



**DEPARTMENT OF THE AIR FORCE**  
**HEADQUARTERS UNITED STATES AIR FORCE**  
**WASHINGTON DC**

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13 AUGUST 2024

MEMORANDUM FOR DISTRIBUTION C  
MAJCOMs/FLDCOMs/FOAs/DRUs

FROM: HQ USAF/A4  
1030 Air Force Pentagon  
Washington, DC 20330-1030

SUBJECT: Department of the Air Force Guidance Memorandum (DAFGM) to Department of the Air Force Manual (DAFMAN) 32-1067, *Water and Fuel Systems*

By Order of the Secretary of the Air Force, Air Force Manual (AFMAN) 32-1067, *Water and Fuel Systems*, is re-designated Department of the Air Force Manual (DAFMAN) and this DAF Guidance Memorandum (DAFGM) immediately implements changes to DAFMAN 32-1067. Compliance with this memorandum is mandatory. To the extent its directions are inconsistent with other Department of the Air Force (DAF) publications, the information herein prevails, in accordance with DAFMAN 90-161, *Publishing Processes and Procedures*.

This memorandum provides DAF guidance for storage tank compliance and inspections for underground storage tanks and steel aboveground storage tanks including piping and pipelines in direct contact with soil.

The guidance in this Memorandum becomes void after one year has elapsed from the date of this Memorandum or upon incorporation in rewrite of DAFMAN 32-1067, whichever is earlier.

TOM D. MILLER  
Lieutenant General, USAF  
DCS/Logistics, Engineering & Force Protection

Attachment:  
DAFMAN32-1067\_DAFGM2024-01, *Water and Fuel Systems*

The below changes to AFMAN 32-1067, dated 4 Aug 2020, are effective immediately. The use of an asterisk (\*) identifies a substantive change over the previous guidance. Compliance with **Attachment 1** in this publication is mandatory. All references to United States Air Force (USAF) terminology, units, grades, and positions will also apply to the equivalent in the United States Space Force (USSF), as appropriate. For example, references to Airmen will also apply to Guardians. References to MAJCOMs or NAFs will also apply to field commands. References to wings will also apply to deltas. Air Staff roles and responsibilities (e.g., AF/A1, etc.) may also apply to the equivalent Office of the Chief of Space Operations (Space Staff) position or office (e.g., SF/S1, etc.), as deemed appropriate.

Changed. This publication applies to all DAF civilian employees and uniformed members of the United States Space Force, Regular Air Force, the Air Force Reserve, the Air National Guard, and those who are contractually obligated to comply with Department of the Air Force publications performing work or inspections in accordance with this DAFMAN.

\*2.9.20. Added. The BCE will appoint a qualified POL Storage Tank Compliance program manager to oversee installation compliance with the tasks in Chapter 9 of this DAFMAN and should reference qualifications in the same chapter.

\*9.1.2. Changed. Department of the Air Force personnel are expected to comply fully with the underlying regulatory requirements of 40 CFR Parts 112 and 280, UFC 3-460-03, NFPA 30, and the applicable state programs. **(T-0)**. Other requirements may apply to storage tanks under the *Clean Air Act* and the Title 42 USC Sections 11001 – 11050, *Emergency Planning and Community Right-to-Know Act* to the extent authorized by Executive Order 13693, *Planning for Federal Sustainability in the Next Decade*, and other environmental laws, *Occupational Safety and Health Administration (OSHA)* regulations and the national codes and standards listed in **Attachment 1** to this DAFMAN. **(T-0)**

\*9.1.3. Changed. Roles and responsibilities: The POL Storage Tank Compliance program manager will establish a Fuels POL tank cross-functional team to coordinate inspection responsibilities for all installation units, tenant units, and non-appropriated fund units with storage tanks subject to AST (40 CFR 112) and UST (40 CFR 280) environmental regulations for petroleum products. **(T-1)** As a minimum, the cross-functional team will include personnel from civil engineering operations management, environmental, liquid fuels maintenance, Logistics Readiness Squadron's Fuels Management Office, service providers and applicable regulated fuel storage organizational tanks (such as DLA contractor operations and AAFES). **(T-2)** The cross-functional team will meet annually and report status to the Wing leadership. **(T-2)** Roles and responsibilities for POL tank compliance management will be accomplished per the Air Force POL Tank Management Playbook. **(T-1)**

\*9.2.5. Added. All UST systems on Department of the Air Force (DAF) installations which are DAF real property or real property-installed equipment and/or subject to the UST regulations in 40 CFR 280 will be entered in the STAR database and NexGen. Inspections of UST systems required for environmental compliance will be entered in the STAR database by the qualified assessor (i.e., unit tank owner's operator, custodian, manager or qualified organization or contractor conducting the inspection). **(T-1)**

\*9.3.6.2. Changed. AFI 23-201, *Fuels Management*, provides guidance for Recoverable Fuel (Jet, Aviation Gasoline, Unleaded, Diesel and Heating Oil). It requires Headquarters United States Air Force offices to provide oversight, and Guard, Reserve, and MAJCOMs along with subordinate

activities to establish and implement operating and accounting procedures in connection with recovering and disposing of these products. This DAFMAN does not address storage of wastes other than oils. Hazardous waste storage is addressed in DAFI 32-7001, *Environmental Management*.

\*9.3.7. Added. All AST systems on DAF installations which are DAF real property or real property-installed equipment and/or POL aboveground tanks 55 gallons or larger, subject to the SPCC regulations in 40 CFR 112, will be entered in the STAR database. Inspections of AST systems 55 gallons or larger required by the SPCC plan will be entered in the STAR database by the operator or organization conducting the inspection. AST systems which are real property or real property-installed equipment will be entered individually in STAR and NexGen. **(T-1)** Smaller POL containers of the same type, which are not real property or real property-installed equipment (e.g. 55-gallon drum storage in a single shop), may be grouped for single entry in STAR for the purposes of tracking inspections required by the SPCC.

\*9.6.3.1. Changed. Shop-Fabricated and Applicable Organizational Tanks. Only a Steel Tank Institute certified inspector shall conduct formal internal and external inspections (as defined in **Attachment 1**) of all shop-fabricated tanks. **(T-0)** The inspector qualifications, frequency, and types of inspections will be per Steel Tank Institute Standard SP001 (STI SP001), Standard for the Inspection of Aboveground Storage Tanks. **(T-0)**

\*9.6.3.1.1. Added. The frequency, types, and required formal inspection dates of STI-SP001 must be documented in the installation SPCC. **(T-1)** See UFC 3-460-03, *Maintenance of Petroleum Systems* for inspection frequencies. Monthly and annual inspection will be conducted using a standard checklist such as STI SP001, pre-loaded AF checklists in STAR or state mandated checklists. **(T-1)** Regardless of checklist used, all inspections will be documented in STAR as an assessment. **(T-1)**

\*9.6.3.1.2. Added. Tank Custodian or Tank Operator will conduct monthly compliance inspections and document on specified form. **(T-1)** POL Tank Compliance Manager will direct how records will be entered in STAR as an assessment.

\*9.6.3.1.3. Added. Designated environmental or liquid fuels maintenance personnel will conduct annual inspections and document on specified form. **(T-1)** POL Tank Compliance Manager will direct how records will be entered in STAR.

\*9.6.3.1.4. Added. For overseas installations, inspections will be conducted by an authorized inspector in accordance with the Final Governing Standards for the specific country. POL Tank Compliance Manager will direct how records will be entered in STAR.

\*9.6.3.2.1. Added. Fuels Management Team (FMT) reviews AFTO Form 39, used to inspect tanks and other components of the fuels system, monthly and record discrepancies as directed by AFI 23-201. Monthly operational tank inspections will be performed IAW UFC 3-460-03 and recorded on appropriate checklist. **(T-0)** Monthly environmental inspections per the SPCC will be entered in STAR per **paragraph 9.3.7. (T-1)**

\*9.6.3.2.2. Added. Annual Inspections will be performed by the Unit Tank Custodian (Manager) or designated inspector or assessor. In contrast, CE fuels maintenance personnel or appropriate designated personnel IAW UFC 3-406-03 will oversee or support this annual inspection process and record assessments on the proper checklist. **(T-0)** Annual compliance inspections will be entered in STAR by the tank owner's designated qualified personnel or may be assisted by the CE POL Tank Compliance Program Manager. **(T-1)**

\*9.6.3.3. Changed. Underground Storage Tank Inspections. A certified class A or B operator must inspect USTs every 30 days using the checklist required by the implementing regulatory agency. If the regulatory agency does not provide a required checklist, use a checklist provided by a nationally recognized standard of practice, or an equivalent checklist. Exceptions may be applicable to frequency of overfill equipment inspections and allowance for remote monitoring of release detection, and review of implementing agency requirements. Field constructed tanks and aviation pressurized fuel systems regulated as an UST system must be inspected in accordance with 40 CFR 280.252. **(T-0)** All recurring 30-day compliance inspections must be documented in STAR as an assessment, regardless of checklist used. **(T-1)** Aviation fuel pressurized systems that are regulated as part of an UST system must comply with requirements of 40 CFR 280.250-252, state and local requirements.

\*9.9.1.1. Changed. Tank Inventories. All fuel storage POL tanks 55 gallons or greater requiring monthly and annual inspections subject to regulations ASTs (40 CFR 112) and USTs (40 CFR 280) will be entered in Storage Tank Accounting and Reporting (STAR). **(T-1)** This includes tanks which are real property, real property installed equipment, and equipment. See **Attachment 4**, for a listing of tank data descriptions.

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE MANUAL 32-1067**

**4 AUGUST 2020**



**CIVIL ENGINEERING**

**WATER AND FUEL SYSTEMS**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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**ACCESSIBILITY:** Publications and forms are available on the e-Publishing website at [www.e-Publishing.af.mil](http://www.e-Publishing.af.mil) for downloading or ordering.

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This Air Force Manual (AFMAN) implements Air Force Policy Directive (AFPD) 32-10, Installations and Facilities and AFPD 32-70, Environmental Considerations in AF Programs and Activities. It provides guidance for managing water, wastewater, and Petroleum, Oils, & Lubricants (POL) storage tank systems throughout the Air Force. It applies to Regular Air Force, Air Force Reserve, and Air National Guard. This AFMAN applies to Regular Air Force (RegAF), Air Force Reserve Command (AFRC) and Air National Guard (ANG) military and civilian personnel performing work or inspections in accordance with this AFMAN. This publication may be supplemented at any level, but all supplements must be routed to the Office of Primary Responsibility (OPR) listed above for coordination prior to certification and approval. Refer recommended changes and questions about this publication to the OPR listed above using the Air Force Form 847, Recommendation for Change of Publication; route AF Forms 847 from the field through the appropriate chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See Air Force Instruction (AFI) 33-360, Publications and Forms Management, **Table 1.1** for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule located in the Air Force Records Information Management System. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

***SUMMARY OF CHANGES***

This AFMAN has been substantially revised and must be completely reviewed. Major changes include the incorporation of tank compliance, a complete review of waiver levels for all tiered requirements, and updates to applicable laws and regulations.

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## CHAPTER 1

### OVERVIEW

#### 1.1. Purpose

1.1.1. This Air Force Manual defines responsibilities and provides guidelines to help Base Civil Engineers design, operate, and maintain Air Force-owned or -operated drinking water, wastewater, stormwater, liquid fuels, natural gas systems, storage tanks, and associated piping storing petroleum and hazardous substances. It provides guidance on complying with applicable federal, state, and local regulations.

1.1.2. This Air Force Manual also addresses the environmental compliance requirements for systems located in the U.S.

#### 1.2. Applicability

1.2.1. This publication applies to all installations located in the U.S.

1.2.2. Installations located outside the U.S. are not subject to federal, state, and local regulations. This publication applies only to the extent the requirements do not conflict with applicable international agreements, country-specific Final Governing Standards (FGS), and, where no FGSs exist, the Overseas Environmental Baseline Guidance Document.

1.2.3. The requirements of this AFMAN do not apply to water or gas systems on installations not owned or operated by the Air Force (i.e., privatized systems) except as specifically provided in the contractual terms of the privatization agreements.

1.2.4. This instruction does not apply to Air Force-owned or -operated water systems at contingency or other deployed operation locations outside the U.S.

1.2.5. To the extent this manual or referenced playbooks conflict with applicable regulations and statutes, the regulations and statutes take precedence.

## Chapter 2

### ROLES AND RESPONSIBILITIES

**2.1. The Assistant Secretary of the Air Force Installations, Environment, and Energy (SAF/IE).** SAF/IE is accountable for all doctrine, strategy, policy, guidance, and resource advocacy related to drinking water, wastewater, stormwater, natural gas and liquid fuel system programs.

**2.2. The Air Force Surgeon General (AF/SG).** AF/SG:

2.2.1. Provide environmental health oversight of owned drinking water systems.

2.2.2. Ensure Air Force owned drinking water systems are properly surveyed, sampled, analyzed and monitored to provide adequate supplies of safe drinking water to personnel at garrison and deployed locations.

2.2.3. Develop implementation instructions for drinking water surveillance and establish drinking water requirements to protect the health of personnel as required in AFI 48-144, *Drinking Water Surveillance Program*.

2.2.4. Provide Title 42 United States Code (USC) Sections 300f – 300j-27, *Safe Drinking Water Act*, oversight for drinking water surveillance. This including analysis of present and proposed federal legislation associated with Safe Drinking Water Act surveillance, and analyzes open enforcement actions associated with Safe Drinking Water Act surveillance for negative trends.

2.2.5. Coordinate for proposed revisions to Final Governing Standards and DoD 4715.05-G, *Overseas Environmental Baseline Guidance Document*, Chapter 3, “Drinking Water.

2.2.6. Establish resources and implementation instructions for the drinking water surveillance program and regulatory compliance to protect public health.

2.2.7. Coordinate on drinking water system matters.

**2.3. The Headquarters, United States Air Force, Deputy Chief of Staff for Logistics, Engineering and Force Protection, Directorate of Civil Engineers (AF/A4C).** AF/A4C:

2.3.1. Be responsible for Air Force policy, strategy, doctrine, oversight, directive guidance, and resource advocacy related to the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system program.

2.3.2. Be accountable for non-directive guidance related to the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system program.

**2.4. The Air Force Installation and Mission Support Center (AFIMSC).** AFIMSC:

2.4.1. Support the development of policy, strategy, doctrine, directive guidance, and oversight related to the drinking water, wastewater, stormwater, natural gas and liquid fuel system program.

2.4.2. Be responsible for the development of non-directive publications and resource advocacy related to the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system program.

2.4.3. Be responsible for activity management program for utilities and natural infrastructure for drinking water, wastewater and stormwater. Provide AF oversight of AF portfolio of water related infrastructure assets.

## **2.5. The Air Force Civil Engineer Center (AFCEC). AFCEC:**

2.5.1. Support the development of Air Force policy, strategy, doctrine, directive guidance, oversight, and resource advocacy related to the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system programs.

2.5.2. Provide the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system subject matter expert(s) to act as the Air Force senior consultant(s).

2.5.3. Execute the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system programs by setting standards, developing procedures, and providing technical assistance to implement Air Force policies and programs.

2.5.4. Develop, maintain, and approve non-directive guidance to implement the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system program.

2.5.5. Consult with SAF/IE and AF/A4C on all non-directive guidance and execution of the Air Force drinking water, wastewater, stormwater, natural gas and liquid fuel system programs.

