Requirements include efficient management of the contract including the submission of accurate, on-time, quality contract deliverables and timely identification and solution of impediments to successful project execution. Technical requirements include early involvement in the process to allow for the development of the most cost-effective and technically sound approach or solution. The Government will rely on the

AE's expertise in recognizing and addressing problematic issues and successful execution of this contract. The AE shall perform all work in accordance with Federal, State, and local statutes and regulations. Remedies shall conform to environmental permits, decision document requirements, or other legal requirements and regulatory approval or concurrence.

The AE shall work closely with the USACE PM/COR to ensure effective communication is maintained to execute the contract in accordance with this SOW and other contract requirements. Project management coordination shall include, but not limited to, contract option subCLIN reviews to confirm the contract option modification is in alignment with the IMS, progress reviews, and other issues identified by the USACE PM/COR.

5.1 Project Management

5.1.1 Project Management Plan (PMP)

The AE shall develop and maintain a detailed PMP for each installation. The PMP shall include the Technical and Management Approach, Quality Control procedures, and Integrated Master Schedule (IMS). The PMP shall specify the project's resources and tasks corresponding to the SOW Contract Line Item Numbers (CLINs) for this contract as required for the planning, execution, control, and completion of contract requirements, and shall follow guidance documents. At a minimum, the PMP shall include the following sections:

- Description of the technical approach, the project organization, personnel and management, the project's resources and project tasks corresponding to the subCLINs for this contract,
- Technical approach for achieving the POs in accordance with the SOW;
- Contract cost/schedule baseline;
- Organization and integration of the project team (including an organization chart identifying the names of personnel and their involvement in the contract);
- Schedule management, project controls, and change management;
- Transitional activities;
- Risk management;
- Communication management;
- Quality management;
- Health and Safety management;
- Subcontractor and resource management; and
- Security management.

The AE PMP shall be consistent with USACE ER 5-1-11 (USACE Business Practices) and standard industry practice, i.e., PMP guidance. Clarification and approval of PMP content and the level of detail required to address the program shall be provided by the PM/COR.

The PMP shall include a Work Breakdown Structure (WBS) and WBS Dictionary. In addition, the WBS shall demonstrate a comprehensive decomposition of each work package/PO deliverable and exhibit a clear and concise correlation between the SOW, IMS and subCLIN structure. Decomposition of the SOW into discrete work packages at the lowest reasonable level shall be demonstrated in the WBS and WBS Dictionary.

The PMP shall also include a Milestone Payment Schedule/Plan that identifies the tangible elements to be tracked and monitored for invoicing and change control. The Milestone Payment Schedule/Plan shall be coordinated and approved by the PM/COR.

The first draft of the PMP shall be due within thirty (30) calendar days of Contract award (or a more aggressive schedule if agreed upon by the COR and the AE). The draft PMP and subsequent revisions shall be subject to USACE and AF review and approval. Response to comments and changes shown in

redline/strikeout shall be provided within 14 calendar days, and the final PMP shall be due within seven calendar days of USACE and AF approval of responses to comments. A one-time payment milestone will be established for USACE approval of the final PMP through the PM/COR. The PMP shall be maintained throughout the duration of the contract and updated as necessary and has required by the PM/COR.

The PMP shall include the following aspect-specific plans:

- Quality Management Plan – detailing the quality management aspects of the task order including document quality, data quality, personnel qualifications, and other aspects of program quality management. The quality management plan shall include standard operating procedures for all quality-related tasks.
- Schedule Management Plan - defining how the project schedule is managed throughout the project lifecycle. The plan provides guidance and sets expectations for project schedule policies and procedures for planning, developing, managing, executing, and controlling the project schedule.
- Communication Management Plan – organizing and documenting the process, types, and expectations of effective communication for this task order, including stakeholder and project team communication requirements. The communications management plan shall include a comprehensive organizational chart including lines of responsibility, authority, and lines of communication for the task order.
- Subcontract Management Plan – detailing how the AE will manage all subcontracted activities, including laboratories, drillers, and professional services subcontracts that may be used for technical/management support. The subcontract management plan shall detail the means and methods used by the AE to provide subcontractor oversight and monitoring, inspections, audits, and other means of quality control throughout the task order. The Subcontract Management Plan shall detail how the AE shall always directly supervise work performed by subcontractors, including but not limited to management and safety oversight of all fieldwork.
- Project Controls Plan – This plan outlines how the schedule and budget will be managed throughout the project, including integrated chance control to monitor and document changes to the baseline schedule, and monitor and control use and expenditure of project resources. Since this task order is designed to allow resources to be reallocated and moved as needed across sites in order to achieve the site-specific horizontal and vertical delineation of PFAS contamination, this plan will document how resources will be tracked, controlled, monitored, and reported.
- Waste Management Plan – This plan will document the handling, storage, characterization, profiling, and final disposition of all generated waste, including investigation derived waste. The plan will address both PFAS and other potential contaminants that may be present at each site.
- Additional Plans – The PM/COR may require additional planning documentation and/or documentation for the PMP as project issues and complexities arise.

5.1.2 Project Information Repository

The AE shall maintain a web-based document repository for all Phase I RI-related documents, including but not limited to:

- Information on meetings including meeting agendas and meeting minutes
- Documents submitted, including but not limited to work plans, planning documents, reports, data, studies, invoices, presentations
- Sub-CLIN details
- IMS
- Monthly AE's Progress, Status, and Management Reports (CPSMRs)
- Current topics associated with the contract
- Basic stats/objectives

- Stakeholder POC contact information
- Calendar of events/meetings/milestones
- Analytical results/reports
- 3D conceptual models
- Links to Administrative Record/Information Repository records
- Links to associated appropriate reference documents
- State and Federal policy guidance
- Key performance indicator metrics tracking

The AE shall present a documentation repository format and template for PM/COR review and approval (e.g., the repository shall be logically organized by task/Site, CLIN and subCLIN, and phase of work). The AE shall include a Document Repository O&M procedure (included in the PMP) detailing how the AE will ensure information in the repository is correct, current, and complete. The AE shall present AF and the USACE with a proposed repository format, outline, and design for approval. The COR/PM may require corrections and/or modifications of the repository throughout the Contract. Information assurance requirements for DoD information systems and/or data storage must meet the technical security requirements of the DoD/AF environment and is the responsibility of the service provider to meet the mandates defined in DoDI 8510.01 dated 28 July 2017. Responsibility for procedural and administrative security is shared between the service provider and the supported entity contracting for the service and must meet the Defense Information System Agency Best Security Practices.

The repository is intended to be a single access point repository for all contract-related documentation. The repository shall be accessible to stakeholders during the life of the contract, and the AE shall implement security measures to ensure/control access to appropriate parties. The AE shall provide email notifications to the AFCEC PM, AF RPM, and USACE PM/COR when information is included/modified in the repository. At close-out, all repository documents will be transferred to DVD or other digital media (per the PM/COR) and copies delivered to AF and USACE. Periodic format adjustments during the life of the contract may be required to ensure consistency and will be provided by the COR. Stakeholders will be provided with appropriate security password restrictions.

The AE shall create and maintain a Master Document List (MDL) that includes all documents, whether the document is a deliverable or not, prepared during this contract. The AE shall maintain the project documents for the duration of this contract and transfer custody to the Government within 90 calendar days prior to POP expiration.

5.1.3 Integrated Master Schedule (IMS)

The AE shall maintain a detailed baseline and working IMS for each installation that facilitates the management of the project work and provides the capability for project performance tracking and early identification of potential schedule impacts using Gantt charts and Critical Path Method analyses. The IMS shall:

- Identify work items based on the subCLIN structure
- Include both negotiated baseline dates and current schedule projections
- Identify all sites associated with each milestone/task
- List percent complete for each line item and a rollup percent complete for each milestone
- Accurately reflect program progress and provide realistic forecast projections.

The IMS shall be prepared following approved AF/USACE guidance and shall present a realistic sequence and timing of all activities and documents necessary to execute the SOW within the POP and complete a final Phase I RI report. The IMS shall be organized by WBS, aligned with the CLIN structure,

and include, but is not limited to, the following columns in the prescribed order shown below, or as required by the PM/COR:

- Installation name
- Site number and identification
- CLIN or subCLIN
- WBS Element number
- Task description
- Task duration
- Start and finish dates
- Baseline start and finish dates
- Percent complete; and
- Logic, Predecessors, and successors

The WBS work package detail shall be further broken down into discrete manageable tasks in the IMS with activities at the detailed execution level. The IMS shall be realistic and include the appropriate work calendar, logic, and durations to complete the work under this contract. Sites associated with each milestone/task must be noted in the IMS. The PM/COR or AF RPM may require additional detail in the IMS.

The AE shall submit the baseline IMS for approval within 10 business days following contract award and update the schedule monthly thereafter for submittal with the monthly CPSMR. The IMSs shall be submitted in native and PDF formats to the Project Repository and in accordance with instructions from the PM/COR. The COR/PM may require corrections and/or modifications to the IMS throughout the Contract POP.

The schedule shall be provided to the AFCEC PM, AF RPM, and USACE COR/PM in electronic format consistent/compatible with DoD software, currently Microsoft™ Project, and in portable document file (.pdf). Certain versions of the IMS may be required to be submitted in Excel table format as well. Updated and revised schedules shall be submitted to the USACE COR/PM with monthly status reports with changes clearly identified by the AE. A copy of the proposed project schedule shall be provided with the proposal in MS Project format, or equivalent and shall be evaluated as part of the proposal review process.

5.2 Cost and Status Reporting

5.2.1 AE's Progress, Status, and Management Report

The AE shall prepare and submit a monthly CPSMR by the 15th working day of each month to the USACE PM, AF RPM, and AFCEC PM summarizing contract progress through the end of the previous month. The CPSMR shall be used to review and evaluate the overall progress of the project, along with any existing or potential problem areas. Additional cost/schedule status reporting detail may be required by the PM/COR. The CPSMR shall be presented by CLIN/subCLIN and shall include graphics, charts, and/or tables to clearly communicate the information presented in the CPSMR. The CPSMR shall also be used to indicate whether efforts for each site are on target for completing the Phase I RI in accordance with the SOW within the POP. The report shall be prepared in a format coordinated with the COR and shall be prepared and submitted in an electronic format to the AE's document repository and via electronic mail.

The CPSMR shall include a summary of the events that occurred during the reporting period, discussion of performance, identification of problems, proposed solutions, corrective actions taken, outstanding issues, and payments made to date. Failure to submit timely and complete monthly progress reports may

result in payment withholding. Each report shall include the following information and formats at a minimum:

- Completed tasks in the previous month including a list of meetings held during the reporting period;
- Status update of the Milestone Payment Schedule/Plan
- Statused IMS
- Monthly cost performance data including planned value, actual cost, un-invoiced progress, cost/schedule variance, and other parameters as requested by the COR/PM.
- Address problems encountered in completing the various tasks and any changes in scope or direction from the program baseline, including actual or potential schedule and cost impacts;
- Upcoming tasks for the next two months;
- Regulatory meetings (completed or upcoming);
- Project the estimated cost at completion, in accordance with the Contract, if the Project Price is expected to be exceeded;
- Other pertinent information necessary to provide the AF RPM and AFCEC PM information necessary to monitor the project success.

These requirements shall apply unless the COR/PM provides the AE with specific written alternative instructions. Monthly reports shall be signed and dated by the senior project manager designated for the project.

5.2.2 Invoicing, Direction, and Responsibility

While submitting an invoice each month is not required, the AE shall submit no more than 1 invoice each month. All invoices shall be submitted using form ENG-93, which may be modified with COR/PM approval to better reflect the invoicing structure for this contract.

Partial payments, as authorized by the COR will be made monthly for the amount and value of the work and services performed by the AE in accordance with the General Provision of the task order. An updated progress chart/submittal and technical project status summary shall be submitted monthly to the technical manager at the time of each payment estimate (ENG Form 93).

A copy of the electronic ENG Form 93 may be found at the following website http://www.publications.usace.army.mil/USACEPublications/EngineerForms.aspx. The electronic copy of an ENG Form 93 shall be prepared by the AE, and shall be submitted via e-mail to EN-TS, at E-mail address: SAMAE-ENGFORM93@usace.army.mil. Please CC the Technical Manager (TM) and COR. The Mobile District Project Manager for this work is [redacted] and Technical Manager is [redacted]

All required information must be filled in correctly by the AE, and the form must have a true electronic signature of an officer of the company. Cut and pasted images of signatures will not be accepted as electronic signatures. The estimate will be verified by the COR utilizing the progress report submitted by the AE and independent analyses of progress. The AE must submit the ENG form 93 and any supporting documentation in a separate PDF file, with the file name that includes the contract number, the delivery order number, the task order number and the invoice number, followed by an underscore ENG93.pdf. See the following example: W91278-15-D-0038 (W9127817F0088) 0013-02_ENG93.pdf. When submitting for final payment, include a Release of Claims Statement with, or on the ENG 93, the following statement is acceptable:

"The work under the above numbered task order having been completed and finally accepted, I hereby release the United States of America, its officers and agents from all claims whatsoever arising under or by virtue of this contract upon payment of a balance due of $_____."

"Directions"
The A-E shall accept technical directions only from the Mobile District Procuring Contracting Officer (PCO) or the Authorized Representative of the Contracting Officer (COR). Requests or desires of the users, using agency, or other Government employees made directly to the A-E will be immediately brought to the attention of the COR and PCO. Only a warranted Procuring Contracting Officer (PCO), acting within their appointed limits, has the authority to issue modifications or otherwise change the terms and conditions of this contract. Any changes to the project affecting scope, delivery, price, or other terms and conditions must be authorized in writing by the PCO. Proceeding with any change not authorized by the KO shall be at the Contractor's own risk.

5.3 Environmental Resources Program Information Management System (ERPIMS) Data Management

Comply with the Environmental Resources Program Information Management System (ERPIMS) data deliverable requirements for all field-derived data/information supported by ERPIMS data structure including, but not limited to, sampling data, relevant QA/QC data, lithology, groundwater, monitoring well location, well installation, well maintenance, and/or abandonment information.

After receipt of the contract, the AE shall submit an ERPIMS Data Submission Schedule within 30 days of award to establish the projected framework for ERPIMS data submissions. The AE shall record and enter field and laboratory data and submit this data as specified in the latest ERPIMS Data Loading Handbook (DLH) using the latest version of the ERPIMS software utility (ERPTools).

ERPIMS data submissions are required within 90 calendar days of sample collection unless a written waiver or extension is obtained from the KO in coordination with AF. The AE shall be responsible for the accuracy and completeness of all data submitted. The AE shall ensure that any required corrections are accomplished within both the contract POP and before funding expiration. The preferred procedure is for laboratories to use ERPTools to input/submit chemistry data for initial validation, import, and submission by the AE. ERPTools training is available to the AE and laboratory contractors. All milestones that include analytical sampling shall include successful ERPIMS loading of all relevant ERPIMS data elements into the production database as a minimum acceptance criterion.

The AFCEC website (https://www.afcec.af.mil/What-We-Do/Environment/Restoration/ERPIMS.aspx) offers the latest DLH, ERPTools client software, ERPIMS policy, ERPIMS Help Desk contact information, data submission requirements, ERPTools training schedules, and more. Data submissions shall be error-free, pass all validation checks and fully comply with the ERPIMS DLH. The AE shall ensure that any required corrections are accomplished within both this contract POP and before funding expiration. The preferred procedure is for laboratories to use ERPTools to input/submit chemistry data for initial validation, import, and submission by the AE. ERPTools training is available to the AE and laboratory contractors.