2.5.6. Assist installation drinking water, wastewater, stormwater, natural gas and liquid fuel system personnel to implement an effective drinking water, wastewater, stormwater, natural gas and liquid fuel system program. Provide technical support for Direct Reporting Units and small units in accordance with this AFMAN.

2.5.7. Coordinate with other service agencies on military drinking water, wastewater, stormwater, natural gas and liquid fuel system programs.

2.5.8. Provide environmental and operational technical support, guidance, centralized project execution, and training to address water quality compliance.

2.5.9. Provide environmental compliance assistance and technical support regarding regulatory matters involving the Title 33 USC Sections 1251 – 1387, *Clean Water Act*, the *Safe Drinking Water Act*, the Title 42 USC Sections 6901-6992k, *Resource Conservation and Recovery Act*, and the Title 33 USC Section 2701 et seq., *Oil Pollution Prevention Act*, that impact installation operations.

2.5.10. Provide regulatory guidance, technical support and assistance to Air Staff, MAJCOMs and installations and monitor compliance performance and trends. The Air Force Civil Engineer Center, Environmental Directorate (AFCEC/CZ) is the lead office for coordination with Offices of the General Counsel of the Department of the Air Force and The Judge Advocate General in providing clear regulatory interpretations and guidance to Air Staff, MAJCOMs and Installations when there is compliance uncertainties.

2.5.11. Support DoD Regional Environmental Coordination per DoD Instruction (DoDI) 4715.02, *Regional Environmental Coordination*, by providing support to the Air Force Regional Environmental Offices, Department of Defense (DoD) Regional Environmental Coordinators on state or national legislative or regulatory issues or initiatives to facilitate application of consistent environmental standards across regions and installations.

**2.6. United States Air Force School of Aerospace Medicine (USAFSAM). USAFSAM:**

- 2.6.1. Provide consultation regarding safe drinking water quality.
- 2.6.2. Provide a contracting mechanism to execute projects related to drinking water monitoring and compliance.
- 2.6.3. Provide or consult on the provision of Contract laboratory analytical services to installations for drinking water sampling, in coordination with affected installation.

**2.7. Major Commands (MAJCOMs). MAJCOMs:**

- 2.7.1. Ensure implementation of the drinking water, wastewater, stormwater, natural gas, and liquid fuel system policies and programs through their installations. Implementation and oversight may be accomplished directly by MAJCOM personnel, through associated AFIMSC Detachment, by delegation to the installation, or other means as determined by each MAJCOM.

**2.8. MAJCOM Bioenvironmental Engineer (BEE). MAJCOM BEEs:**

- 2.8.1. Support installations to ensure drinking water surveillance programs are conducted in accordance with AFI 48-144, *Drinking Water Surveillance Program*.
- 2.8.2. Conduct periodic audits of installation drinking water surveillance programs in accordance with appropriate DoD and AF policies and in accordance with applicable laws and regulations while ensuring regulatory compliance, public health, and adequate resourcing. Frequency of audits shall be determined by the MAJCOM BEE shall determine the frequency of audits. Audits should be based upon installation-specific performance, historic enforcement actions, inspection results, and execution of new drinking water requirements.
- 2.8.3. Fulfill the role of appropriate DoD medical authority, if appropriately appointed by the in-theater DoD Component Commander, if appropriately appointed by the in-theater DoD Component Commander, with respect to drinking water monitoring and surveillance for installations in foreign countries as specified in the DoD 4715.05-G, *Overseas Environmental Baseline Guidance* Document or country-specific Final Governing Standards.

**2.9. The Base Civil Engineer (BCE). BCEs will:**

- 2.9.1. Provide oversight and support of all installation drinking water, wastewater, stormwater, natural gas, liquid fuel system programs, and active utility privatization agreements in accordance with DoD, federal, state, and legally applicable host nation laws. **(T-0).**
- 2.9.2. Provide facilities, equipment, and material to support the local drinking water, wastewater, stormwater, natural gas, and liquid fuel system program. **(T-3).**
- 2.9.3. Operate and maintain drinking water, wastewater, stormwater, natural gas, and liquid fuel systems, using the AF Civil Engineer (AFCE) *Operations Flight Playbooks* as guides. **(T-3).**
- 2.9.4. Manage POL and storage tank systems using the AFCE *POL Tank Management Playbook* as a guide. **(T-3).**

2.9.5. Perform sampling and conduct testing procedures necessary for day-to-day operation of the drinking water, wastewater, stormwater, natural gas, and liquid fuel systems, review monitoring, sampling, and testing reports, and implement necessary corrective actions for compliance with applicable permits, standards, laws, and regulations. **(T-0)**.

2.9.6. Ensure system operations personnel are properly trained and have the required license or certification (e.g., applicable federal, DoD, state, local, or host nation requirements) before assuming plant operations, maintenance, or repair responsibility for drinking water, wastewater, stormwater, gas, and liquid fuel systems. **(T-0)**.

2.9.7. Ensure all systems have required regulatory permits and sufficient resources to operate in compliance with applicable federal, state, and local regulations and standards. **(T-0)**.

2.9.8. Develop local operating instructions (including operational monitoring for process control), sampling and testing procedures, emergency operations, maintenance, and regulatory compliance requirements. **(T-3)**.

2.9.9. Conduct engineering and scientific studies using an asset management approach to support the planning and the efficient and effective operation of drinking water, wastewater, stormwater, natural gas, and liquid fuel systems (e.g., hydraulic modeling, Operations, Maintenance, and Training Assistance Program, leak-detection surveys, inflow/infiltration investigations, closed-circuit television inspections, supervisory control and data acquisition, etc.). **(T-3)**.

2.9.10. Correct system deficiencies identified by regulatory agencies through preparing responses, conducting internal assessment, monitoring, inspection, or making repairs and keeping records of corrective actions. **(T-3)**.

2.9.11. Maintain facility operating logs, records, drawings, system distribution maps, and plant-specific operation and maintenance manuals. **(T-3)**.

2.9.12. Maintain an accurate inventory of drinking water, wastewater, stormwater, natural gas, and liquid fuel systems assets and represent them in both tabular and spatial formats, and provide analytic and diagnostic evaluation concerning the value, condition, and functionality of those assets using authoritative data sources and business information systems established by CE governance. **(T-3)**.

2.9.13. Maintain oversight where drinking water, wastewater, stormwater, natural gas, and liquid fuel systems are provided through regional connections or a privatized system and provide the means and methods to accurately determine the total consumption from these services and their total cost. **(T-3)**.

2.9.14. Do not use wastewater treatment plant effluent or stormwater effluent for aquifer recharge unless: (a) recharge is authorized under an applicable permit; or (b) an affirmative determination is made, in the absence of a permit, that such discharge will not violate any local, state, or federal groundwater protection standard. **(T-3)**. Such applications must comply with applicable federal, state, or Final Governing Standards / Overseas Environmental Baseline Guidance Document regulations. **(T-0)**. Consider water rights implications before implementing water reuse of any kind.

2.9.15. Obtain permits required for construction, modification and operation of the drinking water, wastewater, stormwater, and fuel system as required by the primary agency per federal, state, or local law. **(T-0)**.

2.9.16. Apply for and obtain National Pollutant Discharge Elimination System (NPDES) permits for all point source discharges into applicable waters of the U.S. **(T-0)**. BCE shall ensure federally owned treatment works are operated and maintained in full compliance with the Clean Water Act and applicable NPDES permits. **(T-0)**.

2.9.17. Operate and manage other discharges to waters of the U.S. in accordance with NPDES requirements including municipal separate storm sewer system permits, industrial multi-sector general stormwater permits, stormwater construction general permits, installation specific stormwater permits and any other applicable water discharge permits. **(T-0)**.

2.9.18. The Base Civil Engineer will assign appropriate personnel from the installation management flight (CEI) and the operations flight (CEO) to accomplish the AFMAN-assigned tasks. If an Air National Guard unit is not structured the same as active duty units, the Base Civil Engineer will delegate the duties to the appropriate employee as necessary. **(T-1)**.

2.9.19. Appoint an appropriate backflow prevention program manager. **(T-1)**.

**2.10. The Base Bioenvironmental Engineer (BEE).** Installation BEEs will:

2.10.1. Provide general surveillance of potential environmental contamination of drinking water from facilities, and provide copies of monitoring and evaluation reports indicating an exceedance of a drinking water action level or upon request to the Base Civil Engineer. **(T-1)**.

2.10.2. Monitor compliance of drinking water and water supplies with applicable standards (see AFI 48-144). **(T-1)**.

2.10.3. Provide reporting and public notification assistance as required, and submit monitoring results and suggestions for improving water quality to the Base Civil Engineer. **(T-1)**.

2.10.4. Ensure sanitary surveys are performed to satisfy the requirements of applicable regulations and standards, and recommend mitigation actions by either the appropriate civil engineer or surgeon general organization to maintain the sanitary quality of the base drinking water system. **(T-1)**.

2.10.5. Support civil engineers by conducting technical reviews of repairs, renovations, and modifications to drinking water systems to assess and avert potential health hazards. **(T-3)**.

2.10.6. Support the cross-connection control and backflow prevention program by providing technical assistance and assigning the correct hazard classification to each cross-connection, using the most recent *Uniform Plumbing Code (UPC)* criteria, designed to provide consumers with safe and sanitary plumbing systems. **(T-1)**. At a minimum the hazard classification is conducted during the recurring backflow prevention/cross-connection survey conducted per [paragraph 4.3.4.8](#)

2.10.7. Ensure water vulnerability assessments are completed in accordance with AFMAN 10-246, *Food and Water Protection Program*. (T-1).

## Chapter 3

### GUIDANCE AND PROCEDURES

#### 3.1. Compliance with Statutory Requirements.

##### 3.1.1. Water System Requirements (*Safe Drinking Water Act*).

3.1.1.1. Consumer Information. Bioenvironmental Engineers shall coordinate drinking water system evaluations to ensure drinking water violations through public notification procedures in accordance with AFI 48-144. The Civil Engineer Installation Management (CEI) and Operations (CEO) Flights will provide coordinating support and assistance as needed. **(T-1)**.

3.1.1.2. Regulatory Compliance. Civil Engineers and Bioenvironmental Engineering shall coordinate drinking water system evaluations and planning to ensure drinking water parameters meet current federal, state, local, host nation Final Governing Standards or DoD 4715.05-G, *Overseas Environmental Baseline Guidance* Document (where applicable), and Air Force standards. **(T-0)**.

3.1.1.3. Water Vulnerability Assessments. Drinking water system vulnerability assessments are conducted by Bioenvironmental Engineering with cooperation and input from civil engineers and other appropriate base and local agencies.

##### 3.1.2. Wastewater System Requirements (*Clean Water Act*).

3.1.2.1. Wastewater Discharged to Publicly Owned Treatment Works or Sewage Collection Systems. Civil engineers or other authorized personnel, in accordance with sampling, analysis, and monitoring procedures prescribed in the *AFCE Water Program Management Playbook*, will monitor, through sampling, wastewater discharged from the installation to ensure permit limit categorical standards and local standards developed by the publicly owned treatment works are achieved. **(T-0)**.

3.1.2.2. Wastewater sampling or monitoring may be delegated to another base agency or privatized contractor. Civil engineers may still be required to ensure delegated or contracted agencies meet applicable wastewater discharge standards in accordance with the contractual agreement.

3.1.2.3. When first applying for or renewing a wastewater discharge permit (or similar governing instrument), the National Guard Bureau, Air Force Reserve Command, or Air Force Civil Engineer Center Installation Support Section will review the draft permit requirements proposed by the regulatory agency to ensure they are reasonable and achievable. **(T-2)**. If conditions in a draft permit could be amended to better suit Air Force needs, or are unacceptable or unachievable, negotiate these issues in close coordination between the installation legal office and civil engineer installation management flight (CEI). All permit applications shall be signed in accordance with 40 CFR Part 122.22, *Signatories to Permit Applications and Reports*, or applicable state or local regulation. **(T-0)**. For military facilities, the authorized signatory authority is the installation commander; typically, this is the installation commander having responsibility for the overall operations of the installation.



3.1.2.4. Civil Engineer Installation Management Flight shall:

3.1.2.4.1. Submit applicable Notice of Intent to the appropriate permitting agency and receive required approvals prior to implementing planned discharges. **(T-0)**.

3.1.2.4.2. Ensure compliance in cooperation with other installation stakeholders with all water discharge permit conditions, including sampling, analysis, record keeping inspections, reporting, and training; submit discharge monitoring reports on time to the regulatory authority by certified mail or regulatory agency-approved electronic methods; input and maintain all installation National Pollutant Discharge Elimination System permit information and overseas equivalent data in the Air Force network-approved application Water Enterprise Tracking system. **(T-1)**. Submit drinking water and wastewater information in authoritative data systems and Water Enterprise Tracking System. **(T-2)**.

3.1.2.4.3. Submit National Pollutant Discharge Elimination System water discharge permit renewal application, by certified mail or Air Force and regulatory agency-approved electronic method, in accordance with regulatory timelines, typically 180 days prior to permit expiration. **(T-0)**.

3.1.2.4.4. Submit a timely applicable Notice of Termination to the appropriate permitting agency when required with all permits. **(T-0)**.

3.1.3. Gas, Fuel, and other POL Storage Systems Title 29, Code of Federal Regulations (CFR), Part 1910, *Occupational Safety and Health Act (OSHA)*, (OSHA, Department of Transportation (DOT), Title 49 USC Sections 60101 - 60301, *Natural Gas Pipeline Safety Act*, Title 42 USC Sections 7401 – 7671q, *Clean Air Act*, *Oil Pollution Prevention Act*, *Resource Conservation and Recovery Act*).

3.1.3.1. Operate the system in accordance with any applicable environmental and safety operating permits. **(T-0)**.

3.1.3.2. All liquid fuels and natural gas systems will be constructed and maintained, through the use of Unified Facilities Criteria (UFC), in accordance with:

3.1.3.2.1. Title 29 CFR, Part 1910, *Occupational Safety and Health Standards*.

3.1.3.2.2. Title 29 CFR, Part 1926, *Safety and Health Regulations for Agriculture*.

3.1.3.2.3. Title 33, CFR, Part 154, *Facilities Transferring Oil or Hazardous Material in Bulk*.

3.1.3.2.4. Title 40, CFR Part 60, *Standards of Performance for New Stationary Sources*.

3.1.3.2.5. Title 40, CFR Part 112, *Oil Pollution Prevention*.

3.1.3.2.6. Title 40, CFR Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)*.

3.1.3.2.7. Title 40, CFR Part 280 *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*.

3.1.3.2.8. Title 40, CFR Part 281, *Approval of State Underground Storage Tank Programs*.

3.1.3.2.9. Title 49, CFR, Part 192, *Transportation of Natural and Other Gas by Pipeline; Minimum Federal Safety Standards*.

3.1.3.2.10. Title 49, CFR Part 193, *Liquefied Natural Gas Facilities: Federal Safety Standards*.

3.1.3.2.11. Title 49, CFR Part 195, *Transportation of Hazardous Liquids by Pipeline*.

3.1.3.3. Ensure operators of privatized natural gas and liquefied petroleum gas systems meet the qualifications in DOT Pipeline and Hazardous Materials Safety Administration, *Guidance Manual for Operators of Small Natural Gas Systems*. (T-0).

**3.2. Total Maximum Daily Load Regulations (applies to Installations in U.S).** Waste load allocations with assigned target load reductions are established by regulatory authorities to attain and maintain water quality standards. Installations and appropriate stakeholders shall actively participate in the Total Maximum Daily Load (TMDL) development process. (T-1). Civil engineer installation management flight (CEI) shall advise Air Force Civil Engineer Center, Environmental Directorate and Air Force Legal Operations Agency of any draft TMDL documents prepared by an agency. (T-1). Technical and legal review of proposed TMDL waste load allocations shall be accomplished to assess feasibility, reasonableness, and impact to AF mission. Installations located in the U.S. shall:

3.2.1. Assess whether point and non-point source discharges are contributing to impairments in the water body and watershed. (T-0). See *DOD Installation Watershed Impact Assessment Protocol*.

3.2.2. Develop and implement a Total Maximum Daily Load compliance program per National Pollutant Discharge Elimination System permit requirements. (T-0). See Title 40, CFR Part 130, *Water Quality Planning and Management*.

### **3.3. Department of Defense/Federal Programs.**

3.3.1. Acquisition and Sales of Utility Services. AFMAN 32-1061, *Providing Utilities to U.S. Air Force Installations*, covers contracting and sales of utility services for reimbursement. The sale of drinking water to non-federal agencies may impact the base's regulatory status under federal and state regulations. Water Rights are an important asset in ensuring the continued operation and resiliency of AF missions. The utilities privatization program office will coordinate with bioenvironmental engineering and civil engineer installation management and operations flights prior to taking contract action. The Air Force Legal Operations Agency, Environmental Law and Litigation Division - Utility Law Field Support Center will be consulted as part of contract proceedings. See the *AFCE Utilities Privatization Playbook* for more details concerning utilities privatization and consult with Air Force Civil Engineer Center, Energy Directorate, and Utilities Privatization Division.

3.3.2. Linear Segmentation/Asset Inventories. The Base Civil Engineer will develop and maintain accurate inventories of drinking water, wastewater, stormwater, natural gas, and liquid fuel assets. (T-1). Asset inventories shall be maintained in both spatial (e.g., GeoBase) and tabulated (e.g., database) formats in accordance with Air Force approved linear segmentation guidance (see *AFCE Linear Infrastructure Playbook*). (T-1). For safety purposes, fuels mapping has specific requirements listed in [Chapter 8](#).

3.3.3. Regulator Access to Facilities. Agency representatives may inspect treatment facilities, examine facility operating records, and test as necessary to verify compliance with water quality standards in accordance with regulatory requirements. The Base Civil Engineer must enable and support authorized representatives of a regulatory authority access to treatment facilities without prior notice if the entry is consistent with security requirements and at a reasonable time or with the conditions specified in the applicable permit. **(T-0)**.

### **3.4. Training and Certification.**

3.4.1. Operator Training. New operators must receive classroom training and extensive, supervised, on-the-job training before assignment to critical tasks. Experienced personnel must also receive technical refresher courses and upgrade training. The Base Civil Engineer ensures all training courses are compliant with applicable federal, state, local regulations, requirements. **(T-0)**. Military personnel are not required to have specific operator training if the plant has the appropriate number of legally trained and certified operators overseeing operations.

3.4.2. Operator Certification. Wastewater and drinking water operators are required to comply with state and, at times, with federal operator certification requirements for treatment plant operations. Job descriptions shall require state certification or that the certification is obtained and maintained, as appropriate. The operator cannot commence treatment system operations until fully certified. Proper certification must be a condition of employment for new civilians or contractors. **(T-0)**.

### **3.5. Logs, Records, and Drawings.**

#### 3.5.1. Operating Log Preparation and Procedures.

3.5.1.1. Civil engineer operations flight prepares daily operating logs and laboratory records in compliance with applicable regulations and requirements of Air Force-prescribed forms, including required training records. Operating logs should record throughput (water/wastewater produced/treated), level of activity, and time. Operating data can be collected remotely or electronically and maintained in a database. If operating data is manually read and transcribed, it must be recorded in a bound, page-numbered journal in ink with any corrections or deletions lined out and initialed by the user. National Pollutant Discharge Elimination System permits have regulatory-mandated record archive timelines. Keep records according to applicable permit requirements. **(T-0)**.

3.5.1.2. Next-generation software and asset management requirements may dictate the collection of additional operating data. Maintain accurate data in Air Force mandated and authoritative (per CE Governance) next-generation data applications to foster effective and efficient water system operation and maintenance. **(T-1)**.

3.5.1.3. The Base Civil Engineer may delegate final review and signature of operating logs to an appropriate engineer.

3.5.1.4. Dispose of operational records according to AFI 33-322, *Records Management and Information Governance Program*, unless state or federal environmental laws require longer retention or when unusual circumstances such as litigation dictate other retention requirements.

3.5.2. Physical Facility Information. The civil engineer operations flight shall develop, maintain, and keep available at treatment facilities. **(T-1)**.

3.5.2.1. Operation and Maintenance Manuals. Required plant-specific Operation and Maintenance manuals and applicable publications for each treatment system. **(T-3)**.

3.5.2.2. Operating Instructions. System operating instructions with single-line drawings; include operational and compliance monitoring procedures. **(T-2)**.

3.5.2.3. Up-to-date System Drawings. Plans should include elevation profiles (where applicable) and drawings of the entire collection and distribution system. Updated drawing information is added into the base Geographic Information System as changes occur to the system. Retain shop drawings, catalogue cuts, and any other equipment information for compliance with applicable permits, regulations, codes, AF policy, Unified Facilities Criteria, and best management practices. **(T-2)**.

3.5.3. Maintenance Records. Civil engineer operations flight shall develop and maintain effective maintenance plans, including:

3.5.3.1. A preventive maintenance schedule. **(T-1)**.

3.5.3.2. A maintenance history for each major piece of equipment. **(T-1)**.

3.5.3.3. An essential spare parts list (stock essential spare parts at the treatment facility or other accessible location). **(T-1)**.

3.5.3.4. A long-range maintenance and improvement plan. **(T-1)**.

3.5.3.5. Service outage logs. Retain, at the minimum, time/date of incident, description of incident, location of incident, impact of incident, description of repairs, and time/date of restoration of service. **(T-1)**.

3.5.4. Environmental Operations Permits. The Civil Engineer Installation Management Flight retains required records of all monitoring information, including process control data and calculations, all calibration and maintenance records, all original strip chart recordings, and plant operation logs. The Civil Engineer Installation Management flight retains required Discharge Monitoring Reports, and other reports or notices provided to the regulatory agency, including information prepared to complete the application for the permit. Keep all records required by the permit for at least three years after permit expiration or longer if required by the issuing regulatory authority. **(T-0)**.

**3.6. Environmental, Safety, and Occupational Hazards.** Supervisors must ensure all employees are familiar with safety instructions, as applicable, in UFC 3-230-02, *Operations & Maintenance (O&M): Water Supply Systems*, AFI 91-203 to AFMAN 91-203, *Air Force Occupational Safety, Fire and Health Standards*, and AFI 32-7001, *Environmental Management*. Supervisors must maintain Bioenvironmental Engineering occupational health risk assessment reports and shall use the reports to train workers on occupational health hazards. Supervisors must make safety instructions readily available to all operating personnel; train facility personnel on safety procedures and equipment; and enforce their proper use at all times. Once trained, individual workers and the environment must be protected and workers are personally responsible for following safety procedures. **(T-0)**.

## Chapter 4

### DRINKING WATER SYSTEMS

**4.1. Water Facility Design Requirements.** Drinking water systems shall be designed in accordance with UFC 3-230-01, *Water Storage and Distribution*; UFC 3-230-03, *Water Treatment*; UFC 3-420-01, *Plumbing Systems*; UFC 4-020-01, *DoD Security Engineering Facilities Planning Manual*; UFC 4-020-02FA, *Security Engineering: Concept Design*; and UFC 4-020-03FA, *Security Engineering: Final Design*.

**4.2. Facility Operation and Maintenance.**

4.2.1. Water Treatment and Distribution Systems. Installations must operate and maintain water treatment and distribution facilities according to this instruction, UFC 3-230-02, and applicable state and federal laws. **(T-0)**.

4.2.1.1. When appropriate, installations shall also use the manufacturer's operation and maintenance manuals or plant-specific Operations, Maintenance, and Training Assistance Program, Volume II, for specific treatment components. **(T-0)**.

4.2.1.2. Installations that own or operate a potable water treatment facility serving 3,300 persons or more must provide optimally fluoridated water as required by Deputy Under Secretary of Defense for Installations and Environment (DUSD (I&E)) memorandum, *Fluoridation at DoD Owned or Operated Tater Treatment Plants* and UFC 3-230-03. **(T-0)**.

4.2.2. Scale and Corrosion Control. Reference AFI 32-1001, *Civil Engineer Operations*, and UFC 3-570-06, *O&M: Cathodic Protection Systems*, for details of the corrosion control program.

4.2.3. Disinfection. The disinfection process inactivates pathogenic organisms in water by chemical oxidants or equivalent agents. Specific disinfection procedures can be found in American Water Works Association (AWWA) Standard C651-05, *Disinfecting Water Mains*, AWWA Standard C652-02, *Disinfection of Water Storage Facilities*, and AWWA Standard C654-03, *Standard for Disinfection of Wells*.

4.2.3.1. Air Force-owned or operated water production and treatment facilities will be operated with a detectable (measurable level) disinfection residual at all points of the distribution system and throughout the potable water storage tanks served by the treatment plant. The allowed minimal disinfection residual level varies from location to location, so consult with the appropriate regulatory agency to establish the correct level. **(T-0)**. Refer to AFI 48-144 for additional guidance regarding disinfectant surveillance.

4.2.3.2. BCE shall inspect, perform preventive maintenance and check for proper operation at least semi-annually in accordance with UFC 3-230-02 on all distribution components, such as fire hydrants and blow-off hydrants. **(T-0)**. BCE shall conduct fire-flow test and system flushing every five years in accordance with UFC 3-601-02, *Operation and Maintenance: Inspection, Testing, and Maintenance of Fire Protection Systems*. **(T-0)**. The required frequency and method of flushing (routine or unidirectional) will be determined based on individual water system requirements and documented in an installation flushing plan; however, in no case shall any section of

water main go longer than five years without a unidirectional flushing and as allowed per stormwater discharge permit. The installation flushing plan will be coordinated with Bioenvironmental Engineering. **(T-3)**. Due to corrosion and tuberculation associated with cast iron pipes, cast iron pipes may require more frequent flushing. Reference the Air Force Civil Engineer Center guidance document ‘*Unidirectional Flushing (UDF) Program Guide*’ on the CE DASH site for setting up a proper UDF program.

4.2.4. Water System Hydraulic Models. Follow the latest edition of AWWA Manual M32, *Computer Modeling of Water Distribution Systems*. When water system hydraulic models are used, the Base Civil Engineer ensures water system hydraulic models are checked for accuracy by field flow testing. Hydrant and distribution system flow testing results shall be documented. Integrate the water system hydraulic models into the installation's Geographic Information System. For major water distribution system construction projects, the construction contract must require that the contractor update the water system hydraulic models and other associated utility management systems to reflect these construction changes or additions and help develop the most appropriate construction project design and execution. **(T-3)**.

4.2.5. Water Treatment Logs. The Automated Civil Engineer System, NexGen IT, electronic spreadsheets, commercial software, or other electronic formats that collect the same data as the forms in [paragraphs 4.2.5.1](#) may be used in place of these Air Force forms. The use of EPA or state-mandated forms in place of these Air Force forms is also authorized.

4.2.5.1. AF Form 1460 and AF Form 1461. Operators at every installation must prepare AF Form 1461, *Water Utility Operating Log (General)*. If the water requires treatment beyond chlorination, operators must prepare AF Form 1460, *Water Utility Operating Log (Supplemental)*. **(T-1)**.

4.2.5.2. Daily Well and Pumping Station Activity Records. Maintaining daily operating records for wells and pumping stations is a necessary part of water supply systems operation and maintenance. The forms in [paragraph 4.2.5.1](#) are available for use.

4.2.5.2.1. AF Form 997, *Daily Well Activity Record*. Use to record operational information about the well. This information helps when evaluating the performance of the well and pumping system. Records showing trends such as an increase in drawdown or decreased yield help to detect existing problems and prevent future ones.

4.2.5.2.2. AF Form 998, *Daily Pumping Station Activity Record–Water*. Use to record pertinent operational information such as pumping times and rates. Entries on this record are good performance indicators.

4.2.5.2.3. DD Forms. DD Form 2680, *Military Water Well Completion Summary Report*; DD Form 2679, *Piping and Casing Log*; and DD Form 2678, *Well Driller's Log*.

4.2.5.2.3.1. Complete and keep a file for each well, beginning with initial construction.

4.2.5.2.3.2. Update the information after completing a repair, redeveloping a well, or conducting a performance test.

4.2.5.2.3.3. Properly licensed personnel may be needed to construct new wells or modify existing wells in accordance with state and local regulations.

4.2.5.3. Recordkeeping. The Base Civil Engineer verifies that all required documents, records, and monitoring and sampling data are retained for the length of time required by applicable health service and environmental regulations or other applicable codes and standards. Some records are required to be retained for between three years to ten years (e.g., chemical monitoring analysis, disinfection residuals if the system disinfects). The BCE will verify that some information is kept permanently (e.g., well siting approval letters, pump test results, groundwater withdrawal permit). **(T-0)**. The Water Enterprise Tracking application may be used to archive water system regulatory records.

4.2.6. Distribution Valve Operation and Maintenance. The Civil Engineer Operations Flight shall implement a Valve Exercise Program in accordance with American Water Works Association guidelines to ensure water distribution valves are in working order, or replaced if not operable. The Valve Exercise Program is essential to ensure mission capability, reduce cost due to leaks, facilitate emergency response actions, avoid costly property damage, and enhance system reliability.

### 4.3. Special Considerations.

4.3.1. Water Rights. The Base Civil Engineer will maintain permanent records on all water-related documents and data pertaining to water rights in the real property section in [Attachment 2](#). **(T-1)**. The civil engineer real property office will be the lead for water rights/water resources documentation. It is Air Force policy to retain water rights; if systems or services are privatized, the base shall ensure that Air Force interests in water rights/water resources are not jeopardized. **(T-1)**. For further details concerning privatization, refer to the *AFCE Utilities Privatization Playbook* and consult with the Utilities Privatization Division at the Air Force Civil Engineer Center.

4.3.2. Water Vulnerability Assessments. Civil engineer personnel shall assist bioenvironmental engineering to conduct Water Vulnerability Assessments on all Air Force-owned water systems serving over 25 persons in accordance with AFMAN 10-246, and prepare water contingency response plans for deficiencies identified in [paragraph A3.1.2.4.1](#) through [A3.1.2.4.2.3](#) **(T-0)**. This requirement applies to potable water systems on Air Force installations that produce, treat, and purchase water, or distribute drinking water to U.S. military, federal, and contractor employees, and all resident users. For installations consisting of a host base with associated but independent water systems located on the host installation's property and serving an effective population of 25 users or more, the host installation's Water Contingency Response Plan shall include an annex containing subsystem-specific response guides. Other installations shall follow the Response Guide Development identified in [paragraph A3.2](#) through [A3.2.2.6](#) **(T-0)**.

4.3.3. Water System Lead Content. All new installations or repairs to public drinking water systems require the use of lead-free flux and solder, pipes, and pipe fittings as defined by the Safe Drinking Water Act. **(T-0)**.