5.4 Meetings, Conferences, and Telecommunications

For each of the AF installations, it is expected that meeting participation and facilitation will include: (1) Several project scoping meetings, separate for each installation (number to be determined); (2) Monthly project status updates via teleconference with the COR, AF POCs, and technical support; (3) At a minimum, two (2) project status teleconferences per year with the Regulators; (4) A varying number of RAB meetings per year depending on the installation (see section 5.4.5) and (5) Public Meetings or

Hearings. The frequency of the various meetings may change based on the status of the environmental restoration program at each installation. The USACE and AF will be present for all technical and public meetings with the regulatory agencies; however, the AE shall coordinate the meetings, provide logistical support (e.g., facilities, audio/visual), present materials, and lead technical discussions. The AE shall clearly identify themselves as "AEs" in all situations involving stakeholders. The AE shall prepare, and submit for USACE and AF review and concurrence, any presentation materials proposed for use at meetings.

The AE shall attend the meetings described below. For each meeting except the RAB and Public Meetings/Hearings, the AE shall submit an agenda at least 5 business days in advance to the USACE and AF for review and comment. The final agenda shall be provided at least 24 hours prior to the meeting. Within 1 week of each meeting completion, the AE shall submit meeting minutes to the USACE PM/COR, AF RPM, and AFCEC PgM which shall include a list of meeting attendees with email addresses and telephone numbers, a summary (not a transcript) of key issues discussed and their disposition, a list of action items, and any other pertinent information discussed at the meeting. Copies of the final meeting minutes shall be submitted and distributed to the USACE PM/COR, AF RPM, AFCEC PgM, and any additional meeting attendees. Meeting agenda and meetings minutes can be submitted electronically and shall be uploaded to the information repository.

The AE shall function as an integral team member in support of the AF mission, to include the sharing of information with other AF and USACE AEs and AF personnel, and cooperation with communities, regulators, and other government entities.

5.4.1 Kickoff Meetings

The AE shall coordinate a post-award 'kick-off' meeting for each installation within 30 days of award meeting with the Government (USACE and AF) to review the project requirements, PMP, IMS, and other project requirements as determined by the COR/PM. The Government kick-off meeting shall include a comprehensive review of the PMP and site-specific approaches, IMS tasks, durations, and alignment of WBS and IMS.

Following the Government kick-off meetings and all document modifications resulting from the kick-off, the AE shall attend and support the post-award kick-off meetings with the regulators, USACE and AF to introduce technical approaches, schedules, etc. The intent of this meeting is to present the SOW requirements and a high-level approach to address these requirements, provide the deliverable schedule to regulatory agencies, and solicit feedback regarding the Phase I requirements and proposed approach to facilitate concurrence and buy-in when technical scoping sessions are performed.

5.4.2 Progress Meetings and Teleconferences

The AE will participate in telephone status meetings with USACE and AF. These meetings are anticipated to occur monthly, but depending on the amount of field activity, these could occur on a bi-weekly or weekly basis. The purpose of the telephone meetings is to ensure that all issues for work underway are addressed. Telephone conferences are usually less than one hour in length. Project progress teleconferences with regulators are anticipated to occur two times per year, usually less than 2 hours in length.

5.4.3 Project Scoping Meetings

The AE shall host project scoping meetings during project plan development to discuss and confirm the sampling plan and Quality Assurance Project Plan (UFP-QAPP) data quality objectives (DQO). The first 2 meetings will be held with the AF and USACE, and a final meeting will include the AF, USACE, and Regulator(s). Scoping meeting variations may be approved by the PM/COR and AF RPMs. The

individual installation may need to increase the Internal and/or Scoping Meetings with the Regulator based on project complexity and/or expected Regulator interaction. Project scoping meetings shall be performed using web sharing program such as MicroSoft® Teams, WebEx, or similar. Conferences are expected to last approximately 2 to 4 hours each depending on the complexity of the project. Appropriate figures, tables, and draft UFP-QAPP worksheets shall be used to depict the details of the proposed sampling plan.

5.4.4 Project Management Review Meetings

The AE shall coordinate one PMR meeting or teleconference for each installation each year with the USACE and AF. The AE shall be responsible for ensuring that the attendees are selected to provide the necessary level of expertise required by the purpose and scope of the meetings.

5.4.5 Restoration Advisory Board (RAB) Meetings

The number of RAB meetings per year varies by installation as follows:

- HARB: Currently none, but that may change during this contract (assume 2x/year)
- TAFB: 2 RAB meetings/year

The AE should anticipate presentation of one or two select work topics to be determined by the AF RPM for each RAB. Presentations for the RAB shall be submitted at least 2 weeks in advance, or on an alternate schedule designated by the COR/PM, for USACE and AF review and comment. It is anticipated that all RAB meetings will be held at or near each Installation and the AE will be required to travel to the Base to attend.

5.4.6 Public Meetings and Hearings

The AE shall attend teleconferences when necessary, and support the AF RPM to provide updates and briefs to the assigned Public Affairs Officer (PAO) to ensure the PAO is fully aware of all ongoing activities, public outreach status, compliance with applicable regulations, and potential issues that might impact the AF and its public image in accordance with Clause H029, Implementation of Disclosure of Information.

Examples of types of Public Affairs requirements include the presentation of technical information and logistical support (e.g., advertising, audio-visual, handouts, report(s), recordings, verbatim transcripts, poster boards, slides, synopses, etc.) for events and/or meetings in support of the government's position. All reports and other information generated under this contract shall become the property of the Government, and distribution to any other source by the AE is prohibited unless authorized by the COR/PM.

The AE must utilize staff trained in public affairs to complement the technical staff on the project. These trained staff must attend all meetings with the public along with the appropriate technical staff. The credentials of the trained staff must be submitted to and approved by the USACE COR/PM in advance of any meeting with the public. The minimum acceptable credentials of the trained staff will demonstrate effective communications experience and experience in building relationships with the stakeholders involved in cleanup activities or similar efforts.

The AE may be tasked to research, coordinate and provide responses for short-notice internal and external requests for information such as congressional inquiries and media requests as requested by the PAO or other applicable action officers. These inquiries may require the AE to provide the USACE and/or AF factual and responsive information within one working day of the request.

5.5 Proprietary Information

All material gathered and/or developed in the performance of the tasks listed in this SOW shall be the property of the AF installation and shall only be used by the AE and their subcontractors for the execution of this SOW. Additionally, all documents shall be delivered to the government with unlimited rights and without restrictions. The AE is not authorized any other use or distribution of said material without the specific written permission of the COR/PM. After completion of the project, all materials shall be returned to AFCEC and USACE-Mobile District.

5.6 Record Keeping

The AE shall create and maintain in 1 location written (in bound, numbered logbooks and/or field forms) and electronic records (i.e., laboratory analytical data records, data logger, etc.) sufficient to recreate each sampling, analytical, testing, and monitoring event. The AE shall maintain records of all activities outlined in the appropriate portion of the Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP)/Work Plan (WP) supporting the generation of these sampling and analysis records. The AE shall also retain written calculations using information obtained from sampling, analysis monitoring and testing activities, to include all raw data. The AE shall make these records available to the government upon request. The AE shall retain records for a minimum of 5 years.

All field documentation shall be recorded in bound, numbered logbooks. Field logbooks shall have numbered pages and shall include a complete record of all field activities. If multiple field logbooks are required, each shall be numbered and specifically identified to indicate dates and sites where used. Field documentation shall be recorded at the time of fieldwork, i.e., details may not be added after the fact. All information required to fully recreate all sampling and investigation events shall be documented in the field logbook. Use of field forms may augment but not replace the detail required in the field logbook. Field logbook/field form entries must be legible. Digital field documentation may be used only with COR/PM review and approval, and only if the digital documentation methodology is securely recorded and includes an unalterable date and time stamp.

5.7 On-Installation Access and Site Access Badges

Standard work hours are typically 0800 to 1700 Monday through Friday but may vary per installation. Additional work hours and/or weekend work may be proposed by the AE and is contingent upon approval by the Government. Some work locations require an AF escort, an airfield driving permit, a line badge, etc. and work access restrictions may vary during the performance of this contract; therefore, all fieldwork shall be coordinated with and approved by the installation on which the work is being performed (see Part B, Technical Requirements, Site Specific Information). The AE shall conduct a weekly fieldwork planning meeting with each installation and present a schedule of site-specific tasks planned for that week. The Installations will review the schedule and identify locations with additional access or escort restrictions. The AE may be required to modify the planned work schedule as directed by the installations.

The AE shall obtain and monitor assigned security badges (used by both AE and subcontractor personnel) for the duration of this contract. All security badges and/or passes shall be returned to the AF point-of-contact (POC) or AF Security upon expiration of the badge, upon completion of the project, or when possession of the badge is no longer necessary (e.g., AE transition of personnel from the project).

5.8 GIS/GeoBase Spatial Data (Mapping) Requirements

In furtherance of the environmental construction or restoration effort, the AE shall provide geospatial data and map(s) of Installation features (historical, existing, or planned) altered or constructed as required to achieve the POs of this contract.

Source data and product data remain the property of the United States government. The AE may be required to explain and demonstrate the company's process for protecting all geospatial data, including

but not limited to, geometry, attributes, metadata, topologies, and relational database schemas and operations used in association with this SOW. Further information about security and nondisclosure requirements should be obtained from the Installation Geospatial Integration Office (GIO).

The AE shall provide data to update the GIS and/or computer-aided design and drafting (CADD) files as required to achieve the POs of this contract. Source data and product data remain the property of the United States Government.

All products associated with this contract that provide a map representation of the location of installation features (historical, existing, or planned) including installation maps, site plans, area development plans, walls-out as-built depictions, or other related overhead (plan) views of an Installation (partial or entire) must adhere to the following requirements. (NOTE: This requirement does not currently involve walls-in facility floor plans or interior renderings.)

All maps and associated data must comply with the latest AF version of SDSFIE available from the SDSFIE Web site: http://www.sdsfieonline.org/ or contact the AFCEC GIO at AFCEC.GIO.WorkFLow@us.af.mil or (210) 925-4620. These data will be organized using the current version of the standard approved by the Headquarters Air Force GeoBase Office as the functional lead for Installation mapping and visualization. The SDSFIE will determine file and feature class identification and definition, attribution, and valid domain values. When any geospatial information collected as a result of the contract includes information identified in the Common Installation Picture (CIP) or recognized Mission Data Set (MDS), the AE will deliver data consistent with the established requirements for the data and will ensure functionality with the receiving system. The AE shall also consult with each Installation POC and/or Installation GIO office to ensure CADD and GIS data is compatible with each Installation's requirements.

Information must be collected at no less than 1:1200 scale. Spatial data will meet or exceed National Map Accuracy Standards at those scales. Metadata will be provided and will use Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM) for organization.

As a requirement of this contract, the AE shall provide to the Government all shape files, file geodatabases, map exchange files (MXDs), and Geospatial data accumulated as a result of investigation recorded on compact discs (CDs) and also electronically. Geospatial data must be delivered in a geo-referenced GIS format (feature-based file structures with one-to-one cardinality between spatial records and attribute records) which would include Environmental Systems Research Institute's (ESRI) shapefile and geodatabase formats. All attribute data as specifically outlined in the contract must be included either in the GIS data file or as a separate table with a SDSFIE key variable that may be used to relationally join the separate table with the GIS data file. All geospatial data must be delivered in the North American Datum 1983 (NAD83) projection, State Plane Coordinate System, using feet or metric coordinate units. For all locations within the Restricted Area, Universal Transverse Mercator (UTM) coordinates must also be provided. Further guidance on mapping units, coordinate systems, and projections is available from the Installation GIO.

Mapping- or Survey-Grade Global Positioning Systems (GPS) or comparable traditional survey methods will be used to collect geospatial data. The use of mapping- or survey-grade GPS will depend on the precision requirements of the product data. These requirements will be specified later in this SOW for all contract activities where geospatial data are involved. In the case of contracts involving utility construction, location and attribute data will be obtained at the time of excavation. Further information about precision requirements should be obtained from the Installation Execution Support (GeoBase) Office.

The AE shall be required to sign a non-disclosure agreement attesting to the same before source data are released. Further information about security and non-disclosure requirements should be obtained from the Installation GIO. Some installation map data, source and/or product, may be considered by the

Government to be "sensitive, but unclassified." The intent of this clause is to prevent intentional or unintentional dissemination of "sensitive, but unclassified" information to include unauthorized access to the source and product data by any entity wishing to do harm to the AF or United States Government while the data resides on the AE's computer network. The AE is not authorized to release this information to any third party without the explicit consent of the AFCEC GIO (AFCEC/CPAB) or its involved installation. All source information must be returned to the Government POC or destroyed upon completion of this project.

Documentation of information destruction shall be documented and provided to the Installation POC. Special requirements for handling classified map data, if applicable, will be addressed elsewhere in this SOW. The AE is required to follow MD 11042.1 regarding Safeguarding Sensitive but Unclassified (For Official Use Only) information dated 5 January 2005.All final site data collected shall be in a geospatial data standard nomenclature. The data will be submitted to AFCEC, the installation, and USACE for inclusion on their database. The AE shall work to ensure all data have been validated and is accurate. The AE shall not establish new geographic information system (GIS) systems. In furtherance of the environmental construction or restoration effort, the AE shall provide geospatial data and map(s) of installation features (historical, existing, or planned) altered or constructed as required to meet the objectives of this contract.

Source data and product data remain the property of the U.S. Government. The AE may be required to explain and demonstrate the company's process for protecting all geospatial data, including but not limited to, geometry, attributes, metadata, topologies, and relational database schemas and operations used in association with this SOW. Further information about security and nondisclosure requirements should be obtained from the Installation GIO. The AE shall also ensure that GIS data are submitted in a format compatible with the AF GeoBase program, as outlined in the AF GeoBase Strategic Plan.

5.8.1 Metadata Requirements

The National Spatial Data Infrastructure (NSDI) encompasses policies, standards, and procedures for organizations in the United States to cooperatively produce and share geospatial data. The Federal Geographic Data Committee (FGDC) has assumed leadership in the evolution of the NSDI in cooperation with the Department of Defense and other federal agencies, state and local governments, academia, and the private sector. The FGDC has developed standards for collecting common information describing the content, quality, condition, and other characteristics of map and imagery data. These standards are collectively known as the “Content Standards for Digital Geospatial Metadata”. Executive Order 12906 "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," requires all federal agencies to use the FGDC Standard to document all geospatial data that they produce (beginning in 1995). Products Requiring Metadata Collection.

The AE will collect and report metadata on all delivered products, including intermediate products such as breaklines, etc. Information concerning FGDC’s “Content Standards for Digital Geospatial Metadata” is available on the Internet at: http://www.fgdc.gov/standards/standards_publications/index_html.

The FGDC’s “Draft Content Standards for Digital Orthoimagery” product can be found on the Internet at: http://www.fgdc.gov/standards/projects/FGDC-standardsprojects/ orthoimagery/ orth_299.pdf

5.8.2 Required Metadata Format and Data Elements.

Metadata will be submitted in an ArcXML based format capable of being utilized by ESRI’s ArcGIS and at a minimum will include the following data elements:

- Identification Information
- Contact Information
- Time Period
- Data Quality

- General Information
- Attribute Accuracy
- Positional Accuracy
- Source Information
- Process Steps
- Spatial Reference
- General Information
- Horizontal Coordinate System
- Vertical Coordinate System
- Metadata Reference
- Metadata Date

5.9 Notification Requirements

The AE is required to notify the USACE KO, PM, COR and AF RPM of critical issues that may affect the contract performance. For issues that affect human health, safety and the environment, the AE shall verbally notify the PM/COR and AF POCs immediately and follow-up with email notification no later than 8 hours after occurrence.

Based on issue severity, the KO, PM/COR, and/or AF RPM may require the AE to "pause" work activities until more information is gathered. A work "pause" is not an official "stop-work," but is a suspension of activities that may exacerbate the issue.

The types of issues that require notification include, but are not limited to, health/safety risks and actual occurrences (e.g., breach of energized power lines), spills, Notices of Violation (NOVs) (received or anticipated), changes in critical personnel, and finding unanticipated unexploded ordnance (UXO), discarded military munitions, munitions constituents present in high enough concentrations to pose an explosive hazard, or chemical warfare material (CWM). The AE shall follow the 3Rs principal of Recognize, Retreat and Report if Munitions and Explosives of Concern (MEC) are encountered or suspect to have been encountered. The AE shall provide the KO with written notices, via email, of the incident occurrence and a follow-up notice of the incident resolution. Field activities shall not continue until clearance is received from the AF RPM and USACE KO. On critical issues, verbal notification should be made immediately, followed by written notification as soon as practical.

5.10 Permits

The AE shall develop, coordinate, apply and pay fees for, comply with, and/or modify all federal, state, local, and other applicable permits, right-of-entry agreements, easements, licenses, and certificates required to meet the objectives of this contract. The AE shall maintain a library of these documents at the AE's site office as well as the corporate facility handling each contract. The AE shall comply with all applicable permit conditions. It is expected that this effort will include activities such as:

a. Maintaining all needed permissions and clearance to areas such as RI areas, as these areas may be on active airfield, other secured areas, public water well locations, or private property. For private property the AE activities shall be at the direction of the government. Prior to work being performed on private property, the government will obtain permissions for site access; in some instances this could take up to 8 weeks or more.
b. Determining and obtaining all required site-specific training needed to access and work on sites.
c. Coordinating and scheduling work and other access with the AF RPM or a local representative with the current property owners.
d. Preparing Federal Aviation Administration obstruction clearance permits for work within the active airfield.
e. Supporting coordination with authorities for access at cultural and natural resource areas.

f. Providing metes and bound survey(s) as required to establish easements on the property utilizing a registered land surveyor.

5.11 Photo Documentation

The AE shall prepare digital photographic documentation, as required to meet the objectives of this contract. The AE shall include dated photographic documentation of site(s) and building(s) under investigation, field activities, and sample locations. The AE shall upload all photographs to the AE's web-based repository. Photography of any kind must be coordinated in advance through the USACE COR and AF RPM. All photographs must be digitally dated. Photo documentation shall be included in daily reports, CPSMRs, etc.

All of the AF installations prohibit photography of the flightline, aircraft, and in other sensitive areas. Prior approval for photographs on all instllations is required and visual inspection of the photos after the photos are taken by AF installation personnel is required prior to use or dissemination.

5.12 Off-Installation, Remote and/or Austere Sites

The AE will be required to perform work as specified at off-installation, and possibly remote and/or austere locations. The AE shall be responsible for all personnel, security, supplies, equipment, and infrastructure (including, but not limited to, potable water, utility systems, housing, dining, transportation, and medical care) when there are no facilities and services available. This may occasionally include providing these facilities and services to a limited number of government personnel or other AE personnel present or visiting to oversee or assess the work.

If off-base RI work is conducted on private property, the AE will be responsible for protecting Personally Identifiable Information (PII) and will coordinate with the AF/USACE on how to incorporate into the required RI reports.

5.13 General Requirements for Field Activities

The AE shall comply with all applicable federal, state, and any other applicable regulations concerning safety during site characterization and remedial activities, including, but not limited to, drilling, sampling, construction, and remediation and operations activities. All AF, USACE, and AE employees shall be authorized to stop fieldwork that is being conducted in an unsafe manner until the deficiency is properly addressed to ensure worker safety.

All activities requiring AE access to the Installations (e.g., drilling operations, sample collections, well development and testing, surveying, demolition, construction, operations, and maintenance, etc.) or affecting other installation activities shall be coordinated with appropriate installation personnel before implementation. Work will be implemented in a manner that minimizes disruption of the installation's mission(s) and operations.

The AE shall coordinate worksite activities with all applicable AF and USACE personnel to ensure the protection of human health and the environment; the prevention of damage to property, utilities, materials, supplies, and equipment; and the avoidance of work interruptions. The AE shall provide physical security to work areas by furnishing security equipment and personnel. The AE shall perform emergency response to situations arising from project activities. The AE shall perform emergency repairs to facilities, systems, improvements, or utilities damaged while executing contract requirements made to either AF property or to public or private off-base properties. The AE shall comply with all local, state, federal and military law and guidance covering security activities. The AE must comply with Occupational Safety and Health Administration (OSHA) safety and health regulations, USACE EM-385-

1-1, and all local safety office requirements. The AE is required to provide copies of any OSHA report(s) submitted during the duration of the contract the KO and AF RPM.

For environmental services, all on-site workers (AE and subcontractor) performing hazardous operations, including working with hazardous materials, must have completed the OSHA 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) training and/or other applicable training, plus annual refresher courses. The AE shall maintain documentation supporting training records and have the Accident Prevention Plan (APP) and Site Safety and Health Plan (SSHP) on site and available for workers, USACE, AF, and/or regulatory review.

The AE shall be responsible for any damage caused to property of the United States (Federal property) by the activities of the AE or their subcontractors under this contract and shall exercise due diligence in the protection of all property located on the premises against fire or damage from any and all other causes. Any property of the United States damaged or destroyed by the AE or subcontractors incident to the exercise of the privileges herein granted shall be promptly repaired or replaced by the AE to a condition satisfactory to the USACE COR or reimbursement is made by the AE sufficient to restore or replace the property to a condition satisfactory to the USACE COR in accordance with FAR Clause 52.245-2.

5.14 Environment, Safety & Health

The AE shall prepare a HSP for each installation to comply with AF, USACE, Occupational Safety and Health Administration (OSHA), USEPA, federal, state, and local health and safety regulations and guidance, including EM 385-1-1 and ER 385-1-92. In accordance with EM 385-1-1, the HSP will consist of a Site-Specific Safety and Health Plan (SSHP) and Accident Prevention Plan (APP). Fully utilize any existing related HSP, tailored specifically to the current effort. The AE shall maintain written certification that the approved HSP has been reviewed with all personnel that work at the project site prior to their mobilization. The AE and all subcontractors are required to comply with the approved HSP (including SSHP and APP). The Government can shut down operations due to non-compliance or occurrence of a safety incident without cost to the Government until safety issues are resolved.

Prior to the start of any fieldwork, the USACE COR/PM, AF RPM, and Mobile District Safety Office must accept the AE's APP/SSHP. In addition, the USACE COR/PM must accept any changes to the APP/SSHP prior to commencing work covered by the changes. The APP/SSHP shall be included as an appendix or attachment to the UFP-QAPP/WP. The AE shall provide comprehensive Health and Safety oversight of all field activities.

5.15 Quality Management Plan

The AE shall develop and implement a Quality Management Plan (QMP) for each installation that addresses all aspects of the contract, including but not limited to, document quality, schedule updates, fieldwork, field documentation, etc. The AE shall conduct audits of all field efforts and shall provide the COR/PM and AF RPM with a report summarizing each field effort, issues identified, and corrective actions. The QMP shall include procedures for audits, root cause analysis, lessons learned, etc.

The AE shall develop and implement a Quality Program that addresses the work and processes to be completed under this contract, including applicable procedures required to support standard quality practices for document quality, field work, readiness reviews, lessons learned, root-cause analysis, and all other tasks related to overall contract execution. The goal and purpose of the Quality Program is to ensure work under this contract be of the highest quality to support technically sound decisions consistent with applicable Government and regulatory requirements, and to ensure all tasks include appropriate technical and safety authorization and controls. The AE QMP shall include details on how technical plans and reports will be produced in a quality and consistent manner and shall either contain or directly reference a style guide for all documents.

Quality Program documentation may be included as attachment to the PMP or as a stand-alone document.

6.0 QUALITY AND CHEMISTRY REQUIREMENTS

6.1 Quality Assurance/Quality Control

The AE shall develop project specific DQOs to ensure data of adequate quality are collected to support project decisions. DQOs shall be developed in consensus with the restoration project team and in accordance with the UFP-QAPP/WP and USEPA QA/G4, Guidance on Systematic Planning Using the Data Quality Objective Process (most recent version) and documented in the UFP-QAPP/WP. The DQOs shall be thorough and comprehensive and shall address all aspects of the DQO process. A UFP-QAPP/WP for each installation shall be prepared in accordance with the DQO process as described in EPA QC/G4 and UFP-QAPP guidance using the Optimized UFP-QAPP Worksheets, March 2012. Compliance with the DQO requirements will be confirmed by the USACE and AF and the AE shall be required to correct any deficiencies noted prior to UFP-QAPP/WP completion. The AE shall ensure that all requirements specified in the UFP-QAPP/WP are met. If not met, the AE may be required to re-accomplish sampling at the AE's expense. All laboratory services shall be conducted in accordance with the approved project UFP-QAPP/WP. Samples shall not be submitted for analysis until the Final UFP-QAPP/WP is approved.

The AE shall conduct audits, administer an AFCEC-approved performance evaluation sample program, or participate in the AFCEC program, verify and validate data, and perform corrective actions in accordance with the programmatic UFP-QAPP/WP. Data verification, data validation, data qualification schema, and data usability assessment methodology shall be described in the UFP-QAPP/WP, and performed by an independent, qualified, and experienced data validator in accordance with DoD General Data Validation Guidelines and any applicable Modules. The AE can perform the required data validation, but the validators should be independent of contractors collecting the data (e.g., shouldn't be the project chemist). Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data for each sample delivery group.

The data validation standard operating procedure shall be included in the UFP-QAPP/WP. Significant deviations from project requirements discovered during data validation shall be communicated with the AF and USACE project chemists and PM/COR as part of the data validation process. A data validation report shall be prepared and shall sufficiently document the data validation procedure and provide a clear understanding of the representativeness of the data. The results of the data validation shall be summarized in the associated technical report with supporting data validation reports included in an appendix. A data usability assessment of the validated data shall be performed. The results of the data usability assessment shall be included in the technical report, and shall identify the limitations of the data, and the effect qualified results have on the decisions being made for the project.

6.2 Chemistry Requirements

The AE shall be responsible for the quality of all required chemistry services performed. The AE shall ensure that all chemistry-related tasks are conducted in accordance with the programmatic UFP-QAPP WP. The AE shall identify a Project Chemist as key personnel in the UFP-QAPP. The Project Chemist will act as a POC on all chemistry-related issues and shall be responsible for ensuring that all Data Quality Objectives (DQOs) are met. Data quality includes analytical and non-analytical data, measurements, and all other types of data/information collected to support achievement of the Phase I RI.

6.2.1 Laboratory Selection

The AE shall select 2 laboratories, a primary and a back-up, with analytical capabilities sufficient for the methods specified in the UFP-QAPP/WP with adequate throughput capacity to handle the project's

analytical workload during all field activities. The AE shall ensure that each laboratory is accredited under the DoD Environmental Laboratory Accreditation Program (ELAP) to DoD QSM, version 5.3 or newer, and meets all federal requirements. Laboratories shall also possess any current registrations or certifications required by the state where the work is being performed. DOD ELAP accredited laboratories can be found here: https://www.denix.osd.mil/edqw/accreditation/accreditedlabs/

The AE may establish an on-site laboratory at the project site if determined necessary by the AE. However, on-site test laboratories shall also be accredited under the DoD ELAP and meet all state and federal requirements, including state certification, where appropriate.

During laboratory selection, it is recommended the AE confirm sampling container types, sizes, and initial volume requirements; standards containing both branched and linear isomers are used, when commercially available; chemical derivation of the ion transitions; and reagent or ultra-pure water used in the laboratory is confirmed to be free of PFAS.

6.2.2 Analytical Requirements

All laboratory services shall be in accordance with the analytical requirements described below and be conducted in accordance with the approved UFP-QAPP/WP. The UFP-QAPP/WP shall include SOPs for field sampling and laboratory analytical procedures. Samples shall not be collected or submitted for analysis until the UFP-QAPP/WP and addenda have received both Government and regulatory agency approvals of the final document. The laboratory and reporting analyte list shall be presented in the UFP-QAPP/WP; the government may require modifications to this list as determined to be appropriate.

PFAS analysis for all matrices (i.e., groundwater, surface water, soil, and sediment) shall be performed by a DoD ELAP accredited laboratory using EPA Draft Method 1633 (including any current EPA errata sheets and revisions). All target analytes listed in the medthod used for analysis must be reported. All compounds to be reported must be on the laboratory's DoD ELAP scope of accreditation. The DoD QSM allows for commercial PFAS standards that are available as salts providing the measured mass is corrected to the neutral acid concentration. Results shall be reported as the neutral acid with appropriate CAS number. The preferred nomenclature of the target analyte for reporting purposes will be the conjugate acid (i.e., sulfonic acid instead of sulfonate). Laboratories should be capable of converting concentrations from the conjugate base to the conjugate acid based on the molecular weight, as necessary based on stock standards purchased. As data is referenced in project reports, the text shall refer to the base conjugates (i.e., sulfonate instead of sulfonic acid) with associated concentrations displayed as the acid conjugate, with a note to clarify the differences. If analytes that are not listed in the DoD QSM are requested, laboratory in-house control limits must be approved by USACE and AFCEC.

New or improved PFAS analytical methods are likely to come into existence in the near future. Prior to use for PFAS analysis, the laboratory must be DoD ELAP accredited, have the method and reported analytes on the laboratory's DoD ELAP scope of accreditation, and be in compliance with the version of the DoD QSM to which the laboratory is accredited.

6.2.3 Analytical Data Management

The AE shall ensure that all hard copy and electronic data deliverables supplied by the laboratory are complete and adequate to support the quality and usability of the data. Stage 4 data packages shall be submitted to the USACE and AFCEC. Data packages shall include all information required to re-create the analysis, including correspondence with the laboratory regarding exceeding quality assurance/quality control (QA/QC) measurements and documentation of corrective actions. The AE shall meet ERPIMS data deliverable requirements as currently required by AFCEC. Stage 4 laboratory reports in accordance with the QSM shall be provided to include QA/QC results, chromatographs, and manual integrations completed during analysis.

6.2.4 Data Validation

The AE shall be responsible for assessing the environmental data's quality by performing data validation against criteria established within the analytical method, the DoD QSM, the DoD General Data Validation Guidelines, and the UFP QAPP/WP. Validation shall be performed to a 90% Stage 2b standard and a 10% Stage 4 standard with recalculation of appropriate data.

A data validation report shall be prepared and shall sufficiently document the data validation procedure and provide a clear understanding of the representativeness of the data. The results of the data validation shall be summarized in the associated technical report with supporting data validation reports included in an appendix. A data usability assessment of the validated data shall be performed. The results of the data usability assessment shall be included in the technical report, and shall identify the limitations of the data, and the effect qualified results have on the decisions being made for the project.

7.0 PLANS AND REPORTS

7.1 Technical Plans and Reports

The AE shall provide technical plans and reports, as well as various other deliverables. The AE shall complete these documents according to the most appropriate industry standard.

The deliverables required under this contract shall demonstrate SOW compliance and milestones attainment. Most of these documents must be submitted for initial USACE and AF review followed by submittal to the regulatory agency. The AE must confirm the number of copies required for delivery to all relevant parties as depicted in the table presented in Section 7 of this SOW. The protocols described in the Attachments to this SOW, as well as relevant and appropriate USEPA and AF guidance should be used in development of these plans as applicable. Collection methods for all sample media, water levels, water quality parameters, sample collection and handling, and analytical methods will be included in all project work plans and required reports. The AE may utilize existing plans in their entirety or prepare updates, revisions, or addenda to the existing plans, as appropriate, in lieu of developing new plans.

7.1.1 Uniform Federal Policy - Quality Assurance Project Plan (UFP-QAPP) Work Plans (WPs)

Since this task order is specific to Air Force bases in Florida and will be executed under the same regulatory framework and requirements, the AE may elect to prepare a Programmatic UFP-QAPP that addresses aspects and details common to all locations, and then prepare base/location-specific UFP-QAPP/WPs that contain the site-specific detail and reference the Programmatic UFP-QAPP. The AE may also elect to prepare comprehensive all-inclusive and site-specific UFP-QAPP/WPs for each base RI.