4.3.4. Backflow Prevention Program. Bases under U.S. jurisdiction must use the *Uniform Plumbing Code (UPC)*, Section 603, *Cross-Connection Control*, and *UPC Illustrated Training Manual*, to inspect, test, install, repair, and replace backflow prevention devices.

**(T-0)**. Fire protection systems are exempt from this requirement; see [paragraph 4.3.4.6](#) for fire protection systems requirements. When the backflow requirements of this AFMAN, the UPC, and the International Plumbing Code (IPC) conflict, comply first with this AFMAN, second with the Uniform Plumbing Code, and third with the International Plumbing Code, all in accordance with state/local regulations. If no state or local training/certification is specified, certified training from any state, local, or Air Force approved certificate program is required at a minimum. Specific backflow requirements are as follows:

4.3.4.1. Design of Equipment. Civil engineers must first consider designing a solution to eliminate the potential for a cross-connection. **(T-3)**.

4.3.4.2. Device Accessibility. New and existing backflow devices will be planned for and installed to be readily accessible within 1 to 5 feet (0.3 to 1.5 meters) above the floor or grade, at least 1 foot (0.3 meter) from the back wall and have at least 1 foot (0.3 meter) clearance above the device, and documented on AF Form 845, *Cross-Connection Information* or state mandated forms. Backflow devices must be installed with appropriate clearances and in accordance with the manufacturer's installation instructions. **(T-3)**.

4.3.4.3. Device Location Safety. Locate devices outside of areas containing toxic, poisonous, or corrosive fumes. **(T-0)**.

4.3.4.4. Device Protection. Enclosures shall be installed to secure exterior backflow preventers serving critical or high-risk facilities. **(T-0)**. Backflow preventers serving only non-potable uses (e.g., fire protection systems) are excluded.

4.3.4.5. Hose Bibb Devices. At a minimum, specify atmospheric vacuum breaker-type devices that meet American Society of Sanitary Engineering (ASSE) Standard 1011-2004, *Performance Requirements for Hose Connection Vacuum Breakers*.

4.3.4.6. Fire Suppression Systems. Backflow protection on fire suppression systems shall be in accordance with AWWA Manual M14, *Backflow Prevention and Cross-Connection Control Recommended Practices*, [Chapter 6](#) and UFC 3-601-02, in lieu of the Uniform Plumbing Code. Fire protection systems that use non-potable water are exempt from backflow requirements. **(T-1)**.

4.3.4.6.1. All new fire suppression systems using potable water shall have backflow prevention installed. Install a double check valve backflow preventer on new dry/wet fire suppression systems that use only water as a fire suppressant (with or without fire department connections). Use a reduced pressure-type backflow device only where antifreeze, foam, or other hazardous chemicals are added, or where local or state requirements require such devices and the waiver of sovereign immunity applies. **(T-0)**.

4.3.4.6.2. Existing fire suppression systems using only water as a fire suppressant are exempted from the backflow requirements for new systems if they met the existing backflow requirements at the time they were installed.

4.3.4.7. Hydraulic Losses. Pressure losses through a backflow prevention device will degrade the effectiveness of a fire protection system or other water system. Design and submittal acceptance by a registered Professional Engineer must be completed to ensure



that the rated working flow rate of the selected valve meets the flow requirements of the system. **(T-0)**.

4.3.4.8. Water System Backflow Prevention/Cross-Connection Survey. Every five years, civil engineers, under the supervision of the base backflow program manager and with the assistance of Bioenvironmental Engineering or qualified contractors, shall survey all facilities (including non-government owned facilities connected to the AF drinking water systems) and water-using equipment and systems, with results documented on an AF Form 848, *Inventory of Cross-Connection Control and Backflow Prevention Devices*, a computerized maintenance management system, or state submittal forms. **(T-1)**.

4.3.4.9. Testing and Inspecting Backflow Preventers. The backflow program manager ensures that a schedule is developed and used by certified technicians to inspect and test backflow assemblies. At a minimum, testable devices shall be tested after installation, cleaning, repair or relocation, and at least annually, with results documented on an AF Form 843, *Backflow Prevention Device Inspection Data* and AF Form 845, state-mandated forms, the Automated Civil Engineer System or TRIRIGA Program Management module, or another computerized maintenance management system approved by the backflow program manager. **(T-0)**.

4.3.5. Acquisition and Sales of Utility Services. AFMAN 32-1061, covers contracting and sales of utility services for reimbursement. The sale of waste water rights to non-federal agencies may impact the base's regulatory status under federal and state regulations. The utilities privatization program office will coordinate with bioenvironmental engineering and civil engineer installation management and operations flights prior to taking contract action. **(T-2)**. The Air Force Legal Operating Agency, Environmental Law and Litigation Division - Utility Law Field Support Center will be consulted as part of contract proceedings. See the *AFCE Utilities Privatization Playbook* for more details concerning utilities privatization and consult with AFCEC, Energy Directorate, and Utilities Privatization Division.

## Chapter 5

### WASTEWATER SYSTEMS

**5.1. Wastewater System Design.** Wastewater systems shall be designed in accordance with UFC 3-240-01, *Wastewater Collection*; UFC 3-240-02, *Domestic Wastewater Treatment* and UFC 3-420-01. **(T-0).**

**5.2. Wastewater Treatment Systems Operation and Maintenance.** Civil engineer operations flight operates and maintains water pollution control facilities within applicable permit limits and other permit requirements according to base-specific Operations, Maintenance, and Training Assistance Program manuals or plant-specific operation and maintenance manuals. Relevant guidance can be found in UFC 3-240-03N (MIL-HDBK-1138), *Wastewater Treatment System Operation and Maintenance Augmenting Handbook*.

5.2.1. Activities that require special attention include metal finishing and electroplating; vehicle and engine maintenance and vehicle and aircraft wash facilities; aircraft maintenance (paint stripping, nondestructive inspection, painting, and solvent cleaning); battery shops; photo labs; hospitals; aircraft deicing; civil engineer activities; and fire training. Proper operation and maintenance of oil/water separators, pretreatment systems, and lift stations must also be addressed. **(T-0).**

5.2.2. Wastewater Treatment Logs. Operators must prepare AF Form 1462, *Water Pollution Control Utility Operating Log (General)*. **(T-0).** The use of electronic databases or EPA and state-mandated forms in place of AF Form 1462 is authorized.

5.2.2.1. Bases with wastewater treatment plants must have written instructions that govern the discharge of industrial and non-domestic waste to the sanitary system by generating activities. **(T-0).** Instructions shall describe pretreatment requirements, discharge procedures, and limitations for industrial waste. **(T-0).** The Base Civil Engineer can impose these requirements. Within each generating organization, the activity commander is responsible for controlling industrial discharges. These organizations must use the pollution-control techniques specified in AFI 32-7001 to minimize pollutant discharges. Hazardous waste or other prohibited materials may not be discharged to the collection system. **(T-0).**

5.2.2.2. Disinfect effluents when necessary to comply with federal, state, and local requirements for water pollution control. **(T-0).** De-chlorination of the effluent may also be required at some locations.

**5.3. National Pollutant Discharge Elimination System Permits .** For installations located in the U.S., discharges of domestic wastewater require a National Pollutant Discharge Elimination System permit from federal or delegated state regulatory authorities. The civil engineer installation management flight (CEI) will coordinate these permits with the National Guard Bureau, Air Force Reserve Command, or AFCEC Installation Support Section to ensure that proposed requirements are reasonable and achievable. Input and maintain wastewater National Pollutant Discharge Elimination System permits in the Water Enterprise Tracking system. **(T-1).**

5.3.1. Permit Applications. All permit applications shall be signed in accordance with 40 CFR Part 122.22, *Signatories to permit applications and reports*, or applicable state or local regulation. **(T-0)**. For military facilities, the authorized signatory authority is the senior executive officer; typically, this is the Air Force installation commander having responsibility for the overall operations of the installation. **(T-0)**. Reports required by permits and other information must be signed or certified by the installation commander except to the extent delegations are authorized under applicable federal or state regulations. **(T-0)**.

5.3.2. Enforcement Action and Host Nation Enforcement Action Process. Refer to AFI 32-7001, *Environmental Management*, for coordination, processing, and reporting.

5.3.3. Pretreatment Requirements. Base Civil Engineers shall develop pretreatment programs, if required, for wastewater discharges to satisfy pretreatment requirements. **(T-0)**. See Title 40 CFR Parts 400 – 471, *Effluent Guidelines and Standards*.

5.3.4. Discharges to Publicly Owned Treatment Works. Installations that discharge to publicly owned treatment works are considered as indirect dischargers and are regulated by the publicly owned treatment works authority. Installations must comply with applicable publicly owned treatment works regulations, permits, and contractual agreements. **(T-0)**.

5.3.5. Discharges from Federally Owned Treatment Works. Wastewater point source discharges into waters of the U.S. require National Pollutant Discharge Elimination System permits. **(T-0)**.

5.3.6. Septic Systems. The Base Civil Engineer ensures compliance with applicable state or local regulations regarding septic systems. Connect septic systems to publicly owned treatment works or domestic wastewater systems to maintain compliance. Industrial wastewater shall not be discharged to septic systems. **(T-0)**.

5.3.7. Other Water Discharge Permits.

5.3.7.1. Dredge or Fill Permits. *Clean Water Act*, Section 404, requires a permit from the U.S. Army Corps of Engineers (authorized state) to discharge dredged or fill material into navigable waters (waters of the U.S., including jurisdictional wetlands that are waters of the U.S.). **(T-0)**. Examples of such activities include depositing of dredged or fill material, site development fill, and construction activities.

5.3.7.2. Pesticides. The *Clean Water Act* general National Pollutant Discharge Elimination System permit covers application of biological pesticides or chemical pesticides that leave a residue “on or near” waters of the U.S. Due to the permit differences from state to state, care must be taken to determine applicability. **(T-0)**.

5.3.8. Discharge Monitoring Report Submissions. The civil engineer installation management flight will ensure discharge monitoring reports have been submitted to the permitting authority, as required, according to the schedule that the discharge permit specifies, by registered mail or Air Force/agency-approved electronic method to guarantee a record of on-time arrival. **(T-0)**.

#### 5.4. Special Considerations.

5.4.1. All Air Force installations and facilities located in the U.S. shall operate in accordance with applicable federal, state, and local regulations. **(T-0)**. Including requirements to obtain permits or applicable publicly owned treatment works regulations, permits, and contractual agreements, which include, but are not limited to, the following:

5.4.1.1. Develop pretreatment programs, if required, for wastewater discharges to satisfy pretreatment requirements. **(T-0)**. See 40 CFR Part 403 through 471, *Effluent Guidelines and Standards*.

5.4.1.2. Comply with applicable state or local regulations regarding septic systems. **(T-0)**.

5.4.1.3. National Pollutant Discharge Elimination System-permitted federally owned treatment works and other applicable systems such as pretreatment or privatized systems must comply with Title 40, CFR Part 503, *Standards for the Use or Disposal of Sewage Sludge*, including requirements to obtain permits for land application, surface disposal, or incineration of sewage sludge. **(T-0)**.

5.4.1.4. Installations shall correct cross-connections and illicit discharges identified through inspections by elimination, operational modifications, repairs or construction. **(T-3)**.

5.4.1.5. Eliminate or minimize stormwater inflow and groundwater infiltration to wastewater collection systems to prevent sewer system overflows and non-compliance with permit requirements. **(T-0)**. Reduce wastewater discharge cost for metered systems discharging to POTW or to other quantity-based fee systems by reducing inflow and infiltration.

5.4.2. Collect and manage industrial wastewater as a hazardous material per AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, if regulations or permit limits prohibit discharging such wastewater into domestic or other non-industrial sewer systems. Pre-treat regulated industrial wastewater discharges to federally owned treatment works or host nation wastewater systems per applicable permit requirements. Installations will not discharge domestic waste containing industrial waste that does not qualify under the *Resource Conservation and Recovery Act* domestic sewage exclusion will not be discharged to cesspools, septic systems, or stormwater retention ponds. **(T-0)**. Manage industrial wastewater created by releases of aqueous film forming foam (e.g., wastewater discharge from aircraft hangar accidental release of firefighting foam solution) in accordance with applicable regulations, permit conditions, pretreatment limits and AF guidance and policy. **(T-0)**.

5.4.2.1. Do not discharge commercial products containing per- and polyfluoroalkyl substances (PFAS), like perfluorooctane sulfonic acid (PFOS), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorohexane sulfonic acid (PFHxS), perfluoroheptanoic acid (PFHpA), or perfluorobutanesulfonic acid (PFBS) to sanitary sewer. Release of firefighting solutions that contain per fluorinated compounds from fire systems test activation and fire vehicle chemical discharges will be captured, contained, and disposed of to meet applicable regulatory requirements or applicable policy directives. Industrial wastewater treated for PFAS or with residual PFAS contamination

from known releases will only be discharged in accordance with applicable regulations, permit conditions and AF guidance and policy, and with authorization from receiving treatment works. **(T-0)**.

5.4.2.2. Firefighting solutions that do not contain per fluorinated compounds shall be discharged to the sanitary sewer after receiving approval from the receiving publicly or federally owned treatment works. **(T-0)**. Installations must document and follow procedure for metered release of non-per- and polyfluoroalkyl substances (PFAs) firefighting solutions. **(T-1)**. Agreements for discharge are subject to AFCEC Installation Support Section review.

5.4.3. Lift Stations. Lift stations must have audible and visual alarms at each pump station to alert maintenance staff of pump failures, including at times of power loss. Include equipment to transmit alarm signals to a central monitoring point, if possible. Ensure major lift stations are equipped with emergency backup power supply such as mobile or fixed generator. Provide all lift stations with at least duplex pump systems to ensure redundancy. **(T-0)**.

5.4.4. Oil/Water Separators. Do not install any new oil/water separators until all alternative methods have been evaluated. Follow Army Environmental Center SFIM-AEC-EQ-CR-200010, *Multiservice Oil/Water Separator Guidance Manual*, to evaluate alternatives. **(T-2)**. Operate oil/water separators in accordance with applicable federal, state and local regulations. Applicability of regulations may vary based on discharge of oil/water separator to systems with NPDES permit coverage

5.4.4.1. Installations shall not directly discharge solvents, paints, cleaning compounds, corrosion-control facility waste, and non-oily wastes into oil/water separators. **(T-0)**. Residuals of these substances in wastewater shall be minimized or prohibited in accordance with any pretreatment or National Pollutant Discharge Elimination System (NPDES) requirements. **(T-0)**. Consider emulsification of oil by soap during decision making for the installation and use of oil/water separators. Soap use may render the oil/water separator ineffective for separation of oil and grease from water.

5.4.4.2. Obtain an appropriate National Pollutant Discharge Elimination System or host nation wastewater discharge permit if a discharge from an oil/water separator to a wastewater treatment plant is not possible. **(T-0)**.

5.4.5. Large-Capacity Cesspools. Federal regulations require the closure of existing large-capacity cesspools. Federal regulations also require the closure or permitting of Class V underground injection control wells that discharge motor vehicle maintenance operations wastewater. **(T-0)**.

5.4.6. Prohibition of Bypasses. Federal, and some Final Governing Standard, regulations prohibit piped connections, overflow devices and intentional bypasses that directly discharge untreated wastewater into waters of the U.S. or the host nation, except under limited circumstances (see Title 40, CFR Part 122.41, *Conditions applicable to all permits*, (m)(4) and (m)(2)). Wastewater collection systems and pumping stations must not bypass nor allow overflow into storm sewers or waters of the U.S. Notify regulatory authorities of an unauthorized discharge event within 24 hours of discovery or in accordance with local, state, or other reporting requirements whichever has the most rapid reporting requirement (see AFMAN 10-206, *Operational Reporting*, and AFI 32-7001. **(T-0)**.