The UFP-QAPP/WP(s) for this contract, to include a Draft, Draft Final, and Final version for USACE, AF, and Regulatory review and approval. The AE must implement, maintain, and comply with the approved programmatic UFP-QAPP/WP and its installation-specific addenda.

The UFP-QAPP/WP shall be written in the format specified in the Intergovernmental Data Quality Task Force Optimized UFP-QAPP Worksheets (March 2012), the EPA Guidance on Systematic Planning Using the DQOs Process, February 2006, and in accordance with other applicable USEPA and DoD guidance documents. The UFP-QAPP/WP shall include, as appendices, the APP/SSHP prepared in accordance with EM 385-1-1 and an Investigation-Derived Waste (IDW) Management Plan in accordance with this SOW and all federal and state regulations as appendices.

7.1.2 Health and Safety Plan (HSP) and Accident Prevention Plan (APP)

Prepare a HSP and APP for each installation to comply with Air Force, OSHA, USEPA, state, and local health and safety regulations regarding the proposed work effort. The AE shall fully utilize any existing, related HSP or APP tailored specifically to the current effort. The AE shall maintain written certification that the approved HSP and APP have been reviewed with all personnel that work at the project site prior to their mobilization.

7.1.3 Phase I RI Report

The AE shall prepare and submit a Phase I RI Report (for each installation) for USACE, AF, and Regulator review and approval to include a summary of results of field investigation activities to characterize the site, sources of contamination, nature and extent of contamination, fate and transport of contaminants, site CSMs, and exposure CSMs, which includes potential exposure pathways and human and ecological receptors, and other requirements for a CERCLA RI report, excluding a Feasibility Study and Risk Assessment. The report format and content will be in accordance with EPA Guidance (EPA 1988) except for risk assessment components not included in the scope of the Phase I RI. The Phase I RI Report shall include all required supporting materials (e.g., bore logs, waste manifests, supporting calculations, etc.) and analytical information (e.g., required data validation and usability reports, data packages, etc.). A separate Phase I RI report shall be prepared for each base, i.e., two separate reports.

7.2 Deliverable Submission Cycle

Major deliverables are defined as any document that must be submitted to the Regulatory Agency. All major deliverables specified in this SOW shall be submitted in 3 phases unless otherwise stated. Submission requirements including number of copies, distribution, and submission schedule are stated in this SOW; however, actual document version names, distributin, and other details will be determined by the specific requirements of each installation and will be verified by the PM/COR.

Typically, the first submission shall be considered a preliminary/draft document and shall be submitted for Government-only review. The AE shall respond to each comment in writing and shall make the appropriate revisions to the draft document. The preliminary/draft UFP-QAPP/WP and preliminary/draft Phase I RI Report may require up to a 90-day review by the Government. This includes a 30-day review by the project delivery team (PDT), revisions by the AE, and a 60-day review by the USACE Environmental and Munitions Center of Expertise (EM CX), if required. The revised preliminary/draft will be submitted as a draft-final document for regulatory review. The AE shall again respond to each Regulator comment in writing and shall make the appropriate revisions to the draft-final document. Responses to all regulatory agency comments and any associated revised document shall be reviewed by the Government before submittal to the agencies. Should a review meeting be scheduled, the minutes of the meeting shall contain the written record of the comments and responses provided by the AE. The revised draft-final document shall be submitted as the final document. However, these submittal requirements should in no way be construed to limit the number of version submittals required for the AE to obtain USACE, AF, and/or Regulatory approval. All iterations will require Government review and response to comments or approval. The actual naming of document versions will be determined by each installation.

The AE shall submit all plans, reports, and other deliverable documents in three versions as appropriate for that specific document and as required by the Government. Additional document versions may be required, e.g., Preliminary Draft at the request of the Government. Submittals shall be in electronic format; however, hard copies may be required at the request of the Government or as specified in this SOW. Document submittals shall include both native file formats (e.g., MS Word, MS Project, etc.) and pdf. Unless otherwise specified, final document versions shall be submitted in both digital and hard copy. Multiple versions of documents may be generated by the AE including:

- Preliminary-Draft Documents – Preliminary-Draft documents are internal documents that are submitted for USACE and AF review and approval. In all respects, preliminary-draft documents shall be complete; substantively correct and consistent with applicable laws, regulations, Department of Defense/USACE/AF policies; in proper format; and free of grammatical and typographical errors. All draft documents shall be thoroughly screened through in-house peer/technical review during this phase of the review process. Preliminary-draft documents shall not be submitted to regulatory agencies for review.
- Draft-Final Documents – In general, draft-final documents have undergone USACE and AF review, incorporation of government review comments, and are submitted to the appropriate regulatory agencies for review. A second version of the draft-final document incorporating initial regulatory comments and resubmitted for regulatory agency review may also be required prior to the submittal of the final document. Responses to all regulatory agency comments and any associated revised document shall be reviewed by the Government before submittal to the agencies. Note that some documents may initially be submitted to the regulatory agencies as final with any comments being incorporated into subsequent documents as appropriate (e.g., system status reports, monitoring reports, "data dumps").
- Final Documents – Final documents are the version of the document that has successfully incorporated all review comments and has received USACE, AF and regulatory concurrence and written approval. At least 1 electronic copy of the final document consisting of original productivity software files and all quality control data, drawings, and GIS-type information, shall be provided to the USACE and AF. Electronic copies should be compatible with the current USACE and/or AF Microsoft™ Office Suite and GIS software versions. All figures shall be delivered in original application files GIS format as described in this SOW. In addition, an electronic version of the final document shall be submitted in a single portable document file (.pdf) format approved by the USACE and AF complete with electronic bookmarks.

7.3 Deliverables and Recipients

The planned deliverables for this contract are listed in Table 3 and shall be included in the AE's IMS. This deliverables list details the types and number of documents that are required to achieve the specific site objectives and will be transmitted to the regulatory agents, the Information Repository, and the Administrative Record file. The AE shall ensure that publicly released documents exclude Personally Identifiable Information (PII) and Freedom of Information Act (FOIA) – Exemption 6 personal privacy information. Planned submittal recipients are listed in Table 3.

Table 3: Document Name/Type	A	B	C	D	E
Draft and Final PMP	1 digital 1 hard copy	1 digital	1 digital	---	---
Draft Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	1 digital	1 digital	1 digital	---	---
Draft Final Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	1 digital	1 digital	1 digital	2 CDs 2 hard copies	2 CDs 2 hard copies
Final Documents (including but not limited to UFP-QAPP/WP, APP\SSHP, IDW Management Plan, Remedial Investigation Report)	2 CDs 2 hard copies	2 CDs 2 hard copies	2 CDs	2 CDs 2 hard copies	2 CDs 2 hard copies
Analytical Data – EDD and Hard Copy	1 digital	1 digital	1 digital	---	---

Note: Primary submittal format will be digital; however, the Government may request hard copies, or DVDs as needed. Digital includes pdf and native files emailed to recipient and posted in the repository.

Planned submittal recipients are listed below. However, it should be noted that that there may be different FDEP or EPA regulators for each installation. Hard copies should not be needed for each (unless documents are installation-specific), but electronic distribution should include all appropriate regulatory stakeholders. Should AE files be too large to be readily downloaded on-line via DOD Safe and other means, DVDs may be required. Additionally, at Homestead the county (DERM) is also copied on submittals.

Table 4: Planned Submittal Recipients		
A	**USACE** **Project Manager/COR** [redacted] CESAM-PM-I(C) Programs and Project Management Interagency and Environmental Branch PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]	**USACE Technical Manager** [redacted] CESAM-ENGE Environmental & HTRW Section PO Box 2288, Mobile, AL 36628 109 Saint Joseph St. Mobile, AL 36602 [redacted]
B	**AFCEC/CZRE** **Project Manager** [redacted] Restoration Program Manager, CZRE 2261 Hughes Ave., Bldg 1650 JBSA Lackland, TX 78236 [redacted] Courier delivery (FedEx, UPS, DHL) 3515 S. General McMullen San Antonio, TX 78226-9853	
C	**AFCEC BASE RPMs**: **Homestead ARB, FL** [redacted] Environmental Restoration Project Manager	**Tyndall AFB, FL** [redacted] Environmental Restoration Project Manager [redacted] Air Force Civil Engineer Center

Table 4: Planned Submittal Recipients		
	AFCEC/CZOE 29350 Westover Avenue, Bldg. 232 Homestead ARB, FL 33039 [redacted]	USAF AFMC AFCEC/CZOE [redacted] Phone: [redacted]
D/E	FDEP/EPA Regulators, and DERM in some instances. TBD by the Government	

7.3.1 USACE Project Delivery Team (PDT)

The USACE - Mobile District has reviewed the requirements for this project and has assembled a PDT of scientists and engineers with a skill set commensurate with the project complexity. Additional PDT members may be added as needed to address specific project needs. The PDT for this Contract includes the following personnel:

a) PM/COR: [redacted] CESAM-PM-I(c)

b) Technical Manager (HARB): [redacted] CESAM-EN-GE

c) Technical Manager (TAFB): [redacted] CESAM-EN-GE

d) Project Geologist: [redacted] CESAM-EN-GE

e) Project Geologist: [redacted] CESAM-EN-GE

f) Project Chemist: [redacted] CESAM-EN-GE

g) Project Env. Eng: [redacted] CESAM-EN-GE

h) Project Risk Assessor: TBD CESAM-EN-GE

7.3.2 Responses to Comments

The AE shall submit written responses for all written comments generated during the review of project deliverables. Copies of the comment responses shall be provided for all participants in the review process for each deliverable. Wherever practical, the minutes of review meetings may be used as the vehicle to provide the written response.

8.0 SITE WORK

The AE shall perform site preparation, incidental characterization and field investigation, conservation, and waste handling as required to meet the objectives of this contract.

8.1 Conservation

Activities shall be planned and implemented in a manner that protects existing site utilities, structures, surface features, service operations, monitoring and other types of wells, and the general site environment. This includes the protection of trees, shrubs, and other vegetation not in the affected zone from dust damage, soil compaction, and physical contact with machines and equipment. If appropriate, the AE shall conserve uncontaminated topsoil by removal, storage, or redistribution. All reasonable measures shall be taken to minimize and suppress fugitive emissions of dust, vapors, and other site

materials during site work. All fill materials shall be tested, confirmed, and verified to be non-contaminated. The AE shall conduct all operations and activities with the intent of reducing the amount of pollution generated. Specific areas to be focused on are generation of solid waste, use of hazardous materials, use of ozone depleting chemicals, generation of hazardous waste, and use of energy and water. During site work the AE shall plan, construct, operate, maintain, optimize, and decommission systems necessary to control storm water run-on and run-off; and transport surface water drainage to a treatment plant, discharge location, or any other appropriate destination.

8.2 Demobilization

The AE shall decontaminate equipment and facilities, decommission facilities as necessary, and restore the site. The AE shall remove any temporary facilities and implement erosion control measures such as seeding, mulch, sod placement, and erosion control fabrics; restore roads, structures, and utilities; and plant trees, shrubbery, grasses, and other vegetation. The AE shall document and report on activities and train government personnel to perform required maintenance, as requested.

8.3 Site Characterization

The AE shall perform field investigation and sampling/analysis that characterizes environmental conditions, in accordance with approved DQOs, as required to achieve the POs of this project. The AE shall identify specific site characterization activities proposed to achieve the POs.

8.4 Site Preparation

The AE shall perform site work as necessary to prepare sites for field activities. Security and access controls shall be implemented to prevent unauthorized entry to sites and to protect wildlife from site exposure. The AE shall survey existing utilities to determine adequacy and need for modifications to support site activities. The AE shall perform all necessary installation coordination to gain approvals for, and shall construct connections or new systems for electrical power, water, sewer, gas distribution, telephone, and other utilities, as required, to meet the objectives of this contract.

8.5 Waste Management

Aqueous and solid IDW may be generated during activities at the Installations. A Waste Management Plan (WMP) for each installation shall be provided as an attachment to each installation UFP-QAPP that shall address the handling, storage, and disposal requirements for IDW. The AE shall have a comprehensive knowledge of the management and disposal of all wastes that will potentially be generated and require disposal as well as the regulatory requirements for the state in which the work shall be performed. The AE shall be responsible for handling, transportation, and disposal of all AE-generated wastes to permitted off-site treatment, storage and/or disposal facilities within 90 days from waste generation, in accordance with the IDW procedures in operation at each AF installation. IDW generated off AF property shall be containerized, sampled, analyzed, and properly disposed. Handling, transport, and disposal of these materials shall be performed in accordance with requirements mandated by all applicable federal, state, and local regulations. The AE shall provide all hazardous materials used and hazardous waste disposal documentation to the USACE COR/PM and/or AF RPM, to ensure appropriate and efficient tracking of the AE's hazardous material purchases, inventories, use, and releases as required by the Emergency Planning and Community Right-to-Know Act (EPCRA), Executive Orders, or any installation reporting requirements.

The AE shall also comply with federal, state, and local requirements for any task involving the transportation and disposal of hazardous wastes and/or contaminated materials. This includes 40 Code of Federal Regulations (CFR) 260, 49 CFR 172, 173, 178, 179 and all other applicable local, state, and federal transportation regulations. The WMP will address the disposal requirements for IDW. It also is

necessary to comply with the regulations regarding listed hazardous waste at the Installation and the AE must ensure that there is a generator identification number. After IDW disposal, IDW documentation of shipping and recycling/disposal shall be provided as an appendix to the RI Report.

The AE shall remove, render inert, destroy, recycle, and dispose of hazardous wastes and materials and provide all hazardous materials use and hazardous waste disposal documentation to the USACE COR/PM and AF RPM or designated alternate. An AF representative for each installation will sign all waste manifests and other transportation/disposal-required documents. The AE shall perform associated characterization and profiling work as required. Soil and groundwater IDW shall be containerized and stored as approved by the Government in accordance with all applicable guidance and requirements.

9.0 POINTS OF CONTACT (POCS)

9.1 USACE PM/COR:

[redacted]
U.S. Army Corps of Engineers
CESAM-PM-I(c)
109 Saint Joseph Street
Mobile, Alabama 36602
[redacted]

9.2 USACE Technical Manager:

[redacted]
CESAM-ENGE
Environmental & HTRW Section
PO Box 2288, Mobile, AL 36628
109 Saint Joseph St. Mobile, AL 36602
[redacted]

[redacted]
CESAM-ENGE
Environmental & HTRW Section
PO Box 2288, Mobile, AL 36628
109 Saint Joseph St., Mobile, AL 36602
[redacted]

9.3 USACE KO:

[redacted]
Environmental Section Chief
U.S. Army Corps of Engineers, Mobile District
Office: [redacted]
Mobile: [redacted]
Email: [redacted]
Web: [redacted]

9.4 AFCEC PgM:

AFCEC/PgM: [redacted]
Bldg 171, 2261 Hughes Ave, Ste 155
Lackland AFB, TX 78236-9853
[redacted]

9.5 AFCEC RPMs:

Homestead ARB, FL (HARB)
[redacted]
Environmental Restoration Project Manager
AFCEC/CZOE
29350 Westover Avenue, Bldg. 232
Homestead ARB, FL 33039
[redacted]

Tyndall AFB, FL (TAFB)
[redacted]
Environmental Restoration Project Manager
Tyndall AFB, Air Force Civil Engineer Center
USAF AFMC AFCEC/CZOE
[redacted]
Phone: [redacted]
Cell: [redacted]

10.0 ADDITIONAL REQUIREMENTS

10.1 News Releases

Neither the AE nor the AE's personnel shall give out any news releases or conduct media interviews concerning the work performed under this SOW. All media inquiries should be directed to the designated AF installation Public Affairs representative.

10.2 Community Relations

Community relations activities will be the responsibility of each AF installation. The AE shall support those activities, such as public meetings, in coordination with the AF, by providing necessary existing technical information to the AF installation. The AE shall not discuss the program with anyone that does not have an official "need to know" for the purpose of task completion. The AE shall not provide any press releases relating to this work without express written authorization from the AF installation and AFCEC.

10.3 Regulatory Interface

The AF has authority for all regulatory interactions pursued on behalf of the AF. All interactions with regulatory agencies must be coordinated through the AF. The AF RPM (or his/her designee) will be present for all meetings with the Regulatory Agency and will be included in the review of all documents or other materials that may be presented to the Regulatory Agency. All written communication with the regulator will be through the AF RPM. Distribution of project work plans, reports, and other information shall be coordinated through and directed by the AF RPMs and submitted with the AF RPM copied on the communication.

10.4 Program Completion Requirements

The AE shall collaborate with the AF and USACE COR/PM on development of a discrete, measurable basis for verifying completion of each task or activity planned through program completion. This basis will be used to acquire the AF and USACE concurrence that task completion has occurred, and contractual obligations have been satisfied. At the conclusion of all assigned work, the AE shall submit project documentation as directed by the KO. Project completion forms shall be sent to the KO no later than 4 months after completion of all work or the expiration of the contract POP.

10.5 Identification of Unrelated Contamination

If, during the course of site activities, the AE discovers contamination that appears to be unrelated to the existing sites being investigated under this SOW, the AE shall notify the USACE KO in writing within 3 business days of discovery and copy the USACE PM, AF RPM, and AFCEC PgM.

10.6 Other Provisions

AE shall notify the USACE COR/PM, AF RPM, and AFCEC PgM in writing within 3 business days of becoming aware of the occurrence of an event described below:

a. AE or any agent or subcontractor receives notice of violation (NOV) of any governmental enactment, requirement, or authorization, which relates to the performance of the SOW;
b. Permits, licenses, or other governmental authorizations relating to implementation of the SOW are revoked or denied;
c. Litigation is commenced or threatened concerning or impacting the SOW or any sites;
d. Any other condition occurs or is threatened to occur which may have a materially adverse effect on the timely performance of the SOW, or the timely performance of any duties the AE or the installation may have under any applicable law, regulation, ordinance, order, decree or plan;
e. The installation personnel are interfering or wrongfully preventing AE from performing its material duties and obligations under this SOW to such an extent that the AE's costs, schedule, and/or quality are being adversely impacted.

10.7 Key Personnel

The AE and subcontractor personnel shall be experienced and competent in the tasks for which they are responsible and currently possess any required certifications, registrations, or licenses required under federal, state, and/or local laws and regulations. The AE shall be limited to utilizing the key personnel and subcontractors identified in the AE's technical proposal unless the KO approval prior to the substitutions is obtained during the performance execution of the SOW. The AE shall obtain the KO's written consent before making any substitutions for key personnel or subcontractors by submitting in writing to the KO the reasons for the substitutions and submit the qualifications of the new persons or subcontractors. The AE shall provide the same level of detail on credentials and qualifications on the key personnel or subcontractor as was required by the solicitation. The key personnel or subcontractors that are proposed as substitutes must possess equal or greater qualifications than the individuals or subcontractors who were accepted at the award of the contract. The minimum required personnel qualifications are as follows, but not limited to:

10.7.1 Project Manager (PM)

The PM is the AE POC responsible for implementing work specified in the SOW. The PM shall evaluate the requirements of the contract and shall develop and implement a plan to meet those requirements. The PM shall have in-depth, relevant experience and proven ability to provide effective and efficient management and implementation of the efforts as outlined in the SOW. The PM must demonstrate

availability to meet the requirements of the SOW through multiple means of communications, meetings, and required activities. The PM shall be competent, experienced, and knowledgeable in the field of investigation and remediation of Hazardous, Toxic, and Radioactive Waste (HTRW) sites. The PM shall be responsible for the day-to-day coordination with stakeholders and must be an employee of the AE.

The PM must have, at a minimum, the following qualifications:

- Bachelor's degree from an accredited school in a technically related field such as: engineering, geology, environmental science (15 years as a PM meeting the requirements below can be substituted for a bachelor's degree).
- Professional registration in Florida.
- A minimum of 10 years managing HTRW projects.
- Experience managing a HTRW project that included sampling for PFAS at AF installations in Florida.
- Working knowledge of applicable federal, state, and local laws, regulations, and guidance pertinent to this project.

10.7.2 Project Geologist

The AE shall designate a Project Geologist who is knowledgeable in the field of investigation and remediation of HTRW and has experience investigating PFAS. This individual shall be trained and have experienced as a geologist to ensure activities, to include plan development, field activities, report writing, designs, etc. are of the quality to meet project objectives. The geologist should have experience in surface and subsurface soil, ground-water, surface water, sediment, etc. sampling techniques, as well as aspects of obtaining all types of samples through various drilling and sampling techniques, along with appropriate documentation procedures. The Project Geologist will be responsible for all geologic interpretation and will either perform or directly oversee staff performing geologic work. The senior geologist must have, at a minimum, the following qualifications:

- Bachelor's degree in geology or geological engineering from an accredited 4-year program.
- Professional Geologist in Florida.
- A minimum of 10 years specialized experience in HTRW projects.
- Experience investigating PFAS at AF installations in Florida.

10.7.3 Senior Project Chemist

The Senior Project Chemist shall be responsible for the development of the UFP-QAPP chemistry worksheets, along with the PDT to establish the project DQO following the USEPA seven step DQO process. The Senior Project Chemist shall have direct experience with PFAS. The Senior Project Chemist must meet provisions of Section 7.2 of the DoD Policy and Guidelines for Acquisitions Involving Environmental Sampling or Testing, November 2007 by performing the following minimum functions:

- Provides coordination and quality assurance surveillance of laboratory services
- Approves project-specific Method Quality Objectives and Data Quality Indicators that will meet the project specific performance standards;
- Verifies appropriateness of sampling and analytical methods and laboratory quality systems;
- Verifies laboratory qualifications and makes recommendations for laboratory selection;
- Coordinates with the laboratory during contract execution;
- Notifies the Government Quality Assurance Manager of any problems or nonconformance issues;
- Directs the performance of data review and validation, per contract specifications; and Monitors corrective action, as needed.

- The Senior Project Chemist shall have, at a minimum, the following qualifications:
- Bachelor's degree in chemistry.
- A minimum of 5 years of directly related environmental chemistry experience in HTRW projects.
- Experience with analysis for PFAS.

10.7.4 AE Quality Control Supervisor (CQCS)

The CQCS shall be responsible for developing, maintaining, and ensuring implementation of the environmental quality program. This responsibility includes oversight of activities, periodic reviews of the processes being implemented, evaluation of any recommendations made by the project team over the course of the project regarding use of these processes, and continuous improvement evaluations of the quality program. The CQCS is also responsible for providing support to the project team in ensuring that the quality of products and services provided to the Government is in accordance with the terms and conditions of the contract.

The CQCS shall, at a minimum, the following qualifications:

- The individual proposed as the CQCS shall have a minimum of five (5) years working QA/QC experience in the chemical/hazardous waste investigation/remediation field, including PFAS projects; and can address overall quality management, quality control/assurance, quality auditing, or process improvement.
- The individual proposed as the CQCS shall have formal education or training in technically related field such as geophysics, environmental engineering, environmental science, geology, environmental chemistry, or other.

10.7.5 Senior Site Manager(s)

The Senior Site Manager(s) shall be the AE personnel responsible for providing full, direct, on-site oversight and supervision of field activities conducted by the AE and subcontractor personnel. The Senior Site Manager is expected to be onsite at all times during field activities to directly supervise all personnel and subcontractors, and shall be responsible for implementing specific work under this contract, i.e., approved work plans, safety plans, quality plans, etc. The Senior Site Manager(s) shall be the primary onsite point-of-contact for the contract to the Government for on-site activities, site visit interaction, and QASP surveillances. Based on the management structure proposed by the Offeror, one or more Senior Site Manager may be assigned to this contract.

A Senior Site Manager shall have, as a minimum, the following qualifications:

- Bachelor's degree from an accredited school in a technically related field such as: engineering, environmental science, geology, hydrology, chemistry, industrial hygiene or other science or engineering-related discipline.
- Professional registration, where required by discipline, i.e., Florida PE or PG.
- A minimum of seven (7) years' experience performing field management duties similar to those described for this Key Personnel position, with a minimum of five (5) years' experience managing environmental investigation/remediation projects at the field operational level in the state of Florida.

OR

- A minimum of ten (10) years' experience as a Senior Site Manager, with a minimum of five (5) years' experience managing environmental or traditional projects at the field operational level in the state of Florida.
- Working knowledge of applicable federal, state, and local laws, regulations, and guidance.

11.0 VETERAN'S EMPLOYMENT

Emphasis for U.S. Army Corps of Engineers Contracts

In addition to complying with the requirements outlined in FAR Part 22.13, FAR Provision 52.222-38, FAR Clause 52.222-35, FAR Clause 52.222-37, DFARS 222.13 and Department of Labor regulations, U.S. Army Corps of Engineers (USACE) AEs and subcontractors at all tiers are encouraged to promote the training and employment of U.S. veterans while performing under a USACE contract. While no set-aside, evaluation preference, or incentive applies to the solicitation or performance under the resultant TO, USACE AEs are encouraged to seek out highly qualified veterans to perform services under this TO. The following resources are available to assist USACE AEs in their outreach efforts:

- Federal Veteran employment information at https://www.fedshirevets.gov
- Department of Labor Veterans Employment Assistance http://www.dol.gov/vets/
- Department of Veterans Affairs–VOW to Hire Heroes Act http://benefits.va.gov/vow/
- Army Wounded Warrior Program – http://wtc.army.mil/modules/employers/index.html
- U.S. Chamber of Commerce Foundation–Hiring Our Heroes
- https://www.uschamberfoundation.org/hiring-our-heroes
- Guide to Hiring Veterans – Reference Material https://obamawhitehouse.archives.gov/blog/2012/04/10/white-house-business-councils-guidehiringveterans

12.0 SUSTAINABILITY REQUIREMENTS

Green Procurement is the purchase of environmentally preferable products and services and is known as sustainable acquisitions and Green Procurement. Practicing Green Procurement takes into consideration economic facets, environmental considerations, and resource efficiency.
Here are some of the benefits of Green Procurement:

- Prevents pollution and reduces environmental impact
- Increases energy independence
- Protects and conserves natural resources
- Minimizes waste
- Supports new markets and job creation
- Supports the USACE Campaign Plan and Sustainability Plan Goals
- Saves $$ by reducing waste
- It is a Federal mandate!

Some Mandatory Environmental Initiatives are as follows:

- Energy Star
- Federal Energy Management Program (FEMP)-Designated Products
- WaterSense
- BioPreferred/Biobased
- Environmentally Preferable Purchasing (EPP)
- Electronic Product Environmental Assessment Tool (EPEAT)
- Significant New Alternatives Policy (SNAP)
- Recovered Materials

FAR Part 23 requires Federal agencies to ensure that 95% of new contract actions require products that are:

- Energy-efficient
- Biobased
- Non-ozone depleting
- Water-efficient
- Environmentally preferable
- Made with recovered materials

The AE shall review and follow scope, purpose, applicability, and policy of FAR Part 23 and FAR 52.223-4 requirements, as they pertain to their specific contract/TO requirements to meet sustainability acquisitions or Green procurement initiatives. Some examples of sustainability achievements are:

- Car-pooling to meeting from local offices
- Doubled-sided documents using recycled paper
- Submittal of documents through electronic methods
- Use of energy-efficient products
- Use of non-toxic or low-toxic products
- Reconditioned or remanufactured supplies or materials

II. PART B - TECHNICAL REQUIREMENTS

1.0 SITE SPECIFIC INFORMATION

1.1 Installation Location, Characteristics, and Description

Information about regional/local geology, topography, and hydrogeology for HARB and TAFB is available in various investigation reports located in the AF Administrative Record (https://ar.afcec-cloud.af.mil/Search.aspx), and/or also with the installation RPMs listed in section 9.5.

The AE is responsible for locating and acquiring, either via the AR or the individual installation RPMs, previous site investigation reports with the necessary information required to accomplish the contract objectives successfully.

1.1.1 Homestead ARB, FL

Some investigative document examples are as follows:

- Final Preliminary Assessment Report for PerFluorinated Compounds at Homestead Air Reserve Base, Florida, HydroGeologic, Inc. Aug 2015.
- Final Site Inspections Report of Fire Fighting Foam Usage at Homestead Air Reserve Base, Aerostar SES, LLC. 12 Mar 2019.
- Final Remedial Investigation/Feasibility Study for Area of Concern 3 (OU-34), HydroGeologic, Inc. 17 Dec 2020. (This is a relatively recent CERLCA RI/FS that has been fully approved—although it is not directly relevant to PFAS sites.)

HARB Installation Overview

Homestead Air Reserve Base consists of almost 2,000 acres. The base, activated as Homestead Army Airfield in 1942, originally encompassed only approximately 1,200 acres. In 1953, it was re-designated as Homestead AFB (HAFB) and as the mission expanded, the size of the base grew to almost 3,000 acres. On 24 August 1992, HAFB was devastated by Hurricane Andrew. As a result of the destruction caused by the hurricane, the DOD Base Realignment and Closure (BRAC) Commission recommended HAFB for

realignment in 1993. In 1994, two-thirds of the property (2,086 acres) was transferred to the Air Force Base Conversion Agency (AFBCA). The remaining one-third of the property (852 acres) was transferred to the Air Force Reserve Command (AFRC) as an Air Reserve Station (ARS), with the 482nd Reserve Fighter Wing as the host unit.

In 2003, Homestead ARS was officially re-designated as Homestead ARB under AFRC. The 1,965 acres that comprise HARB are referred to as the cantonment area. The growth of the cantonment area from the original 852 acres to the current acreage is a result of the AF maintaining ownership of the airfield along with other areas that were originally proposed to be transferred. (HARS became HARB as a direct result of maintaining ownership of the Airfield). The Air Force Real Property Agency (AFRPA), formerly known as the Air Force Base Conversion Agency (AFBCA), transferred the remaining property that was within the confines of the Homestead AFB, but outside of the cantonment area, to the US Department of Labor, Department of Homeland Security, Florida Army National Guard, and Miami-Dade County.

Homestead Air Reserve Base is located near the southern end of the Florida peninsula, about 25 miles south of Miami, Florida in Miami-Dade County. The base is located between two national parks, Everglades National Park to the west and Biscayne National Park to the east. Biscayne Bay, an estuary classified as an Outstanding Florida Water body, is two miles directly east of the base. The climate is subtropical with a very low elevation and flat topography. The groundwater table is shallow (average 5 feet below ground surface [bgs]) and limestone bedrock is present at or near ground surface in some locations. The Biscayne Aquifer consists of a heterogeneous karst and unconfined system with a slightly alkaline substrate that produces a buffering capacity.

The 482nd Fighter Wing (482 FW) is the host unit of Homestead ARB and supports contingency and training operations of US Southern Command (SOUTHCOM) and a number of tenant units including Headquarters Special Operations Command South (SOCSOUTH), US Coast Guard Maritime Safety and Security Team (MSST), and an air and maritime unit of US Customs and Border Protection. In addition, Homestead ARB is home to the most active North American Aerospace Defense Command (NORAD) alert site in the continental United States, operated by a detachment of F-15 fighter interceptors from the 125th Fighter Wing (FW), Florida Air National Guard (FANG).

Remediation activities at Homestead Air Reserve Base are being conducted pursuant to the CERCLA, as amended by the SARA, and NCP requirements; RCRA; Florida Administrative Code (FAC) Chapter 62-780. Regulatory oversight is provided by the USEPA and FDEP. The USEPA is the lead regulatory authority for CERCLA operable units (OUs). FDEP coordinates on CERCLA activities. The Miami-Dade County Department of Environmental Resources Management (DERM) also participates on the "Base Cleanup Team" (BCT) and generally works in coordination with FDEP. Their comments on CERCLA OU documentation are "for consideration", as would be any comment from a member of the public.