## Chapter 6

### STORMWATER SYSTEMS LOCATED IN THE U.S.

**6.1. Stormwater System Design.** The Base Civil Engineer shall design surface drainage, underground drainage systems, stormwater management facilities, and erosion and sediment control in accordance with UFC 3-201-01, *Civil Engineering*, and applicable requirements of the local regulatory agency with jurisdiction over the installation; UFC 3-210-10, *Low Impact Development*; applicable Leadership in Energy and Environmental Design credits; and the criteria noted in this AFMAN. **(T-0)**. When there is a conflict between the criteria, installations will follow the most stringent criteria. **(T-0)**. Other important construction-related stormwater references include, UFC 1-200-02, High Performance and Sustainable Building Requirements; and USEPA 841-B-09-001, *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence Security Act*.

**6.2. Stormwater Systems Operation and Maintenance and Compliance.** The Base Civil Engineer shall operate and maintain stormwater facilities within applicable permit limits and according to relevant guidance in the applicable CE Playbook. **(T-0)**.

6.2.1. Stormwater National Pollutant Discharge Elimination System Permit. Stormwater discharges to the waters of the U.S. must be covered under either a General or an Individual permit. When possible, installations should strive to operate under a General Stormwater permit.

6.2.1.1. Industrial activities coverage under a National Pollutant Discharge Elimination System permit is required for discharge of certain stormwater categories associated with, for example, runway and aircraft deicing, landfill runoff, wash racks, etc. into waters of the U.S. Installations are automatically regulated as small Municipal Separate Storm Sewer Systems if they are located within an Urbanized Area, designated by the U.S. Census Bureau.

6.2.1.2. Input and maintain stormwater National Pollutant Discharge Elimination System permits in the Water Enterprise Tracking system and other authoritative data sources per CE governance. **(T-0)**.

6.2.2. For continental U.S. installations, National Pollutant Discharge Elimination System stormwater discharge permit holders must develop and implement a stormwater pollution prevention plan meeting federal and state regulatory requirements (Title 40, CFR Parts 122.26, *Stormwater discharges*, and 123.25, *Requirements for permitting*). **(T-0)**. For overseas installations, the Final Governing Standards or DoD 4715.05-G, *Overseas Environmental Baseline Guidance Document* also require the development and implementation of a stormwater pollution prevention plan. Develop and implement best management practices to eliminate or minimize pollutants. Pursue achievable, cost effective, non-structural best management practices before considering structural best management practices. **(T-0)**.

6.2.3. Municipal Separate Storm Sewer System. Installations are automatically regulated as small Municipal Separate Storm Sewer Systems if they are located within an Urbanized Area, designated by the Bureau of the Census. Installations should consult with installation legal office to determine whether the installation is required to comply with Municipal

Separate Storm Sewer System requirements. Under some conditions, the regulatory agency may designate installations not located in an Urbanized Area for Municipal Separate Storm Sewer System permit coverage.

### 6.3. Special Considerations.

6.3.1. Regulated Construction Activities. Construction activities disturbing one or more acres in aggregate require stormwater permit coverage and the timely submission of a Notice of Intent (if required) to be sent to the appropriate permitting agency. A site specific stormwater pollution prevention plan must be prepared and implemented per permit requirements. The civil engineer installation management flight will review proposed construction activities to determine whether exemptions to submitting a Notice of Intent are available. Attention should be given to permitting authority-specific requirements such as: parties submitting a Notice of Intent, signatory authority, preparing and keeping a copy of the stormwater pollution prevention plan on-site; statutory waiting period after submission of the Notice of Intent before construction can begin; and permit fees. For overseas installations, refer to water discharge permits issued by recognized host nation governments or authorities and the DoD 4715.05-G, *Overseas Environmental Baseline Guidance* Document or Final Governing Standards. (T-0).

6.3.1.1. Title 42 USC Section 17094, *Energy Independence and Security Act 2007 Section 438*. Construction projects meeting the applicability criteria shall be designed in accordance with *Energy Independence and Security Act 2007 Section 438*. Federal projects that construct facilities with a footprint greater than 5,000 gross square feet, or projects that expand the footprint of existing facilities by more than 5,000 gross square feet shall use planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the pre-construction hydrologic conditions of the property with regard to the temperature, rate, volume, and duration of flow.

6.3.1.2. Performance requirements of *Energy Independence Security Act 2007 Section 438* apply only to the project footprint, the flexibility exists to utilize the entire federal property in implementing the stormwater strategies for the project. *Energy Independence Security Act 2007 Section 438*, compliance should be addressed at the watershed level wherever possible for multiple applicable projects, rather than separately for individual single construction projects. Any construction of permanent retention or detention ponds is strongly discouraged. If retention/detention option is selected, written documentation for options considered and justification for the choice should be included in the design analysis. (See DUSD (I&E) Memorandum, *DoD Implementation of Stormwater Requirements under Section 438 of the Energy Independence and Security Act*). See also UFC 3-210-10 for DoD implementing guidance.

6.3.1.3. For *Energy Independence Security Act 2007 Section 438* applicable projects (Military Construction, Operations & Maintenance, Non Appropriated Funds, etc.), the civil engineer engineering flight updates the Automated Civil Engineer System or TRIRIGA Program Management module MAJCOM unique by selecting "EISA 438" and inputting in the value field 'Yes' or 'No' to indicate whether *Energy Independence Security Act of 2007 Section 438* has been addressed for the project. Estimated design and construction costs for implementing *Energy Independence Security Act of 2007*

*Section 438* shall be documented in the project cost estimate as a separate line item. (T-0).

**6.4. Stormwater Fees** . Section 313(c) of the Clean Water Act requires federal entities to pay “reasonable service charges” for stormwater discharge or runoff from federal property or a federal facility, to include reasonable nondiscriminatory fees, charges, or assessments. (T-0).

6.4.1. Installations that receive a stormwater fee assessment shall coordinate with their installation legal office and the AFCEC Installation Support Section prior to any payments. The local Judge Advocate can reach back to Regional Environmental Counsel or to Air Force Legal Operations Agency, Environmental Law and Litigation Division as necessary. Only make payments after the appropriate technical review and obtaining legal approvals. Input stormwater fees paid pursuant to Title 33 USC Section 1323, *Federal Facilities Pollution Control*, in the Water Enterprise Tracking system. (T-0).

**6.5. Wastewater Discharges from Aircraft Hangars** . Aircraft or vehicles shall not be washed or rinsed off in non-corrosion control facilities, corrosion control facilities or other aircraft hangars unless this specific effluent has been addressed within a National Pollutant Discharge Elimination System permit application and approved by National Pollutant Discharge Elimination System authority. Wastewater from aircraft hangars containing non-petroleum materials or products which do not meet pretreatment standards will not be discharged to pretreatment gravity oil/water separators. Soaps and detergents which emulsify oil such that oil/water separators are ineffective will not be discharged to oil/water separators. If wastewater characterization determines wastewater does not meet requirements for coverage under NDPEs or other wastewater permitting authority, follow appropriate waste disposal requirements per federal, state and local regulations as well as AF policy and guidance. (T-0).

**6.6. Accidental Releases of Fire Fighting Foam Solutions** . Unless authorized by National Pollutant Discharge Elimination System permit or discharge instrument, do not discharge substances that contain pentadecafluorooctanoic acid, perfluorooctanoic acid, perfluorocaprylic acid or perfluorooctanoate (PFOA) or perfluorooctanyl sulfonate, perfluoronoanoic acid (PFOS). Release of firefighting solutions from fire systems test activation, fire vehicle chemical discharges, firefighting training discharges, and accidental discharges will be captured, contained and disposed in accordance with current AF and DoD guidance and applicable regulatory requirements. Prior to discharge to the sanitary sewer; obtain approval of the receiving publicly or federally owned treatment works. Firefighting foam of all types will not be released to stormwater conveyance structures. Overseas installations shall refer to water discharge permits issued by recognized host nation governments or authorities. (T-0). See AFI 32-7001 on release reporting requirements.

**6.7. Other Wastewater and Stormwater discharges** . Installations must ensure wastewater and stormwater discharges associated with the industrial activities (such as aircraft birdbaths, aircraft deicing operations, firefighting training operations, etc.) are authorized by local, state, or federal agencies as required by applicable National Pollutant Discharge Elimination System regulations. (T-0).



## Chapter 7

### LIQUID FUELS SYSTEMS

**7.1. Liquid Fuels System Design.** Design liquid fuel systems in accordance with UFC 3-460-01, *Design: Petroleum Fuel Facilities*. (T-0).

**7.2. Liquid Fuels System Operation and Maintenance.** Operate and maintain liquid fuel system facilities in accordance with UFC 3-460-03, *Operation and Maintenance: Maintenance of Petroleum Systems*, and AFI 23-201, *Fuels Management*. (T-0).

7.2.1. Liquid Fuels Maintenance Personnel Requirements. The liquid fuels maintenance section shall be staffed with a minimum of two personnel that possess Special Experience Identifier 351. (T-1). Contracted, Civil Service, Air National Guard, and Air Force Reserve Command liquid fuels maintenance sections do not require Special Experience Identifier 351 staffing.

7.2.1.1. Contracted, Civil Service, Air National Guard, and Air Force Reserve Command liquid fuels maintenance section personnel shall be qualified in accordance with UFC 3-460-03. (T-0).

7.2.1.2. Installations with no Type I, II, III, IV, V or similar systems pressurized hydrant direct fueling systems do not require a work center staffed with Special Experience Identifier 351. Refer to [Table 7.1](#) for installations required to have a work center staffed with Special Experience Identifier 351 awarded personnel.

**Table 7.1. Installation Special Experience Identifier 351 Requirement.**

Andersen Air Force Base	Kunsan Air Base
Andrews Air Force Base	Lajes Field
Aviano Air Base	Little Rock Air Force Base
Barksdale Air Force Base	Malmstrom Air Force Base
Beale Air Force Base	McConnell Air Force Base
Cannon Air Force Base	McGuire Air Force Base
Davis Monthan Air Force Base	Minot Air Force Base
Dover Air Force Base	Misawa Air Base
Dyes Air Force Base	Mountain Home Air Force Base
Eielson Air Force Base	Nellis Air Force Base
Ellsworth Air Force Base	Osan Air Base
Fairchild Air Force Base	Ramstein Air Base
Grand Forks Air Force Base	Royal Air Force Lakenheath
Holloman Air Force Base	Royal Air Force Mildenhall
Joint Base Charleston	Seymour Johnson Air Force Base
Joint Base Elmendorf-Richardson	Spangdahlem Air Base
Joint Base Langley-Eustis	Travis Air Force Base
Joint Base Lewis-McChord	Whiteman Air Force Base
Joint Base Pearl Harbor-Hickam	Yokota Air Base
Kadena Air Base	

7.2.1.3. If an Airman does not exercise their duties in the Special Experience Identifier 351 coded position for 36 months or more, the supervisor shall initiate an AF Form 2096, *Classification/On-the-Job Training Action*, in accordance with AFI 36-2101, *Classifying Military Personnel*, to remove the Special Experience Identifier. **(T-1)**.

7.2.1.3.1. A supervisor may submit an AF Form 2096 to award the Special Experience Identifier 351 for airmen who were previously awarded Special Experience Identifier 351.

7.2.1.3.2. Airman must complete fuel system maintenance duty qualification training and be certified all duty specific and core tasks.

7.2.1.4. Submit requests for Special Experience Identifier 351 in accordance with AFI 36-2101, *Air Force Enlisted Classification Directory*, and utilizing criteria listed in Air Force Enlisted Classification Directory.

#### 7.2.2. Tank Entry Requirements.

7.2.2.1. Tank Entry Supervisor Certification Requirements. The tank entry supervisor is responsible for all aspects of tank entry and must have a Tank Cleaning Certificate of Competency issued by the Air Force Fuels subject Matter Expert or their delegate. **(T-2)**. Submit the following to the Air Force Fuels Subject Matter Expert or their delegate for certification:

7.2.2.1.1. Air Education and Training Command Tank Entry Supervisor Course completion certificate.

7.2.2.1.2. Tank Cleaning Experience. List at least two tanks cleaned with dates, sizes, locations and tank-cleaning supervisor.

7.2.2.1.3. Medical Evidence. Applicant is physically qualified to perform tank cleaning.

7.2.2.2. Certification will not exceed five years from the completion date of the Tank Entry Supervisor Course. The Air Force Fuels Subject Matter Expert or their delegate may approve a one time, one-year waiver.

7.2.2.2.1. If personnel can demonstrate they have cleaned more than 12 tanks (at least eight of which they were the tank entry supervisor) during their current tank entry supervisor certification, then personnel can submit their experience and medical evaluation to renew their tank entry supervisor certification without attending the Air Education and Training Command Tank Entry Supervisor Course.

7.2.2.2.2. AF member will not be issued a tank entry supervisor certification if they have not attended the Air Education and Training Command Tank Entry Supervisor Course in 10 years. **(T-1)**.

7.2.2.3. Tank cleaning will be accomplished in accordance with UFC 3-460-03, Appendix H. **Note:** Confined space entry will be accomplished in accordance with AFMAN 91-203.

#### 7.2.3. Perform Pipeline Pressure tests in accordance with UFC 3-460-03, Appendix G.

## Chapter 8

### NATURAL GAS SYSTEMS LOCATED IN THE U.S.

**8.1. Natural Gas System Design.** Natural gas and liquefied petroleum gas systems shall be designed in accordance with DOT Pipeline and Hazardous Materials Safety Administration; 49 CFR Part 192; Unified Facilities Guide Specification 33-51-15, *Natural Gas and Liquefied Petroleum Gas (LPG) Distribution Pipelines*. Liquefied petroleum gas distribution systems shall also comply with National Fire Protection Association (NFPA) 58, *Liquefied Petroleum Gas Code*, and natural gas distribution systems shall comply with NFPA 54, *National Fuel Gas Code*. **(T-0).**

8.1.1. All buried nonmetallic piping shall have an electrically conductive wire or tape buried within 12 inches (305 millimeters) above the pipe as a means for locating the pipe. **(T-1).** High-density polyethylene pipe specifically manufactured for natural gas or liquefied petroleum gas is the only acceptable nonmetallic material for buried systems.

8.1.2. Liquefied petroleum gas containers shall comply with NFPA 58. All containers shall have pressure relief devices. Verify that liquefied petroleum gas containers or pressure vessels meet the American Society of Mechanical Engineers (ASME) *Boiler and Pressure Vessel Code* and American Petroleum Institute minimum requirements, and are marked to show compliance with these requirements. Markings show designed working pressure and capacity. Identify container content according to Military Standard (MIL-STD)-101C, *Color Code for Pipelines and for Compressed Gas Cylinders*. Show the testing dates on all liquefied petroleum gas pressure vessels. **(T-0).**

8.1.3. Design of Liquefied Petroleum Gas Propane-Air Mix Plants. Propane air mix is also known as synthetic natural gas. Design of propane-air mix plants shall comply with NFPA 58 and NFPA 59, *Utility LP-Gas Plant Code*. **(T-0).**

8.1.3.1. Propane-air mix plants supplied by liquefied petroleum gas may be installed when economically justified or as standby for systems with interruptible natural gas supply contracts. Follow the original manufacturer's instructions for the operation, maintenance, and inspection of this equipment. **(T-1). CAUTION: COMPRESSED NATURAL GAS VEHICLE FUELING STATIONS MUST NOT BE CONNECTED TO DISTRIBUTION PIPING THAT COULD AT ANY TIME CONTAIN SUBSTANCES OTHER THAN NATURAL GAS. DOING SO COULD RESULT IN AN EXPLOSION.**

8.1.3.2. The liquefied petroleum gas in the propane-air mix will separate from the air and liquefy when compressed by the compressed natural gas system, which operates at a much higher pressure than liquefied petroleum gas systems. This may damage the compressed natural gas system as well as vehicles or equipment designed strictly to operate on compressed natural gas. Additionally, this creates a potential explosive safety hazard.