Homestead Air Reserve Base was placed on the National Priorities List (NPL) in 1990. A Federal Facilities Agreement (FFA) was signed in 1991 by the AF, USEPA, and FDEP, which excluded petroleum sites. A consent agreement was signed by the FDEP and the AF in 1991 for petroleum sites. The installation also has a RCRA Corrective Action Permit. Since RCRA authority was granted to FDEP in 2001, the RCRA Corrective Permit falls under FDEP's regulatory purview. The HARB RCRA Permit addresses corrective action requirements only and is managed by the Restoration Program. The permit (2438-HH-002) was issued to HARB on 16 Sep 2016 and is re-issued every 10 years (current permit expires 09 Feb 2026). FDEP's corrective action decision-making process is governed by FAC 62-780.

Note that the CERCLA and RCRA programs at Homestead include both HARB (Active) and former HAFB (BRAC) sites. BRAC sites are addressed under a separate AF cleanup program and are not included under this contract. However, from a regulatory perspective, all sites (BRAC and HARB) are managed under the same Federal Facility ID (FL7 570 024 037) and are considered to be one program. The same regulators govern both the BRAC and HARB cleanup programs via the BCT. Generally, both

AF restoration programs (Active and BRAC) submit separate independent documentation (e.g., a Five-Year Review for the HARB sites and a separate Five-Year Review for the BRAC sites).

For access to Homestead Air Reserve Base, the AE employees and any Sub-AEs will need to pass a background check to obtain a base entry badge. This process may take up to two weeks. In addition, the AE will need to have a CAC for escorting privileges (e.g., equipment deliveries, etc.). Access to Sites located in proximity to the airfield/ramp/flightline will require additional coordination with the Airfield Manager. To drive around Perimeter Road (around the airfield) to work outside of the Controlled Movement Area (CMA), the driver must possess an airfield driver's license. If the Contractor uses a Company Vehicle it must have clear signage with company name and must obtain a Privately Owned Vehicle (POV) pass from the Airfield Manager's office. Access may be limited depending on mission requirements and maintaining radio contact with the control tower is required when working in the area. These sites, including Site SS15A and FT005 (OU-1), are considered "Restricted Access Areas" and require Flightline Driver's Course and Airfield Manager Coordination each occurrence prior to work activities. In addition, the person acting as an escort to these restricted areas will require a Line Badge.

Sites for Investigation in this SOW:

a.	FT004P-SUB:	FIRE PROTECTION TRAINING AREA 3 (OU-8)
b.	FT005P-SUB:	FIRE PROTECTION TRAINING AREA 2 (OU-1)
c.	SS051P:	HANGARS 194 – AFFF AREA 3
d.	SS052P:	HANGARS 193, 200, AND BUILDING 217 – AFFF AREA 3
e.	DA053P:	CURRENT FIRE STATION – AFFF AREA 5
f.	DA054P:	PLANE CRASH AREA – AFFF AREA 6
g.	SS055P:	FIRE TRUCK TANK RELEASE – AFFF AREA 9
h.	DA056P:	F-16 Aborted Take-off Location
i.	SA652P-SUB:	OU-11T: Outfall Canal Terr. / Sewage Treat./Incin.
j.	SS15AP-SUB:	APRON AREA – includes HANGAR 877 – AFFF AREA 4, APRON FUEL SUPPRESSION AREA – AFFF AREA 7, and EQUIPMENT TEST RELEASE AREA – AFFF AREA 8

FT004P-SUB, FT005P-SUB, DA054P, SS055P, DA056P: Site access requires flightline badge, flightline driver's license and coordination with the Airfield Manager (additionally FT004 (OU-8) and SS055P require advanced coordination with Security Forces).

SS051P, SS052P: These sites are within a restricted area and will require a flightline badge and AF escort with advanced coordination with the respective Hangar Manager.

DA053P: Site access requires advance notification to the Fire Department.

SS15AP-SUB: Site access requires flightline badge, flightline driver's license and POV pass and coordination with the Airfield Manager's office or Florida Air National Guard (FANG).

SA652P-SUB: Site access requires advance coordination with Security Forces and the presence of a CAC Holder.

It may also be worth noting that although several existing "legacy" sites have existing "OU" numbers, it is unknown whether new/different OU #s will be established for the PFAS investigation process at these sites. Additionally, it is more than likely that the other "new" sites (which don't have an assigned legacy "OU" #) will be designated as OUs by the EPA. The EPA will expect these regulatory IDs to be referenced in/on documents, once assigned.

Site FT004 (OU-8) is located between the Mako Ramp, Munitions Storage Area (MSA) and the flightline areas. Additional advanced coordination is required with Security Forces.

Site SA652 (OU-11T) is a fenced area and activities will require additional coordination with the Security Forces and requires off-base access (CAC card escort required).

Although other Site source areas may not have specific additional security requirements, the flightline is located downgradient from many of the sites. Plume delineation could require flightline access, which would trigger the requirement state above for SS15A and FT005.

Any construction activities that disturb the surface or subsurface (including digging, compaction, soil sampling, injection or sampling point installation using Direct Push Technology (DPT), Hollow-Stem Auger (HSA), or any other intrusive technology) must be coordinated with the Facility Manager when working in close proximity to a building.

The AE is also responsible for completing the appropriate steps of the construction coordination process (e.g., AF Form 103 and AF Form 332) for intrusive activities including sampling. This includes, but is not limited to, completing and submitting dig permit paperwork, attending associated meetings to answer questions, obtaining dig permit signatures, marking dig locations for utility locates, meeting utility locators, escorting any subcontractors or delivery vehicles, and consultations with Wing POCs, such as natural resources personnel.

1.1.2 Tyndall AFB, FL:

Some investigative document examples are as follows:

- Final Preliminary Assessment Report for PerFluorinated Compounds at Tyndall Air Force Base, Panama City, FL, CH2MHill, April 2015
- Final SI Report for Aqueous Film Forming Foam Areas at Tyndall AFB (Aerostar SES LLC (ASL), Sep 2018

TAFB Installation Overview

Tyndall AFB is located on an 18-mile-long, narrow, northwest-to southeast-trending peninsula occupying approximately 29,000 acres. Tyndall AFB is bordered by St. Andrew Sound and the Gulf of Mexico to the south-southeast, St. Andrew Bay and the Gulf of Mexico to the south-southwest, East Bay to the north, and the Mexico Beach area to the east-southeast.

Tyndall AFB was activated in December 1941 at the outset of World War II. The first mission of Tyndall AFB was to train instructors for a gunnery school. In May 1946, Tyndall AFB became the home of the Air University's Air Tactical School, training junior officers in the responsibilities of command at squadron level. This mission continued until 1950 when the base became responsible for training all-weather jet interceptor pilots and air weapons controllers. The air weapons controller school remains an important part of the activities at Tyndall AFB. Tyndall AFB transferred from the Air Training Command to the Aerospace Defense Command in July 1957. At that time, its mission shifted to that of a weapons center. The USAF Air Defense Weapons Center (ADWC) activated 1 January 1968, to provide a single area within the Department of Defense for the centralization of operational and technical expertise on air superiority matters. The ADWC and Tyndall AFB transferred to the Tactical Air Command (TAC), 1 October 1979, as part of a USAF reorganization when TAC picked up the continental air

defense mission. On 1 July 1981, the USAF ADWC again reorganized and activated the 325th Fighter Weapons Wing, later renamed the 325th Tactical Training Wing. Under the center and wing concept, the USAF ADWC continued to provide a variety of missions, all tied directly with combat readiness training for TAC. The command was changed again in June 1992 from TAC to the Air Combat Command (ACC). In 1993, the command was changed to the Air Education and Training Command and in 2013, the command was changed back to ACC.

AE personnel needing access to Tyndall AFB on a frequent basis must obtain a contractor badge. Approximate time required is ten (10) working days to obtain approved contractor badge. Prior to performing work involving disturbing soil and/or structures, AE must obtain an approved AF Form 103, Work Clearance Request. Approximate time required is ten (10) working days to obtain approved form.

Sites for Investigation in this SOW:

a. SS041P: AFFF Area 1 Fire Station #1 (Building 214)
b. FT017P-Sub: AFFF Area 2 Nozzle Spray Test Area
c. SS516P-Sub: AFFF Area 3 QF-4 Drone Crash Site Response #1 (2001)
d. SS042P: AFFF Area 5 F-15 Jet Fuel Fire Response
e. SS043P: AFFF Area 6 F-15 Jet Tire Fire Response
f. SS022P-Sub: AFFF Area 8 F-22 Raptor Crash Site Response
g. SS044P: AFFF Area 9 F-106 Crash Site Emergency Response
k. TU539P-Sub: AFFF Area 10 Silver Flag WWTP Spray Field
l. TU539P-Sub: AFFF Area 11 Former Silver Flag Wastewater Treatment Faciliy
m. TU539P-Sub: Silver Flag Fire Trng Area (in AFFF SI Report) (Named AFRL Fire Trng Pit in EESOH)
n. FT016P-Sub: Shell Bank Fire Training Area
o. FT017P-Sub: Highway 98 Fire Training Areas
p. FT023P-Sub: Little Cedar Creek/Bayou Fire Training Area Former Active Fire Training Area
q. SS046P: Area 7 Subscale Drone Crash Site Response (exercised as Optional Delineation task)

1.2 General Intent

This task order includes the PFAS RI at HARB and TAFB. All sites within each installation shall be fully delineated both horizontally and vertically, and any un-allocated resources required for delineation at an installation can be moved to other sites within that Installation as needed to achieve the final Phase-I RI requirements. However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW. Variations in delineation requirements may be approved by the PM/COR and AF RPMs.

The initial plan presented in this SOW includes the approach, methods, and quantities the Government deems necessary to fully delineate each location/site; the AE shall plan, initiate, and conduct planning sessions with the Government to refine the allocation of resources to complete the location/site-specific requirements. The AE shall document all planning sessions including resources used and/or reallocated, as well as Government concurrence to ensure work remains within the existing scope and quantities of this task order.

The AE shall:

1) Plan and conduct a Phase I RI (following CERCLA guidance) to delineate the nature and extent of PFAS in surface and subsurface soil, groundwater, surface water, and sediment (all PFAS-

impacted media) from AF releases at HARB and TAFB. However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW.
2) Collect data from AFFF release areas identified for further investigation in this SOW, and
3) Develop a comprehensive understanding of the PFAS fate and transport including a comprehensive baseline groundwater flow.

The CSM shall encompass PFAS release locations installation-wide to acquire a holistic understanding of the PFAS release, comingling of contamination, interaction with legacy contamination, geologic and hydrogeologic conditions, and migration in the environment. This includes understanding the role and interaction of the geologic units, groundwater-bearing units, and surface water, as well as any man-made structures that may affect contaminant migration. Data from PFAS on the laboratory analyte list shall be used as necessary to update or develop the CSM.

A quantitative baseline risk assessment will not be prepared under this Phase 1 RI effort, but sample collection for the purposes of delineation of nature and extent in soil, groundwater, surface water, and sediment shall consider potential human and ecological receptors under reasonable scenarios in accordance with USEPA risk assessment guidance (USEPA RAGS). In addition, relevant exposure areas and depth intervals, required data quality for use in risk assessment, and minimum number of samples required to compute exposure point concentrations during development of the Phase I RI sampling design shall be considered.

Per AF policy, human health risk assessments must address an unlimited use/unrestricted exposure (UU/UE) scenario (i.e., hypothetical future residential) (AFI 32-7020). While risk assessments are not required under this Phase I Contract, sufficient data should be collected to support completion of a risk assessment in future phases.

The screening criteria in the 15 October 2019, and/or its updates, Assistant Secretary of Defense (ASD) Memorandum, *Investigating Per- and PolyFluoroalkyl Substances within the Department of Defense Cleanup Program*, shall be used to delineate PFOA, PFOS, and PFBS. On 08 April 2021, the PPRTV toxicity value for PFBS was updated. The report can be found on the EPA's webpage https://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=542397. The ASD screening values are presented in Table 14.2. State promulgated values will not be used for delineation or considered as preliminary applicable or relevant and appropriate requirements without approval from the Office of the Secretary of Defense.

Table 5: ASD Screening Values

Chemical	Carcinogenic Slope Factor - Oral (SF) (mg/kg-day)$^{-1}$	Non-Carcinogenic Reference Dose (RfD) (mg/kg-day)	Residential Screening Levels					
			Tap Water (µg/L)			Soil (mg/Kg)		
			HQ =0.1	**ILCR = lE-06**	**ILCR = lE-04**	**HQ= 0.1**	**ILCR= lE-06**	**ILCR= IE-04**
PFOS	NA	2.00E-06	0.004	NA	NA	0.013	NA	NA
PFOA	7.00E-02	3.00E-06	0.006	1.1	111	0.019	7.8	775
PFBS	NA	3.00E-04	0.601	NA	NA	1.9	NA	NA
PFNA	NA	3.00E-06	0.006	NA	NA	0.019	NA	NA
PFHxS	NA	2.00E-05	0.039	NA	NA	0.13	NA	NA
HFPO-DA	NA	3.00E-06	0.006	NA	NA	0.023	NA	NA

Note: The tap water RSL (HQ=0.1) shall be used for delineation in groundwater and surface water. The residential soil RSL (HQ=0.1) shall be used for delineation in soil and sediment.

2.0 Project Planning

The AE shall review the existing AF installation AR and other resources, as necessary, to evaluate all available information for the PFAS release sites identified in this SOW, evaluate potential PFAS transport mechanisms, provide a preliminary site CSM or update an existing CSM which shall be utilized to develop the Phase I RI technical approach, and ensure SOW compliance to complete the Phase I RI.

The Phase I RI planning shall include DQO project scoping sessions to review the existing site information and define project DQOs. The first 2 scoping sessions will include only USACE and AF stakeholders and the remaining sessions shall include USACE, AF, and regulatory stakeholders. Planning meeting variations may be approved by the PM/COR and AF RPMs. The AE shall follow guidance in the UFP-QAPP and document the project work plan using the UFP-QAPP worksheets for stakeholder review and approval.

Additional scoping sessions shall be completed for step-out well installation and/or sampling events after initial mobilization sample results, potentiometric maps, and well network optimization analysis have been developed to inform additional monitoring well and/or sampling locations. The pertinent sections of the UFP-QAPP shall be amended, as needed, to update the project plan. It is expected that the Phase I RI for each site will be an iterative process where data is collected and presented to the AF and USACE for planning/confirmation of subsequent investigation elements. This iterative process will continue until all sites are fully delineated and required information for the Phase I RI has been collected.

It is expected that the RI scoping will consist of:

a) Identifying data needs and developing DQOs.
b) Performing a site reconnaissance, community interviews and preliminary risk screening activities to evaluate all potentially complete exposure pathways.
c) Developing an initial area-wide baseline of groundwater flow and contaminant hydrogeologic conditions.
d) Reviewing existing data and updating the CSM to determine migration and exposure pathways requiring evaluation.
e) Evaluating storm water and other conveyances to determine potential transport mechanisms.

2.1 Prohibited and Acceptable Items

PFAS are present in a wide variety of commercial products including common household items (fabric softeners, sunscreens, low density polyethylene containers, Gore-Tex, cosmetics, moisturizing lotions, etc.). Given the low detection limits associated with PFAS analysis and the many potential sources of trace levels of PFAS, field personnel will strictly adhere to the sampling equipment and protocols summarized in Appendix D. If in doubt about a particular product or item in contact with environmental media including well construction materials and sampling equipment, the AE shall collect and analyze a rinsate sample using laboratory-supplied PFAS-free water to verify the materials do not contain PFAS.

2.2 Direct-Push Technology (DPT) Investigation

The AE shall develop a planned approach to complete initial characterization and delineation of contamination at each site using DPT methodologies. Data collected by DPT shall include both soil and groundwater samples for laboratory analysis as a screening tool to support the placement of permanent monitoring wells for more accurate and efficient horizontal and vertical delineation. The DPT methods/ equipment used shall be sufficient to complete both horizontal and vertical characterization and collect both soil and groundwater samples. A higher density of soil samples (vertical and horizontal) are expected to be collected in suspected source areas.

DPT equipment requirements shall be selected by the AE that will be capable of achieving the depth and sampling requirements for this Phase I RI including, but not limited to, vehicle weight, equipment hydraulic size and power, DPT tool size and sonic/vibratory capabilities, depth to groundwater, and DPT refusal considerations, etc. Equipment shall be compatible for low-detection requirements of PFAS sampling and analyses.

Vertical Aquifer Sampling (VAS) will be performed at selected DPT locations within source areas to determine the vertical distribution of contamination in groundwater. Discrete groundwater samples will be collected starting at the water table and then at specified intervals to the base of the aquifer and tested for PFAS. All groundwater removed will be treated or disposed of in accordance with the IDW Plan.

Surface soil sampling shall also be done in areas where PFAS impacted groundwater has been used for irrigation or watering of lawns/gardens at on-base and/or off-base locations.

At each site source area, an additional 3-5 soil samples (composite samples of each sample depth at each site) shall be collected for the analysis of geotechnical parameters (e.g., pH, grain size, Total Organic Carbon, and anion/cation exchange capacity). See installation-specific requirements in Appendix A.

The AE shall document all subsurface soils during well installation by a qualified and experienced geologist working under the direction of licensed Professional Geologist in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The number of DPT locations and depths, and some other RI requirement details are presented for each installation in Appendix A. Any unallocated resources may be reallocated between sites within an installation, with COR/PM approval, to address site-specific characterization requirements as needed to achieve Phase I RI objectives.

Direct Push Sampling for vertical delineation of PFAS impacted groundwater shall include groundwater samples at discrete depth intervals at each location to aid in developing a vertical profile of PFAS distribution in the subsurface. Direct Push Sampling in soil source areas shall also include soil samples for PFAS laboratory analysis per DPT location. The total number of DPT locations, depths, and soil and water samples may be adjusted and reallocated between sites as needed to achieve Phase I RI objectives.

2.3 Monitoring Well Installation

The AE shall install groundwater monitoring wells at or near PFAS release locations (on and/or off Installation) identified by stakeholders during scoping sessions. The actual monitoring well surface completion requirements will be determined during work plan preparation but the AE shall assume 2-inch diameter, Schedule 40 or 80 PVC (schedule 80 is required for wells > 50ft bgs or if the AE deems necessary given the local geological conditions), and completed at the surface with flush-mounted well boxes. The AF will be responsible for obtaining access agreements needed to install monitoring wells on non-AF property. Each monitoring well must be constructed, installed, and developed per governing state regulations for well installation. Governing State is defined as the state in which the installation is located. Monitoring wells shall be installed following all applicable State laws. Well depths identified in Appendix A1 are estimates. Well depths and screen intervals shall be appropriate for evaluation of groundwater contamination.

The AE shall include a description of the decision process logic for placing and completing step-out sampling (all media) in the UFP-QAPP WP.

The AE shall collect all surface and subsurface soil samples in accordance with F.A.C. 62-780 for all locations during sampling events so that the sampling results may be used for decision making purposes later. Samples shall be tested for PFAS on a standard turnaround.

Groundwater monitoring well installation at off-installation locations cannot take place until offsite access agreements have been completed by the AF and USACE.

If PFAS contamination is suspected or known in more than 1 discrete water-bearing zone, the AE shall screen each water-bearing zone separately. Soil core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations.

The AE shall not drill through confining materials while performing subsurface investigations and monitoring well installations, unless approved by the Government. If natural confining materials (e.g., clay) 2 feet in thickness or engineered confining materials (e.g., geosynthetic liners) are encountered during drilling activities, the AE shall immediately halt drilling activities and contact the USACE and/or AF Project Geologists for guidance.

The AE shall document all subsurface soils during well installation by a qualified and experienced Geologist working under the direction of licensed Professional Geologist licensed in the state in which the work is being performed. Logs shall be recorded on standardized boring log forms. Soil classification shall follow ASTM D 2488.

The AE shall develop all newly installed monitoring wells using a surge and pump procedure. Well development shall be in accordance with local, state, and federal requirements. All groundwater removed will be treated or disposed of in accordance with the approved WMP. Wells should be developed in order of those anticipated to be least contaminated to most contaminated, and equipment shall be properly decontaminated in-between wells. Pre- and post- development photographs are required.

2.4 Groundwater Sampling

The AE shall collect monitoring well samples from new and any existing monitoring wells and analyze the samples for PFAS. The AE shall collect the samples in up to 3 sample events.

- One initial sampling event to sample the existing monitoring well network. This data will be evaluated to determine placement of additional wells.
- Second sampling event (six months after first sampling event) for existing wells and newly installed wells.
- Third sampling event (six months after second sampling event) for existing wells and newly installed wells.
- If additional sampling is needed the options would be exercised as required.

Groundwater samples collected from monitoring wells shall be collected in a manner consistent with all applicable guidance and using a purge method appropriate for the aquifer characteristics and approved by the Base RPM. Groundwater samples shall be field tested for the following parameters: oxidation-reduction potential (ORP), pH, temperature, total dissolved solids (TDS), conductivity, dissolved oxygen (DO), and turbidity. In accordance with the applicable State requirements, use of passive diffusion bag (PDB) samplers or equivalent are not acceptable. All groundwater removed will be treated or disposed of in accordance with the approved Waste Management Plan.

2.5 Surface Water and Sediment Sampling

The AE shall collect surface water and sediment samples at co-located sample locations, unless otherwise specified. Samples shall be collected from downstream to upstream locations in creeks, streams, rivers, etc. In addition, storm water conveyances shall be sampled, as appropriate.

Samples shall be collected in a manner consistent with all applicable guidance. If site-specific conditions indicate, the influence of groundwater on surface water bodies or storm water conveyances shall be evaluated to document the contribution of contamination from base flow of groundwater into these features.

Surface water must be collected by inserting a capped sampling container with the opening pointing down to avoid the collection of surface films. At the time of container opening, the container must be more than 1 foot from the sediment bed and more than 1 foot below the surface water level and as close to the center of the channel as possible, where practicable. Surface water shall not be filtered to remove suspended solids, either in the field or at the laboratory. Centrifuging of the sample at the laboratory shall be used if phase separation is required. Sediment core samples must be collected directly from single-use PVC or acetate liners that must not be decontaminated or reused at different locations. Sampling in creeks/streams/rivers will be conducted from downstream to upstream locations.

2.6 Pore Water Sampling with Lysimeters

The AE shall evaluate the potential for PFAS in soil to leach to groundwater at representative PFAS source areas using lysimetry. The AE shall install suction lysimeters at a representative range of soil types and contamination levels to evaluate migration to groundwater (source strength). Selection of locations for lysimeters should be done after soil data is available for review to ensure lysimeters are placed at locations best suited to address potential migration to groundwater. Lysimeters shall be installed at appropriate depths based on site-specific conditions per source area. Source areas shall be investigated to evaluate migration to groundwater. Pore water samples from lysimeters shall be collected during 4 separate sampling events. The duration of time between each of the 4 sampling events will be determined later. It is not expected the lysimeters will need to remain in place after the prescribed sampling has been performed and results have been reviewed.

2.7 Surveying

A licensed surveyor is required to survey horizontal and vertical elevations of newly installed wells, the vertical elevations of the ground surface near the wells, and the top of the inner well casings. Other surveys required during the performance of work in the SOW include but are not limited to: DPT and lysimeter locations, and all soil, sediment, and surface water sample locations. A licensed surveyor may not be required for DPT, lysimeter, soil, sediment, or surface water sample locations as long as the equipment used is capable of achieving sub- meter accuracy and appropriate benchmarks/controls are used in accordance with best practices and standard operating procedures (see Section 5.8). Installed monitoring wells will be surveyed to 0.01-ft accuracy for location and elevation data by a professional land surveyor that is registered in the state in which the work is being performed.

2.8 Basewide Synoptic Groundwater Gauging

One UFP-QAPP/WP for each installation (total of 2 UFP-QAPP/WPs) shall define the exact procedure for a single Basewide Synoptic Groundwater Gauging event for up to 120 wells. The AE will gauge depth to groundwater on the designated wells and use the data to develop a potentiometric groundwater map depicting groundwater flow.

2.9 Decontamination

Decontamination of drilling equipment must only use materials listed in Appendix D. All equipment must be scrubbed with a plastic brush or steam cleaned and rinsed thoroughly in PFAS-free water to clean away any debris or material on exposed surfaces and then triple-rinsed in distilled (Grade 3 or better) or deionized water (or millipore water). Sampling must include submission of sample(s) representing any water at the point of use (i.e., water truck or tank on-site) used by the driller for drilling purposes.

Equipment that contacts well water within the well (pumping equipment, water meters, etc.) must not contain or be coated with Teflon® unless the Teflon® is internal to the equipment and does not contact the external environment.

2.10 AFFF Release Areas and Phase 1 RI Requirements

AFFF Release Areas were investigated in the SI phase conducted in accordance with CERCLA. Areas of Interest (AOIs) identified for investigation under this Phase I RI are listed in Appendix A and have been determined to have an AFFF release that requires additional investigation in this Phase I RI. Additional information about each of these areas is available in the Installation Site Investigation (SI) reports in the AR or available via the Installation RPMs.

2.11 RI Report

The AE shall prepare a Phase I RI Report for each installation that characterizes environmental conditions, describes the complete nature and extent of the PFOA, PFOS, and PFBS, describes and portrays a comprehensive groundwater flow and contaminant hydrogeological conditions, and evaluates the migration pathways based on the geologic, geophysical, hydrogeological, ecological, chemical, physical, and hydrologic data.

The report shall include analysis and interpretation of multiple factors such as groundwater hydrology/modeling and development of a CSM, groundwater transmissivity, fate transport and contaminant mass flux, calculation of travel times, contamination extent, source identification, and preliminary evaluation remedial alternatives (to be identified at a later date). Other RI reporting to be accomplished include:

- Three-dimensional CSM with pictorial.
- Site level conclusions and whether DQOs were met.
- Analytical data tables for that includes all analyzed PFAS compounds.
- Hydrogeologic cross-section(s).
- Potentiometric maps.
- Isoconcentration contaminant contour maps.
- Basewide Investigative Data Report prepared in table format for internal technical/regulatory team distribution.
- Identification of potentially complete and/or complete exposure pathways and potential receptors.
- Recommendations for any future sampling to address risk assessment needs.

All project deliverables (plans, reports, memorandum, meeting minutes, handouts, etc.) for limited non-AF distribution must include a separate technical memorandum on non-publicly releasable information.

2.12 General Support Requirements

The AE shall be responsible for additional activities in support of this contract such as assisting the Government with public relations, access agreements, and other activities related to this task order.

Examples of support requirements are presented on Table 6.

Table 6: Additional General Support Tasks Required for this Contract

Task	Description	Frequency/Duration/Assumptions
RAB Meetings	Support AF RPM for preparations, reservations, mailings, and attend RABs	RAB meetings (if required)
Progress Status Teleconferences	Teleconferences between AE, AF and USACE	Assume biweekly per base
Partnering/Working Meetings (Site Reconnaissance)	Meetings with AF and USACE. Assume at AF unless COVID-19 restrictions require teleconferences	Assume 2 meetings/year per base

Table 6: Additional General Support Tasks Required for this Contract		
Task	**Description**	**Frequency/Duration/Assumptions**
Miscellaneous PM and Tech support to USACE and AF	General support/requests related to the ERP	Assume labor support of up to 100 hours/year for miscellaneous, unscheduled support for requests, e.g., correspondence review, data calls, presentations, figures, data analysis/summaries, etc.
Public Affairs	Assist PAO by distributing mailers, attending a public meeting, document preparation, etc.	Assume home office support of up to 80 hours/year of effort related to responding to inquiries, review of requests, etc.
AE Manpower Reporting		Yearly
PMP, IMS, project web site	Maintain current documentation	Update web site and PMP as needed to maintain current, update IMS monthly. Update frequency shall be approved by the COR/PM and additional more frequent updates may be required per COR/PM.

2.13 Phase I Remedial Investigation CLIN Structure

The SOW includes the tasks required to complete a Phase I RI (in accordance with CERCLA) for each installation at the release area sites included in Appendix A. This task order does not include completing a Risk Assessment or FS. The Phase I RI shall be completed in accordance with the most recent EPA guidance and 40 CFR § 300.430(d), and the additional requirements stated in this SOW. All release areas shall be fully delineated both horizontally and vertically for affected media (soil, groundwater, surface water, sediment) and contaminant migration pathways. However, some sites at TAFB may not be fully delineated due to MILCON rebuild efforts as stated in section 1.0 of this SOW. Details of the actual scope required to fulfill the Phase I RI requirement will be determined in DQO scoping meetings with AF, the USACE, and environmental regulators.

2.14 Period of Performance (POP)

The performance period of this contract is 36 months after effective date of the contract. Subject to the availability of funds, the KO may exercise the optional line items by written notice to the AE. If exercised, options will have an initial POP of 36 months.

3.0 Optional Tasks

Optional tasks for each installation are in **Appendix B** below the site-specific requirements tables. The optional tasks may be exercised, as determined necessary by the Government, to complete the Phase I RI. The Phase I RI UFP-QAPP WP shall be prepared with the decision logic and worksheet details included to allow the exercise of these options without WP modification. Quantities may be reallocated between sites on a given installation as needed to address site-specific requirements to complete the Phase I RI.

The AE shall guarantee the negotiated price for options for the full contract period of performance (POP). If an option is awarded and later determined to be not required, the option and associated funds may be modified and removed from the contract. The Government will notify the AE of the intent to exercise the following options during the execution of this task order as specific optional tasks are needed to complete the Phase I RI, and the Government will issue the AE a notice to proceed prior to executing all options.

Optional task awarded after September 2022 do not include updates associated with EPA Draft Method 1633 or the May 2022 EPA Residential Screening Levels (RSLs). The need for updating those option tasks will be determined prior to award of those optional tasks.