**8.2. Gas Systems Operation and Maintenance.** Operate fuel gas systems and perform maintenance on the systems to comply with the air requirements in AFMAN 32-7002, *Environmental Compliance and Pollution Prevention* and the operation and maintenance plan developed using the DOT Pipeline and Hazardous Materials Safety Administration. **(T-0)**. Coordinate with engineering to prepare and update system maps. Maintain cathodic protection on metallic piping systems. Use DOT Pipeline and Hazardous Materials Safety Administration for shop reference. **(T-0)**.

8.2.1. Verify that system-critical (key) valves and other critical components have been maintained and operated as required in the operation and maintenance plan. Key valves must be checked at least once every year to ensure they are operable. **(T-0)**.

8.2.2. Installations shall accomplish gas leak surveys annually using leak-detection equipment, with the maximum time allowed between surveys of 15 months. **(T-0)**. Installations shall document gas leak surveys on forms similar to those under Appendix B to DOT Pipeline and Hazardous Materials Safety Administration and reported to the appropriate authorities as outlined in AFMAN 32-7002. **(T-1)**. The frequency of inspections may be lengthened to two years for systems where underground piping is entirely constructed of high-density polyethylene pipe and when no leaks were discovered in the test immediately prior to the current test cycle. Gas lines in highly populated areas of the base should be tested annually regardless of pipe materials used.

8.2.3. All gas on installations shall have a distinct odor to allow easy detection in the atmosphere at all gas concentrations from one-fifth of the lower explosive limit and above. **(T-0)**. When such gases are not otherwise available, in-house technicians or the gas supplier will add the odorant.

**8.3. Gas Distribution System Map.** The Base Civil Engineer will prepare and maintain a general layout map of the base gas distribution system in the "G" series of the Base Comprehensive Plan. **(T-1)**. The Base Civil Engineer must distribute a complete map to the Fire Chief and all base activities involved in operating and maintaining the gas distribution system. Copies will be updated annually; show dates of revisions. **(T-1)**. The map will be large enough to show (if applicable):

8.3.1. Regulator locations. **(T-1)**.

8.3.2. Flow quantities and pressures. **(T-1)**.

8.3.3. All connected loads. **(T-1)**.

8.3.4. Size and material of all mains and services (include the manufacturer's name, numerical designation, American Society for Testing and Materials number, connectors, and any other available descriptive information). **(T-1)**.

8.3.5. Locations with respect to streets. **(T-1)**.

8.3.6. Any major structures related to or served by the system. **(T-1)**.

8.3.7. Valves and distribution-line regulators by number. **(T-1)**.

## Chapter 9

### STORAGE TANK (AND ASSOCIATED PIPING) COMPLIANCE

**9.1. Applicable Standards and Regulations.** The Air Force complies with applicable federal, state, and local laws and regulations; executive orders; DoD and Air Force publications, technical orders, and policies; and, overseas, with the Overseas Environmental Baseline Guidance Document, appropriate Final Governing Standards, international agreements, and applicable portions of this AFMAN.

9.1.1. Air Force activities in overseas locations must implement this AFMAN in accordance with the appropriate FGS or, in their absence, the Overseas Environmental Baseline Guidance Document. The following description of regulations applicable to storage tanks describes only the principal requirements and is not intended to be exhaustive.

9.1.2. Air Force personnel are expected to comply fully with the underlying regulatory requirements of 40 CFR Parts 112 and 280, and the applicable state programs. Other requirements may apply to storage tanks under the *Clean Air Act* and the Title 42 USC Sections 11001 – 11050, *Emergency Planning and Community Right-to-Know Act* to the extent authorized by Executive Order 13693, *Planning for Federal Sustainability in the Next Decade*, and other environmental laws, *Occupational Safety and Health Administration (OSHA)* regulations and the national codes and standards listed in **Attachment 1** to this AFMAN. **(T-0)**.

9.1.3. Roles and responsibilities: A POL tank cross-functional team shall be established to coordinate inspection responsibilities for all installation units, tenant units, and nonappropriated funds units with storage tanks. As a minimum, the cross-functional team will include civil engineering, environmental, fuel management personnel and applicable tenants. The cross-functional team will meet at least annually and report status to the Wing leadership. **(T-3)**. Roles and responsibilities for POL tank compliance management shall be accomplished per the Air Force POL Tank Management Playbook. **(T-1)**.

### 9.2. Underground Storage Tanks (UST).

9.2.1. Title 42 United States Code Section 6991 *et seq*, *The Resource Conservation and Recovery Act (RCRA)*, regulates underground storage tanks containing regulated substances. Regulated substances are defined at 40 CFR Part 280.12 and include hazardous substances regulated under the *Title 42 USC Sections 9601-9675, Comprehensive Environmental Response, Compensation, and Liability Act*, which are not otherwise regulated as RCRA hazardous waste, as well as petroleum and petroleum-based substances.

9.2.2. The federal underground storage tank standards are found in Title 40, CFR Parts 280 UST requirements may also be established by States regulating programs authorized by EPA under 40 CFR Part 281. Likewise, some States without EPA authorization may have additional UST requirements. Given the broad waiver of sovereign immunity in the federal law, installations must comply with such requirements. **(T-0)**. Consult the legal office to address any questions regarding applicability of State requirements.

9.2.3. Spill Prevention Control and Countermeasure Plan and Facility Response Plans. The Oil Pollution Prevention Act, *Spill Prevention, Control and Countermeasures Plan* and

*Facility Response Plan* requirements, found in 40 CFR Part 112, do not apply to underground storage tanks regulated under and complying with applicable portions of 40 CFR Parts 280 and 281, except that underground storage tanks need to be included in the facility diagram [as provided in 40 CFR Part 112.7(a)(3)] or if the EPA Regional Administrator otherwise requires the underground storage tanks to be included in the Spill Prevention, Control and Countermeasures Plan [as provided in 40 CFR Part 112.1(f)]. Section 311(j) of the Clean Water Act requires facilities, which because of their location, could reasonably be expected to cause “substantial harm” to the environment by a discharge of oil to develop and implement a Facility Response Plan. 40 CFR Part 112 defines substantial harm facilities.

9.2.4. The *Clean Air Act* requirements in Title 40, CFR Part 60, Subpart Kb, and *Standards of Performance for Volatile Organic Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984*, are pertinent to underground storage tanks.

### 9.3. Aboveground Storage Tanks

9.3.1. The Spill Prevention, Control and Countermeasures Plan and Above Ground Storage Tanks requirements, discussed in [paragraph 9.3.1.1](#), generally apply to installations located where a discharge could reasonably be expected to reach navigable waters (including sewer pathways) unless both: (i) the completely buried storage capacity of installation facility has a total aggregate of 42,000 gallons or less of oil and (ii) the total aggregate aboveground storage capacity of the installation is 1,320 gallons or less of oil. Containers which are 55 gallons or larger and store petroleum, oil or lubricants are subject to Spill Prevention, Control and Countermeasures regulatory requirements and total volume for the installation in determining applicability. Refer to the EPA definition of ‘oil’ in [Attachment 1](#), Terms.

9.3.1.1. The Spill Prevention, Control and Countermeasures Plan is the document required by 40 CFR Part 112.3 detailing the training, equipment, workforce, procedures and steps to prevent, control, and provide adequate countermeasures for a potential discharge. The relevant requirements for preparing a Spill Prevention, Control and Countermeasures Plan are located in 40 CFR Parts 112.3 – 112.8.

9.3.1.2. A facility shall also determine, in accordance with 40 CFR Part 112.20, whether, because of its location, a spill of oil could cause substantial harm to the environment by discharging oil into or on the navigable waters or adjoining shorelines (does not apply in overseas locations). **(T-0)**.

9.3.1.2.1. If the installation (“facility” as defined by 40 CFR Part 112) determines it does meet the substantial harm criteria, it shall prepare a Facility Response Plan as provided in 40 CFR Part 112, Appendix F or as required by the EPA Regional Administrator (does not apply in overseas locations). **(T-0)**.

9.3.1.2.2. If the installation (“facility” as defined by 40 CFR Part 112) determines it does not meet the substantial harm criteria, it shall complete and maintain certification that the criteria do not apply. **(T-0)**. Even if the substantial harm criteria are not met, the Environmental Protection Agency Administrator has the discretion to require a Facility Response Plan (does not apply in overseas locations).

9.3.2. Aboveground storage tanks containing used oil, as defined in 40 CFR Part 279.1, *Standards for the Management of Used Oil, Definitions*, must also meet the applicable Resource Conservation and Recovery Act used oil management requirements of 40 CFR Part 279 (does not apply in overseas locations). **(T-0)**.

9.3.2.1. In accordance with 40 CFR Part 112 Spill Prevention, Control and Countermeasures (SPCC) Plans must include schedules and requirements defined for “periodic” inspections of shop-built aboveground storage tanks (see [paragraph 9.6.3](#)). 40 CFR Part 112.3 (d) (1) (iii) also requires the SPCC plan has been prepared in accordance with good engineering practice including consideration of applicable industry standards. **(T-0)**. A PE must certify tier II SPCC plans to ensure the plan was prepared with good engineering practice **(T-0)**.

9.3.2.2. The requirements in 40 CFR Part 60.110b – 60.117 and Title 40 CFR **Part 81** apply to aboveground storage tanks (to include shop and field constructed tanks) as pertinent (does not apply in overseas locations).

9.3.3. States may adopt or enact storage tank regulations as long as those regulations are at least as stringent as federal storage tank regulations. Installations must comply with state or local underground storage tank regulations; and aboveground storage tank requirements where sovereign immunity has been waived. Installations shall consult with the installation legal office to obtain guidance on whether state or local regulations are applicable to installation aboveground storage tanks. **(T-1)**.

9.3.4. Aboveground storage tanks with underground piping that is 10% or more of the volume of the aboveground storage tank may have additional regulatory requirements similar to underground storage tank regulatory requirements; may be considered an underground storage tank for regulatory purposes per the federal underground storage tank definition. Identify aboveground storage tanks in this category and manage according to applicable regulatory requirements. **Note:** several states and local regulators have different approaches for regulating underground storage tank, aboveground storage tank, and associated piping (e.g., if one removes a tank then all piping is to be removed also, but in another jurisdiction this requirement may not apply). Partially buried tanks may be subject to both UST and SPCC requirements **(T-1)**.

9.3.4.1. Coordination with Defense Logistics Agency (DLA) is required. Appropriated funds expenditures for tanks and piping may be separated as between Air Force and Defense Logistics Agency.

9.3.5. Guidance on the construction and operation of petroleum storage tanks are governed by UFC 3-460-01, UFC 3-460-03, and DoD standard design AW 78-24-27, *Aboveground Vertical Fuel Tanks with Fixed Roofs*, other sources including some of the national codes and standards listed in [Attachment 1](#) to this AFMAN.

9.3.6. The following AFIs provide policy and procedures as developed by the Air Force Logistics Readiness Division for Air Force fuels operations which cross reference this AFMAN.

9.3.6.1. AFI 23-201, provides managers at all Air Force activities with policy and procedures for fuel operations and organizational tanks. The instruction applies to all Active Duty, Reserve, Guard, and Civil Air Patrol personnel that receive, store, issue,

perform quality control, account for aviation fuels, ground fuels, cryogenic fluids, and missile propellants.

9.3.6.2. AFI 23-502, *Recoverable Fuel*, provides guidance for Recoverable Fuel (Jet, Aviation Gasoline, Unleaded, Diesel and Heating Oil). It requires Headquarters United States Air Force offices to provide oversight, and Guard, Reserve, and MAJCOMs along with subordinate activities to establish and implement operating and accounting procedures in connection with recovering and disposing of these products. This AFMAN does not address storage of wastes other than oils. Hazardous waste storage is addressed in AFMAN 32-7001.

#### **9.4. Tank System Requirements.**

9.4.1. Installations must ensure all tank systems (existing and new) containing oils must comply with 40 CFR Part 112 or 40 CFR Part 280, UFC 3-460-01, AFI 32-1001, applicable state and local regulations, and the requirements listed in this paragraph. **(T-0)**. Overseas installations must comply with the Overseas Environmental Baseline Guidance Document or Final Governing Standards as well as the requirements listed below. **(T-0)**.

9.4.1.1. Regulatory Agency Notification and Certification for Construction for new storage tanks. Civil Engineering shall confirm the project proponent or its contractor will:

9.4.1.1.1. Obtain proper notification and certification forms including necessary construction and operating permits from the appropriate regulatory agency. **(T-1)**.

9.4.1.1.2. Send state or local agencies a Notice of Intent or Construction Notification, required registration documents and fees if applicable prior to starting construction or fuel delivery as required by regulatory agencies. **(T-0)**.

9.4.1.1.3. Notify the appropriate regulatory agency of all new aboveground storage tanks/underground storage tanks within the prescribed notification timeline per applicable federal, state and local regulations after use of a newly installed aboveground storage tank/underground storage tank commences. Ensure notification accurately describes the tank system. **(T-0)**.

9.4.1.1.4. Obtain certification from tank installer that tank was installed according to applicable codes and standards. Maintain installation certification, registration records and as built drawings in appropriate files and authoritative data systems. **(T-0)**.

9.4.1.1.5. Notify the regulator in advance if the installation cannot meet a regulatory deadline. **(T-0)**.

9.4.1.1.6. Obtain certified strapping charts from tank installer. Strapping charts shall be as per UFC 3-460-01. **(T-0)**. Ensure tank installer holds the appropriate license for the work being performed.

9.4.1.2. Anchor all parts of underground storage tanks, vaulted tanks, and cylindrical aboveground storage tanks to prevent floating in floods or dislocation in earthquakes or other conditions. Underground storage tanks and vaulted tanks must not be installed at a site located in a 25-year flood plain. **(T-0)**.



## 9.5. Monitoring for Releases.

9.5.1. Tank owners and operators, including installation personnel and tenant storage tank custodians, must periodically (as established by the base's Spill Prevention, Control and Countermeasure Plan) check tank systems for leaks. **(T-1)**.

9.5.1.1. Underground Storage Tanks. Check leak detection systems of underground storage tanks every 30 days or per local regulatory agreements to verify proper function per 40 CFR Part 280.41. **(T-0)**. The use of approved remote monitoring systems may be utilized to check leak detection systems.

9.5.1.2. Vertical Aboveground Storage Tanks. Require integrity and leak testing when material (major) repairs are accomplished. Major repairs are defined in American Petroleum Institute (API) Standard 653, *Tank Inspection, Repair, Alteration, and Reconstruction* and include removing the annular plate ring; replacement of the container bottom; jacking of a container shell; installation of a 12-inch or larger nozzle in the shell; a door sheet, tombstone replacement in the shell, or other shell repair; or, such repairs that might potentially change the potential for oil to be discharged from the tank. **(T-0)**.