APPENDICES A: Installation-Specific Requirements Tables

APPENDIX A1: Homestead Air Reserve Base Phase 1 RI Requirements

HARB Site-Specific Phase I RI Requirements																									
		Status				MW Install						DPT for Soil Screening					Lysimeters		Other Samples		DPT for GW Screening				
CLIN	Site	Max GW PFOA + PFOS (ug/L)	Max. Soil Concentration (ug/kg)	Est DTW (ft bgs)	Qty Existing MWs	Qty New LDW	Est LDW Depth bgs (ft)	Total LDW Footage (ft)	Qty New VDW	Est VDW Depth bgs (ft)	Total VDW Footage (ft)	Qty SBs	SB Depth (ftbgs)	SB Total Feet (ft)	Qty Soil Samples (per SB)	Qty Soil Samples for Analysis	Qty Lysimeters	Lysimeter Feet (ft)	Qty Surface Water Samples (each event)	Qty Sediment Samples (each event)	Qty DPTs for LDW Install	DPT Total Feet for LDW (ft)	Qty DPTs for VDW Install	Qty GW Samples for VDW Install	DPT Total Feet for VDW (ft)
1	[redacted]	10.08	3.3 PFOA 78 PFOS 0.52 PFBS	5	15	5	15	75	1	35	35	15	4	60	3	45	3	15	0	0	15	225	3	9	135
2		0.32	8.1 PFOA 4.5 PFOS	5	0	8	15	120	1	35	35	6	4	24	3	18	0	0	6	6	24	360	3	9	135
3		0.915	3 PFOA 2.1 PFOS 0.3 PFBS	5	0	7	15	105	1	35	35	6	4	24	3	18	0	0	0	0	21	315	3	9	135
4		0.26	0.27 PFOA	5	0	7	15	105	1	35	35	8	4	32	3	24	0	0	0	0	21	315	3	9	135
5		12.8	4.1 PFOA 64 PFOS 0.42 PFBS	5	0	15	15	225	3	35	105	20	4	80	3	60	3	15	0	0	45	675	9	27	405
6		2.58	18 PFOA 440 PFOS	5	0	8	15	120	2	35	70	15	4	60	3	45	5	25	0	0	24	360	6	18	270
7		1.49	290 PFOA 110 PFOS 0.77 PFBS	5	0	8	15	120	2	35	70	15	4	60	3	45	5	25	0	0	24	360	6	18	270
8		0.071	No soil data collected	5	4	8	15	120	2	35	70	15	4	60	3	45	0	0	0	0	24	360	6	18	270
9		5.8	No soil data collected	5	4	14	15	210	2	35	70	20	4	80	3	60	0	0	10	10	42	630	6	18	270
10		1.03	14 PFOA 110 PFOS 0.65 PFBS	5	6	30	15	450	8	35	280	30	4	120	3	90	7	35	15	15	120	1800	30	90	1350
		Total			**29**	**110**		**1650**	**23**	**350**	**805**	**150**		**600**		**450**	**23**	**115**	**31**	**31**	**360**	**5400**	**75**	**225**	**3375**

NOTES
LDW = Lateral defining wells, VDW = Vertically defining wells
Column V = 3 DPTs per new LDW Install - grab 1 GW sample at LDW depth; equals the number of GW samples needed during screening for LDWs
Column X = 3 DPTs per new VDW install (3 x qty new VDWs)
Column Y = qty of VDW DPTs (column X) x 3 sample intervals per DPT
Column Z = # VDW DPTs (column "X") x VDW DPT depth (VDW DPT depth = estimated VDW depth (column K) plus 10 ft)
SOW section 2.6: Porewater samples from Lysimeters will be collected during 4 separate sampling events
SOW Section 2.4: Assume 3 separate GW sampling events for all new and existing MWs
Assume 2 separate surface water/sediment sampling events to collect samples (for seasonal variation; sample at low tide if applicable)

APPENDIX A2: Tyndall Air Force Base Phase 1 RI Requirements

TAFB Site-Specific Phase 1 RI Requirements																										
		Status				MW Install						DPT for Soil Screening					Lysimeters		Other Samples		DPT for GW Screening					
CLIN	Site	Max GW PFOA + PFOS (ug/L)	Max. Soil Concentration (mg/kg)	Est DTW (ft bgs)	Qty Existing MWs	Qty New LDW	Est LDW Depth bgs (ft)	Total LDW Footage (ft)	Qty New VDW	Est VDW Depth bgs (ft)	Total VDW Footage (ft)	Qty SBs	SB Depth (ftbgs)	SB Total Feet (ft)	Qty Soil Samples (per SB)	Qty Soil Samples for Analysis	Qty Lysimeters	Lysimeter Footage (ft)	Qty Surface Water Samples (each event)	Qty Sediment Samples (each event)	Qty DPTs for LDW Install	DPT Total Feet for LDW (ft)	Qty DPTs for VDW Install	Qty GW Samples for VDW Install	DPT Total Feet for VDW (ft)
1	[redacted]	36.3	0.084	6	1	12	15	180	2	25	50	15	5	75	4	60	0	0	12	5	36	540	6	18	210
2	[redacted]	0.74	0.046	2	1	10	10	100	1	22	22	4	2	8	2	8	3	6	0	0	30	300	3	9	96
3	[redacted]	0.095	NS	4	6	5	15	75	1	25	25	3	4	12	3	9	0	0	0	0	15	225	3	9	105
4	[redacted]	4.25	0.012	3	0	12	15	180	2	25	50	2	2	4	2	4	0	0	0	0	36	540	6	18	210
5	[redacted]	6.489	0.023	2	0	10	10	100	1	20	20	2	2	4	2	4	0	0	0	0	30	300	3	9	90
6	[redacted]	20.9	0.11	5	7	8	10	80	2	25	50	7	4	28	3	21	4	20	0	0	24	240	6	18	210
7	[redacted]	0.18	0.00049	4	0	10	15	150	1	25	25	5	4	20	3	15	0	0	0	0	30	450	3	9	105
8	[redacted]	8.36	0.039	3	0	15	15	225	3	25	75	6	2	12	2	12	3	9	12	4	45	675	9	27	315
9	[redacted]	3.36	0.0093	3	0	12	15	180	3	25	75	6	2	12	2	12	0	0	10	4	36	540	9	27	315
10	[redacted]	902.46	0.324	3	0	15	15	225	4	20	80	10	2	20	2	20	4	12	0	0	45	675	12	36	360
11	[redacted]	877	0.53	3	33	15	15	225	4	20	80	6	2	12	2	12	5	15	10	6	45	675	12	36	360
12	[redacted]	0.598	0.0024	2	32	12	10	120	3	20	60	5	1	5	2	10	0	0	0	0	36	360	9	27	270
13	[redacted]	264	2.9	4	37	15	15	225	4	20	80	12	3	36	3	36	5	20	12	5	45	675	12	36	360
		Total	[redacted]	[redacted]	**117**	**151**	[redacted]	**2065**	**31**	**297**	**692**	**83**	[redacted]	**248**	[redacted]	**223**	**24**	**82**	**56**	**24**	**453**	**6195**	**93**	**279**	**3006**

NOTES
LDW = Lateral defining wells, VDW = Vertically defining wells
Column V = 3 DPTs per new LDW Install - grab 1 GW sample at LDW depth; equals the number of GW samples needed during screening for LDWs
Column X = 3 DPTs per new VDW install (3 x qty new VDWs)
Column Y = qty of VDW DPTs (column X) x 3 sample intervals per DPT
Column Z = # VDW DPTs (column "X") x VDW DPT depth (VDW DPT depth = estimated VDW depth (column K) plus 10 ft)
SOW section 2.6: Porewater samples from Lysimeters will be collected during 4 separate sampling events
SOW Section 2.4: Assume 3 separate GW sampling events for all new and existing MWs
Assume 2 separate surface water/sediment sampling events to collect samples (for seasonal variation; sample at low tide if applicable)
NS = Not sampled
*TU539P-Sub: there are 3 areas to investigate on site TU539P-Sub (see section 1.1.4 of the SOW); line 8 on the requirements table refers to section 1.1.4 item h, etc

APPENDIX B – Installation-Specific Optional Tasks

1.0 HARB Options

1.1 Option-001 DPT (soil screening) and Soil Sampling I

The AE shall complete up to 300 ft of DPT. Up to 120 soil samples will be collected at up to 3 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

1.2 Deleted

1.3 Option-003 Groundwater Sampling and Analysis I

The AE shall complete all task required to collect a groundwater sample from 29 existing monitoring wells and 133 new monitoring wells (total = 162 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

1.4 Deleted

1.5 Option-005 DPT and Groundwater Sampling I for Groundwater Screening

The AE shall complete up to 3000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 150 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

1.6 Deleted

1.7 Option-007 Monitoring Well Installation and Sampling I

The AE shall install up to 1200 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 70 groundwater samples and up to 2 separate sampling events (total of up to 140 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

1.8 Deleted

1.9 Deleted

1.10 Deleted

1.11 Deleted

1.12 Deleted

1.13 Option-013 Optional Site 1 - Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For

bidding purposes, assume a site profile with investigation requirements similar to DA054P in Appendix A1, but also include an additional 10 surface water and 10 sediment samples per event.

1.14 Deleted

2.0 TAFB Options

2.1 Option-001 DPT (soil screening) and Soil Sampling I

The AE shall complete up to 150 ft of DPT. Up to 80 soil samples will be collected at up to 4 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

2.2 Option-002 DPT (soil boring) and Soil Sampling II

The AE shall complete up to 150 ft of DPT. Up to 80 soil samples will be collected at up to 4 subsurface intervals down to but above the water table. This task includes all associated tasks including, but not limited to decontamination, IDW management, soil sample analysis, data validation, reporting, etc.

2.3 Option-003 Groundwater Sampling and Analysis I

The AE shall complete all task required to collect a groundwater sample from 117 existing monitoring wells and 182 new monitoring wells (total = 299 monitoring wells), including, but not limited to water-level measurements, purging, IDW management, sample analysis, data validation, reporting, etc.

2.4 Deleted

2.5 Option-005 DPT and Groundwater Sampling I for Groundwater Screening

The AE shall complete up to 2000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 120 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

2.6 Option-006 DPT and Groundwater Sampling II for Groundwater Screening

The AE shall complete up to 2000 feet of DPT. One groundwater sample shall be collected from each location and analyzed in accordance with this SOW, up to 120 groundwater samples. This task includes all associated tasks including, but not limited to decontamination, IDW management, sample analysis, data validation, reporting, etc.

2.7 Option-007 Monitoring Well Installation and Sampling I

The AE shall install up to 1000 feet of permanent groundwater monitoring wells. Monitoring wells shall be installed using methods consistent with the SOW, and include the collection of up to 50 groundwater samples and up to 2 separate sampling events (total of up to 100 samples, which might require 2 mobilizations if not combined with another task) for laboratory analysis from each new monitoring well. This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.8 Deleted

2.9 Deleted

2.10 Option-010 Sediment Sampling

The AE shall complete all tasks required to collect up to 24 additional sediment samples (2 separate sampling events which might require 2 mobilizations if not combined with another task). This task includes all associated tasks including, but not limited to IDW management, sample analysis, data validation, reporting, etc.

2.11 Deleted

2.12 Option-012 Optional Site 1 – Delineation

The AE shall complete all tasks required to delineate an additional site and accomplish the RI objectives, including, but not limited to IDW management, sample analysis, data validation, reporting, etc. For bidding purposes, assume a site profile with investigation requirements similar to SS041P in Appendix A4.

2.13 Deleted

APPENDIX C: List of Acronyms

AF	Air Force
AFB	Air Force Base
AFCEC	Air Force Civil Engineering Center
AFFF	Aqueous Film-Forming Foam
AFI	Air Force Instruction
AOI	Area of Interest
API	American Petroleum Institute
APP	Accident Prevention Plan
ASD	Assistant Secretary of Defense
bgs	Below Ground Surface
CAC	Common Access Card
CADD	Computer-aided Design and Drafting
CD	Compact Disc
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
COR/PM	Contracting Officer's Representative
CPSMR	AE's Progress, Status and Management Report
CSM	Conceptual Site Model
DLH	Data Loading Handbook
DoD	Department of Defense
DPT	Direct-Push Technology
DQO	Data Quality Objectives
EDD	Electronic Data Deliverable
EO	Executive Order
ELAP	Environmental Laboratory Accreditation Program
EM CX	Environmental and Munitions Center of Expertise
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPP	Environmental Preferable Purchasing
EPEAT	Electronic Product Environmental Assessment Tool
ERPIMS	Environmental Resources Program Information Management System
ESD	Explanation of Significant Differences
FAR	Federal Acquisition Regulations
FDEP	Florida Department of Environmental Protection
FEMP	Federal Emergency Management Program
FFA	Federal Facilities Agreement
FGDC	Federal Geographic Data Committee
FS	Feasibility Study
FSC	Federal Service Code
FE	Government-Furnished Equipment
GFI	Government-Furnished Information
GFP	Government-Furnished Property
GIO	Geospatial Integration Office
GIS	Geographical Information System
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPE	High-Density Polyethylene
IBC	International Building Code
IDW	Investigation-Derived Waste
IMS	Integrated Master Schedule

KO ..... Contracting Officer
KTR ..... AE (Prime Contractor)
LDPE ..... Low-Density Polyethylene
NA ..... Not Applicable
NACE ..... National Association of Corrosions Engineers
NCP ..... National Oil and Hazardous Substances Pollution Contingency Plan
NEC ..... National Electrical Code
NFPA ..... National Fire Protection Association
NOV ..... Notice of Violation
NSDI ..... National Spatial Data Infrastructure
OSHA ..... Occupational Safety and Health Administration
PAO ..... Public Affairs Office
.pdf ..... portable document file
PDT ..... Project Delivery Tea,
PM ..... Project Manager
PMP ..... Project Management Plan
PMR ..... Project Management Review
POC ..... Point of Contact
POP ..... Period of Performance
PVC ..... Polyvinyl Chloride
SOW ..... Statement of Work
QA/QC ..... Quality Assurance/Quality Control
OSD ..... Office of the Secretary of Defense
QSM ..... Quality Systems Manual
RAB ..... Restoration Advisory Board
RAGS ..... Risk Assessment Guidance for Superfund
RCRA ..... Resource Conservation and Recovery Act
RFP ..... Request for Proposal
Phase I RI ..... Remedial Investigation
ROD ..... Record of Decision
RPM ..... Restoration Project Manager
SARA ..... Superfund Amendments and Reauthorization Act
SB or SoB ..... Statement of Basis
SDSFIE ..... Spatial Data Standard for Infrastructure and Environment
SMP ..... Site Management Plan
SNAP ..... Significant New Alternatives Policy
SSHP ..... Site Safety and Health Plan
SSPC ..... Steel structures and painting counsel
SI ..... Site Inspection
SWMU ..... Solid Waste Management Unit
TO ..... Task Order
TBD ..... To Be Determined
UFC ..... Uniform Fire Code
UFP-QAPP ..... Uniform Federal Policy- Quality Assurance Program Plan
USACE ..... United States Army Corps of Engineers
USEPA ..... United States Environmental Protection Agency
UU/UE ..... Unlimited use/unrestricted exposure
WP ..... Work Plan

APPENDIX D: Summary of Prohibited and Acceptable Items

Prohibited Items	Acceptable Items
Field Equipment	
Teflon® containing materials	High-density polyethylene (HDPE) materials
Low density polyethylene (LDPE)	Polyvinyl chloride (PVC) or acetate liners
Aluminum foil	Silicon tubing
Waterproof field books	Loose paper (non-waterproof)
Plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
	Sharpies®, pens
Post-It Notes	
Field Clothing and Personal Protective Equipment (PPE)	
New cotton clothing or synthetic water resistant, waterproof, or stain- treated clothing, clothing containing Gore-Tex™	Well-laundered clothing, defined as clothing that has been washed 6 or more times after purchase, made of natural fibers (preferably cotton)
Clothing laundered using fabric softener	No fabric softener
Boots containing Gore-Tex™	Boots made with polyurethane and polyvinyl chloride (PVC)
Tyvek®	Cotton Clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	Sunscreens - Alba Organics Natural Sunscreen, Yes To Cucumbers, Aubrey Organics, Jason Natural Sun Block, Kiss my face, Baby sunscreens that are "free" or "natural" Insect Repellents - Jason Natural Quit Bugging Me, Repel Lemon Eucalyptus Insect repellant, Herbal Armor, California Baby Natural Bug Spray, BabyGanics Sunscreen and insect repellant - Avon Skin So Soft Bug Guard Plus – SPF 30 Lotion
Sample Containers	
LDPE or glass containers	HDPE or polypropylene
Teflon®-lined caps	Unlined polypropylene caps
Rain Events	
Waterproof or resistant rain gear	Gazebo tent that is only touched or moved prior to and following sampling activities
Equipment Decontamination	
Decon 90	Alconox® and/or Liquinox®
Water from an on-site well	PFAS-free water from a tested source (following the most current PFAS-free guidance/definition)
Food Considerations	
All food and drink, with exceptions noted on the right	Bottled water and hydration drinks (i.e., Gatorade® and Powerade®) to be brought and consumed only in the staging area

APPENDIX E: AFFF Site Boundary Figures (*Shape File(s) will be provided digitally)

(End of Summary of Changes)