9.5.1.3. New and Existing Aviation Fuel Pressurized Piping. Perform a line tightness test annually or monitor this piping monthly using a release detection monitoring method that detects 0.1 gallon per hour. See UFC 3-460-03. **(T-0)**.

9.5.1.4. New and Existing Underground Piping for Underground Storage Tanks. Perform a line tightness test or use an approved monthly monitoring method in accordance with 40 CFR Part 280 or state and local requirements. **(T-0)**.

## 9.6. Operating, Maintaining and Inspecting Tanks.

9.6.1. Corrosion Protection for Steel Underground Storage Tanks and Steel Aboveground Storage Tanks in Direct Contact with Soil. Inspect impressed current cathodic protection systems every 60 calendar days and galvanic cathodic protection systems annually with a qualified cathodic protection specialist. **(T-0)**.

9.6.2. Repairs.

9.6.2.1. Apply 40 CFR Sec. 280.33 in reaching an initial determination as to whether a specific repair job is allowed, as opposed to a required replacement, under federal, state, and local requirements. Use qualified personnel licensed by state agencies to perform repairs on all underground storage tanks if required by state regulations and authorized inspectors to certify repairs were performed on aboveground storage tanks. **(T-0)**.

9.6.2.2. Perform tightness testing of underground storage tanks, including piping, within the state-specified time of completing repairs to any Underground Storage Tank or underground piping. **(T-0)**.

9.6.2.3. Perform integrity testing of an underground storage tank, including piping when major repairs are accomplished on cathodic protection system before the tank system is returned to service in accordance with 40 CFR Part 280, state and local requirements. **(T-0)**.

### 9.6.3. Tank Inspections.

9.6.3.1. Shop-Fabricated and Applicable Organizational Tanks. Only a certified inspector shall conduct formal internal and external inspections of all shop-fabricated tanks. The inspector qualifications, frequency and types of inspections and shall be in accordance with Steel Tank Institute Specification 001 (STI-SP001), *Standard for the Inspection of Aboveground Storage Tanks*. The frequency, types, and dates of STI-SP001 inspections shall be documented in the installation Spill Prevention, Control and Countermeasures Plan. Monthly and annual inspections will be conducting using a standard checklist such as STI SP001, pre-loaded AF checklists in the Storage Tank Accounting and Reporting (STAR) System or state mandated checklists. Tank Custodian or Tank Operator will conduct monthly inspections and record in the STAR, checklists for monthly and annual inspections are available in UFC 3-460-03. **(T-0)**. Monthly inspections will be conducted by the Tank Custodian or Tank Operator and recorded in the STAR data system. **(T-2)**. Annual inspections will be conducted by CE and recorded in STAR. See Unified Facilities Criteria 3-460-03 (UFC 3-460-03), *Maintenance of Petroleum Systems*, for inspection frequencies. For overseas installations, an authorized inspector in accordance with the Final Governing Standards for the specific country shall conduct the inspections. **(T-0)**.

9.6.3.2. Field Erected. Only a certified inspector shall provide formal internal and external inspections of all field erected aboveground storage tanks in accordance with API 653. See Unified Facilities Criteria (UFC) 3-460-03 for inspection frequencies. The dates of API 653 inspections shall be documented in the installation Spill Prevention, Control and Countermeasures. **(T-0)**.

9.6.3.3. Underground Storage Tank Inspections. A certified class A or B operator shall inspect USTs every 30 days using the checklist provided by a nationally recognized standard of practice, or an equivalent checklist required by the implementing regulatory agency. **(T-0)**. Exceptions may be applicable to frequency of overfill equipment inspections and allowance for remote monitoring of release detection, and review of implementing agency requirements. Field constructed tanks and aviation pressurized fuel systems regulated as an UST system must be inspected in accordance with 40 CFR 280.252. **(T-0)**. Aviation fuel pressurized systems that are regulated as part of an UST system must comply with requirements of 40 CFR 280.250 -252, state and local requirements.

9.6.3.4. Tank Equipment Testing. Spill prevention, overfill protection and release detection equipment must be tested in accordance with 40 CFR 112.8 and 40 CFR 280.35. **(T-0)**.

9.6.3.5. Inspections, including Facility Response Plan exercises, from a centralized contract or from a regional support branch contract will be coordinated through the installation gatekeeper in accordance with AFI 23-201, *Fuels Management* **(T-3)**

9.6.3.6. Vaulted Aboveground Storage Tanks (ASTs). For ASTs in subterranean vaults requiring Confined Space Entry Permits, monthly inspections may be performed from outside the vault in accordance with industry practice.

## 9.7. Training.

9.7.1. Personnel training under the Spill Prevention, Control and Countermeasures Regulation (40 CFR Part 112.7 (f)) is intended to reduce the potential of spills by reducing human error.

9.7.1.1. Personnel training for Underground Storage Tank system operators must comply with 40 CFR Part 280 Subpart J and AFI 32-7001. **(T-0)**.

9.7.1.2. Tank owners must ensure their oil-handling personnel obtain the regulatory required training in specific topics. **(T-0)**.

9.7.1.3. Operators of USTs must have UST operator training in accordance with 40 CFR 280.240-245, state and local requirements. **(T-0)**.

## 9.8. Release Response, Cleanup, and Reporting.

### 9.8.1. Suspected Releases.

9.8.1.1. Petroleum, oil, and lubricants (POL) tank compliance program managers or civil engineering installation management flight must report suspected releases from underground storage tanks to the regulators within 24 hours, as per 40 CFR Part 280.50 and appropriate investigation and confirmation steps taken. **(T-0)**. The following are considered suspected releases: (does not apply in overseas locations).

9.8.1.1.1. The discovery of regulated substances at the Underground Storage Tank site or in the surrounding area (such as free product or vapors in soils, basements, sewer and utility lines and near surface water).

9.8.1.1.2. The system indicates a release has occurred. Mechanical automatic line leak detectors and some electronic line leak detectors may cause unusual operating conditions, such as the erratic behavior of dispensing equipment, the sudden loss of product from the system, or an unexplained loss of product from detectors signaling a suspected line leak by greatly slowing down the flow of product in the distribution line. These conditions are considered a suspected release unless system equipment is found to be defective but not leaking within the 24-hour period allowed for reporting suspected releases and is immediately repaired or replaced.

9.8.1.1.3. Petroleum, Oil, and Lubricant (POL) tank compliance managers or civil engineering installation management flight must report monitoring results from a required tank or line release detection method that indicate a release may have occurred as a suspected release unless the following conditions can be met within the allowed 24-hour period. **(T-0)**. These conditions are: the monitoring device is found to be defective and is immediately repaired, recalibrated, or replaced and additional monitoring does not confirm the initial result. **(T-0)**.

9.8.1.1.4. If inventory control shows excessive variance (that is, monthly reconciliations using the EPA leak check comparison of book inventories versus tank measurements exceeds 1% of tank throughput plus 130 gallons), facility managers must report a suspected release and follow up if there are two consecutive months of excessive variances. **(T-0)**. See 40 CFR Part 280.43(a).

9.8.1.1.5. Additional release detection methods are available in 40 CFR Part 280.43.

9.8.2. Responding to Releases. If a release from a tank system is confirmed, coordinate with the Fire Department, Safety, and Bioenvironmental Engineering to identify and mitigate fire, explosion, and vapor hazards. **(T-1)**. Report the release as provided in [paragraph 9.8.5](#)

9.8.3. Cleaning up Releases for Petroleum or Hazardous Substance Tanks (does not apply in overseas locations).

9.8.3.1. For tanks **with** a *Resource Conservation and Recovery Act* hazardous waste permit, take corrective action in accordance with Resource Conservation and Recovery Act Subtitle C requirements (e.g. 40 CFR Parts 264.101, 264.552, 264.553), and any more stringent and applicable state hazardous waste regulations or permit requirements.

9.8.3.2. For tanks **without** a Resource Conservation and Recovery Act hazardous waste permit, take immediate corrective action in accordance with 40 CFR Part 280 Subpart F, and any more stringent and applicable state hazardous waste regulations. **(T-0)**.

9.8.3.3. For aboveground storage tanks take corrective action to clean up releases and make notifications as required in [paragraph 9.8.5](#) and [paragraph 9.8.6](#) and the Spill Prevention, Control, and Countermeasure Plan or the Facility Response Plan.

9.8.3.4. Ensure response resources and spill history are kept up to date in the Spill Prevention, Control and Countermeasures in accordance with 40 CFR Part 112. Spill response capabilities must be maintained in accordance with SPCC/FRP either through in-house capability, support agreement or contract to ensure all levels of spill scenarios can be addressed. **(T-0)**.

9.8.4. Site Remediation. Remediation and post emergency response of petroleum releases from underground or above ground storage tanks to protect human health and the environment are managed and funded in accordance with AFI 32-7020, *Environmental Restoration Program*. Site remediation uses Defense Environmental Restoration Account funds. **(T-0)**.

9.8.4.1. For overseas installations, follow the remediation policy in Department of Defense Instruction (DoDI) 4715.08, *Remediation of Environmental Contamination Outside the United States*.

9.8.4.2. Overseas remediation requirements will be funded using Environmental Quality (Operations and Maintenance) funding if valid. **(T-0)**.

9.8.5. Reporting Releases. Civil engineering installation management flight must notify all applicable regulatory agencies consistent with the applicable federal, state, local requirements (see Title 40, CFR Part 300.125(c), *Notification and Communications*, Title 40, CFR Part 355.40(b)(1), *What Information Must I Provide?*) or for overseas locations Final Governing Standards or Overseas Environmental Baseline Guidance Document. **(T-0)**. Notice of a release is required (does not apply in overseas locations).

9.8.5.1. For releases or discharges of oil or a hazardous substance in a reportable quantity or greater: **(T-0)**.

9.8.5.2. For any spill or overfill from an Underground Storage Tank of petroleum in excess of 25 gallons (or more stringent local requirements) or of a hazardous substance resulting in a release to the environment equal to or exceeding its reportable quantity, notification also is to be provided within 24 hours or other reasonable time period to the

appropriate regulatory agency. If discharge is over 25 gallons and spill is Defense Working Capital Fund Class III Bulk Petroleum products, facilities must submit a report to Defense Logistics Agency through Air Force Petroleum Office, in accordance with Defense Logistics Agency Fuel Spill/Leak reporting policy. See 40 CFR Part 280.53 (a). **(T-0)**. The two reporting requirements referenced here are independent of each other. The responsible Air Force official will not delay a required report to an appropriate regulatory agency in order to file an appropriate report with Defense Logistics Agency. **(T-0)**.

9.8.5.3. For any spill or overfill from an Underground Storage Tank of petroleum less than 25 gallons or of a hazardous substance resulting in a release to the environment less than its reportable quantity where the cleanup cannot be accomplished within 24 hours or other time period established by the implementing agency, notification is to be provided immediately to the appropriate regulatory agency. **(T-0)**. See 40 CFR Part 280.53(b).

9.8.6. Notification. The Base Civil Engineer must submit a notification of a confirmed release and provide it to Air Force Civil Engineer Center, other MAJCOM equivalents, and Headquarters, United States Air Force, Directorate of Civil Engineers, Energy and Environment Division according to AFMAN 10-206 and AFI 32-7001. Releases are reportable to the Air Force Enforcement Actions, Spills, and Inspections system within 24 hours. Overseas locations will report in Enforcement Actions, Spills, and Inspections a spill or overfill of petroleum in excess of 25 gallons or that causes sheen on nearby surface water. **(T-0)**.

9.8.7. Release Reporting. Unless the regulatory agency directs otherwise, Civil Engineering shall submit a report of initial abatement actions promptly after confirming a release, consistent with the applicable federal, state, or local requirements (e.g., 40 CFR Part 280.62(b) requires this report to be submitted within 20 calendar days while 40 CFR Part 110.6 requires reports to the National Response Center be made "as soon as he or she has knowledge of any discharge"). **(T-0)**. Submit a detailed follow-up report consistent with the applicable federal, state, or local requirements (e.g., 40 CFR Parts 280.63(b) and 280.64 requires submission within 45 calendar days) that includes: **(T-0)**.

9.8.7.1. Installations will submit name of the installation point of contact. **(T-0)**.

9.8.7.2. Installations will submit nature and estimated quantity of release. **(T-0)**.

9.8.7.3. Installations will submit information on surrounding population, water quality, use and locations of potentially affected wells, subsurface soil conditions, locations of sewers, climatic conditions, and land use. **(T-0)**.

9.8.7.4. Installations will submit results of initial site check. **(T-0)**.

9.8.7.5. Cause of release.

9.8.7.6. Installations will submit results of free-product investigation. **(T-0)**.

9.8.7.7. Installations will submit estimated quantity, type, and depth of any free product. **(T-0)**.

9.8.7.8. Installations will submit type of recovery system. **(T-0)**.

9.8.7.9. Installations will submit location of on-site or off-site discharges. **(T-0)**.

9.8.7.10. Installations will submit type of treatment and effluent quality. **(T-0)**.

9.8.7.11. Installations will submit steps taken to obtain the necessary permits. **(T-0)**.

9.8.7.12. Installations will submit methods or plan to recycle, reclaim or dispose of any recovered free product, contaminated soil, or groundwater. **(T-0)**.

## **9.9. Record keeping.**

9.9.1. Record keeping shall be managed in accordance with Air Force standards including AFI 32-7001 and AFMAN 33-363. Civil engineers will keep the following records available for inspection at the installation:

9.9.1.1. Tank Inventories. See **Attachment 4**, for a listing of tank data descriptions. Civil engineers must record data in Storage in Storage Tank Accounting and Reporting (STAR). **(T-2)**.

9.9.1.1.1. Update data when tank systems are added, removed, replaced, upgraded, or closed. **(T-0)**.

9.9.1.1.2. The civil engineer installation management flight or environmental management office will maintain installation storage tank inventory of tanks for environmental compliance and makes these records available for inspection. **(T-0)**.

9.9.1.1.3. CE will maintain tank system asset information in the real property records for the installation and reconcile the records annually. **(T-2)**.

9.9.1.2. Corrosion protection equipment operation and inspection. Civil engineers must keep records showing performance of required inspections. **(T-1)**. Tests of installation corrosion protection system in accordance with AFI 32-1001. **(T-1)**. Corrosion control records shall be kept for a minimum of 3 years.

9.9.1.3. Tank repairs and upgrades. **(T-0)**

9.9.1.4. Underground Storage Tanks. Civil engineers must keep records showing a repaired or upgraded underground storage tank system was properly repaired or upgraded, and the record of the repairs shall be kept for the life of the storage tank, as per 40 CFR Part 280.33(f). **(T-0)**. Storage Tank Accounting and Reporting is used to archive required tank records in addition to federal record keeping requirements.

9.9.1.5. Aboveground Storage Tanks. civil engineers must keep records showing a repaired or upgraded aboveground storage tank system was properly repaired or upgraded, and the record of the repairs shall be kept for the life of the storage tank, as per 40 CFR Part 112. **(T-0)**. Storage Tank Accounting and Reporting is used to archive required tank records in addition to federal record keeping requirements.

9.9.1.6. Recent compliance with release detection requirements. Civil engineers must keep records of leak detection performance and maintenance including: **(T-0)**.

9.9.1.6.1. Prior year monitoring results and the most recent tightness test for at least 1 year or until the next test is performed. **(T-0)**.

9.9.1.6.2. Copies of performance claims, including third party certifications, provided by leak detection equipment manufacturers shall be kept for up to 5 years after the useful life of the system, as per 40 CFR Part 280.40. **(T-0)**.

- 9.9.1.6.3. Records of the most recent maintenance, repairs, and calibration of on-site leak detection equipment shall be kept for a minimum of 3 years. **(T-0)**.
- 9.9.1.6.4. Monthly monitoring of release detection systems in log entry or annotation on site records such as automatic tank gauging-print-out. **(T-0)**.
- 9.9.1.6.5. Response to all leak detection alarms must be documented in site records. **(T-0)**.
- 9.9.1.6.6. Where tank leak detection is performed with an automatic tank gauge, records of monthly inventory reconciliation should be kept for at least the previous year to demonstrate compliance with 40 CFR Part 280.43(d)(2). **(T-0)**.
- 9.9.2. Installations will maintain all tank records for 25 years or the operational life of the tank whichever is longer. **(T-1)**. These records are available for official use.
- 9.9.3. The results of the site investigation conducted during permanent closure. For at least three years after closing an underground storage tank, civil engineers must keep records of the site assessment results required for permanent closure. **(T-1)**.

## **9.10. Budgeting and Funding for Storage Tanks.**

- 9.10.1. Environmental Quality fund-eligible storage tank requirements are programmed in accordance with AFI 32-7001. Funding requirements that are associated with the operation and maintenance of the storage tanks should be programmed in accordance with Sustainment, Restoration and Modernization guidelines in AFI 32-1020, *Planning and Programming Built Infrastructures Projects*. **(T-0)**.
- 9.10.2. The Defense Logistics Agency funding authorities.
- 9.10.2.1. Defense Logistics Agency funds all operation and maintenance, operational environmental permits or fees, and other environmental-related costs for storage tanks storing Defense Logistics Agency capitalized products. Funding requirements are identified and requested through the DLA Enterprise External Business Portal.
- 9.10.2.2. Air Force Civil Engineer Center, Environmental Directorate, Operations Installation Support (AFCEC/CZO) Section provides relevant environmental funding requirements to Defense Logistics Agency through their Regional Support Branch and the Air Force Petroleum Office. **(T-2)**.
- 9.10.2.3. The funding authorities for Nonappropriated Fund Activities including Army Air Force Exchange Services station storage tanks are detailed in AFI 65-106, *Appropriated Fund Support of Morale, Welfare, and Recreation (MWR) and Other Non-Appropriated Fund Instrumentalities (NAFIS)* and AFI 32-1020, *Planning and Programming Built Infrastructures Projects*.
- 9.10.2.4. The funding requirements for organizational tanks are addressed in the Roles and Responsibilities table in the *AFCE POL Tank Management Playbook*.

## **9.11. Closing Storage Tanks.**

- 9.11.1. Underground Storage Tanks.
- 9.11.1.1. Temporary Closure. When an underground storage tank system is temporarily closed, as per 40 CFR Part 280.70, installations must continue to operate and maintain

corrosion protection systems and, if the underground storage tank is not empty, operation and maintenance of the release detection systems is also required. **(T-0)**. If the underground storage tank system is temporarily closed for 3 months or more, leave vent lines open and cap and secure other lines, pumps, manways, and equipment. **(T-0)**. Some state regulatory agencies may require permits for temporary closures at 3 months. When an underground storage tank system is temporarily closed for more than 12 months, it must undergo permanent closure unless one of the following occurs: **(T-0)**.

9.11.1.1.1. The underground storage tank meets the standards in **paragraphs 9.10.1.2** through **9.10.1.2.4**, except that spill and overflow prevention are not required. **(T-0)**.

9.11.1.1.2. The regulatory agency approves an extension of the 12 month temporary closure period.

9.11.1.2. Permanent Closure. As per 40 CFR Part 280.71, notify the regulatory agency before permanently closing an underground storage tank system or effecting a change in service consistent with the applicable federal, state, or local requirements (e.g., 40 CFR Part 280.71(a) requires at least 30-day advance notice). **(T-0)**. Determine if the underground storage tank system leaked by sampling for a release where contamination was most likely to occur. Basic guidance pertaining to closure procedures are in UFC 3-460-01, Chapter 14 and API Recommended Practice 1604, *Closure of Underground Petroleum Storage Tanks*. **(T-0)**.

9.11.1.2.1. If a release is discovered, begin corrective action as provided in **paragraph 2.5.3** **(T-0)**.

9.11.1.2.2. If no release is found, empty and clean the tank in accordance with UFC 3-460-03. Manage the materials in accordance with applicable regulatory requirements, in consultation with civil engineer installation management flight. Does not apply to overseas locations. **(T-0)**.

9.11.1.2.3. Except as provided in **paragraph 9.10.1.2.4**, no underground storage tank system shall be closed in place. An underground storage tank system subject to closure shall be properly removed and disposed of consistent with applicable federal, state and local requirements. The tank custodian's unit, whether a Wing organization or tenant, is responsible for funding underground storage tank removal and disposal, including soil testing. Environmental Quality funds are not to be used for this purpose. In the event of contamination, units shall consult with the environmental restoration program (Air Force Civil Engineer Center, Environmental Management Directorate, Restoration Program; or Facility Engineering Directorate, Europe or Pacific) for possible cleanup funding. **(T-1)**. The removal and disposal cost shall be an integrated cost of the closing unit, organization, or tenant. **(T-0)**.

9.11.1.2.4. Underground storage tanks may be permissible to be closed in place under extenuating circumstances (for example, for an underground storage tank located under a building) if regulatory and Air Force Civil Engineer Center approval is obtained. Installations must manage storage tanks closed in place in accordance with 40 CFR Part 280.71(b) and applicable state and local regulatory requirements. **(T-0)**.



9.11.2. Aboveground Storage Tanks.

9.11.2.1. Meet applicable federal, state and local regulatory requirements for temporary deactivation and permanent closure. Overseas aboveground storage tanks inactivated for 12 months or longer shall be disconnected to prevent loading or unloading of petroleum products. See UFC 3-460-01, Chapter 13 for temporary deactivation.

9.11.2.2. Follow UFC 3-460-01, Chapter 14 for permanent removal and deactivation of aboveground storage tank systems. Retain records in Storage Tank Accounting and Reporting. **(T-0)**.

WARREN D. BERRY, Lt General, USAF  
DCS/Logistics, Engineering & Force Protection

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

- AFI 10-208, *Continuity of Operations Program*, 10 October 2018
- AFI 10-2501, *Emergency Management Program*, 10 March 2020
- AFI 23-201, *Fuels Management*, 20 June 2014
- AFI 23-502, *Recoverable Fuel*, 31 October 2014
- AFI 32-1001, *Civil Engineer Operations*, 4 October 2019
- AFI 32-1020, *Planning and Programming Built Infrastructures Projects*, 18 December 2019
- AFI 32-7020, *Environmental Restoration Program*, 12 March 2020
- AFI 32-7001, *Environmental Management*, 23 August 2019
- AFI 33-322, *Records Management and information Governance Program*, 23 March 202
- AFI 33-360, *Publications and Forms Management*, 1 December 2015
- AFI 36-2101, *Classifying Military Personnel (Officer and Enlisted)*, 25 June 2013
- AFI 41-106, *Medical Readiness Program Management*, 9 June 2017
- AFI 48-144, *Drinking Water Surveillance Program*, 21 October 2014
- AFI 48-145, *Occupational and Environmental Health Program*, 11 July 2018
- AFI 65-106, *Appropriated Fund Support of Morale, Welfare, and Recreation (MWR) and Other Non-Appropriated Fund Instrumentalities (NAFIS)*, 15 January 2019
- AFMAN 10-246, *Food and Water Protection Program*, 27 May 2014
- AFMAN 10-206, *Operational Reporting*, 18 June 2018
- AFMAN 32-1061, *Providing Utilities to U.S. Air Force Installations*, 16 July 2019
- AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, 4 February 2020
- AFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 11 December 2018
- AFPD 32-10, *Installations and Facilities*, 20 July 2020
- AFPD 32-70, *Environmental Considerations in Air Force Programs and Activities*, 30 July 2018
- AF Enlisted Classification Directory, 31 October 2019
- API Recommended Practice 1604, *Closure of Underground Petroleum Storage Tanks*, March 1996
- API Standard 653, *Tank Inspection, Repair, Alteration, and Reconstruction*, November 2014
- ASME Boiler and Pressure Vessel Code, 2017

ASSE Standard 1011-2004, *Performance Requirements for Hose Connection Vacuum Breakers*, March 2004

AW 78-24-27, *Standard Fueling Systems; Aboveground Vertical Steel Fuel Tanks with Floating Pan and Fixed Roofs*, 1 April 2015

AWWA Manual M14, *Recommended Practice for Backflow Prevention and Cross-Connection Control*, 2015

AWWA Manual M32, *Computer Modeling of Water Distribution Systems*, 2018

AWWA Standard C651-05, *Disinfecting Water Mains*, 2005

AWWA Standard C652-02, *Disinfection of Water Storage Facilities*, 2011

AWWA Standard C654-03, *Standard for Disinfection of Wells*, 2013

29 CFR Part 1910, *Occupational Safety and Health Standards*, current edition

29 CFR Part 1926 - *Safety and Health Regulations for Agriculture*, current edition

33 CFR Part 154, *Facilities Transferring Oil or Hazardous Material in Bulk*, current edition

40 CFR Part 60, *Standards of Performance for New Stationary Sources*, current edition

40 CFR Part 112, *Oil Pollution Prevention*, current edition

40 CFR Part 122, *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)*, current edition

40 CFR Part 123.25, *Requirements for permitting*, current edition

40 CFR Part 130, *Water Quality Planning and Management*, current edition

40 CFR Part 279, *Standards for the Management of Used Oil*, current edition

40 CFR Part 280, *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)*, current edition

40 CFR Part 281, *Approval of State Underground Storage Tank Programs*, current edition

40 CFR Part 300.125(c), *Notification and Communications*, current edition

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40 CFR Parts 400-471, *Effluent Guidelines and Standards*, current edition

40 CFR Part 403, *General Pretreatment Regulations for Existing and New Sources of Pollution*, current edition

40 CFR Part 403.3, *Definitions*, current edition

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33 USC §§ 1251-1387, *Clean Water Act*

*Atomic Energy Act*, 42 USC § 2011 et seq

*Safe Drinking Water Act*, 42 USC §§ 300f -300j-26

*Resource Conservation and Recovery Act* 42 USC §§ 6901 – 6992k

*Clean Air Act*, 42 USC §§ 7401-7671q

*Comprehensive Environmental Response, Compensation, and Liability Act* 42 USC §§ 9601

*Emergency Planning and Community Right-to-Know Act* 42 USC §§ 11001 – 11050

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*Unidirectional Flushing Program Guide*

*Air Force POL Tank Management Playbook*

AFCEC Guidance Document, *Unidirectional Flushing Program Guide*

*AFCE Linear Infrastructure Playbook,*

*AFCE Operations Flight Playbooks,*

*AFCE Utilities Privatization Playbook,*

*AFCE Water Program Management Playbook,*

***Prescribed Forms***

AF Form 843, *Backflow Prevention Device Inspection Data*

AF Form 845, *Cross-Connection Information*

AF Form 848, *Inventory of Cross-Connection Control and Backflow Prevention Devices*

AF Form 997, *Daily Well Activity Record*

AF Form 998, *Daily Pumping Station Activity Record – Water*

AF Form 1460, *Water Utility Operating Log (Supplemental)*

AF Form 1461, *Water Utility Operating Log (General)*

AF Form 1462, *Water Pollution Control Utility Operating Log (General)*

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

AF Form 2096, *Classification/On-the-Job Training Action*

DD Form 2678, *Well Driller's Log*

DD Form 2679, *Piping and Casing Log*

DD Form 2680, *Military Water Well Completion Summary Report*

***Abbreviations and Acronyms***

**AF**—Air Force (as used on forms)

**AFI**—Air Force Instruction

**AFMAN**—Air Force manual

**AFPD**—Air Force policy directive

**API**—American Petroleum Institute

**ASME**—American Society of Mechanical Engineers

**ASSE**—American Society of Sanitary Engineering

**AWWA**—American Water Works Association

**CFR**—Code of Federal Regulations

**DD**—Department of Defense (as used on forms)

**DLA**—Defense Logistics Agency

**DoD**—Department of Defense

**DoDI**—Department of Defense Instruction

**DOT**—Department of Transportation

**DUSD (I&E)**—Deputy Under Secretary of Defense for Installations and Environment

**IPC**—International Plumbing Code

**MIL-STD**—Military Standard

**NFPA**—National Fire Protection Agency

**NPDES**—National Pollutant Discharge Elimination System

**POL**—Petroleum, Oil, & Lubricants

**RCRA**—Resource Conservation and Recovery Act

**SPCC**—Spill Prevention, Control and Countermeasures

**STAR**—Storage Tank Accounting and Reporting

**STI**—Steel Tank Institute

**TMDL**—Total Maximum Daily Load

**UFC**—Unified Facilities Criteria

**UFGS**—Unified Facilities Guide Specification

**UPC**—Uniform Plumbing Code

**U.S.**—United States

**USC**—United States Code

**UST**—Underground Storage Tank

### *Terms*

**Aboveground Storage Tank**—An unburied storage tank, such as a bulk storage tank, and includes any aboveground container containing oil, as provided in Title 40, Code of Federal Regulations (CFR), Part 112.1(b)(1), *General applicability*, current edition or bunkered tank or partially buried tank as defined in 40 CFR Part 112.2.

**Asset Management**—A way to translate the Air Force’s objectives into asset-related decisions and plans. Effective asset management requires understanding assets’ physical attributes, condition, usage, and performance as well as the realized and potential value to the mission. When applied correctly, asset management balances risk, current and future Air Force objectives, resource limitations, and lifecycle management.”

**Best Management Practices**—Schedules of activities, prohibitions of practices, maintenance procedures, and adaptive management practices to prevent or reduce the discharge of pollutants to waters. Best management practices also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage, and the use of climate-appropriate landscaping (such as xeriscaping, rain gardens and low-impact development techniques) that help restore the natural hydrology of the land.

**Bulk Storage Tank**—Has the same meaning here as “bulk storage container” in 40 CFR Part 112.2. An aboveground storage tank, of 55 gallons or greater capacity, used to store oil, including the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled electrical, operating, or manufacturing equipment is not a bulk storage container.

**Class V Injection Well**—A shallow well used to place a variety of fluids at shallow depths below the land surface, including a domestic onsite wastewater treatment system serving more than 20 people. EPA permits these wells to inject wastes below the ground surface, provided they meet certain requirements and do not endanger underground sources of drinking water.

**Contingency Location**—A non-enduring location outside of the U.S. that supports and sustains operations during named and unnamed contingencies or other operations as directed by appropriate authority and is categorized by mission life-cycle requirements as initial, temporary, or semi-permanent.

**Discharge Monitoring Report**—The form used (including any subsequent additions, revisions, or modifications) to report self-monitoring results by a National Pollutant Discharge Elimination System permit holder. Approved states must use discharge monitoring reports as well as the EPA.

**Domestic Wastewater**—Wastewater that contains human wastes and wastewater from food preparation, laundry, bathing, and similar activities. Domestic wastewater typically includes wastewater from housing units and wastewater from commercial or industrial facilities that is similar to that from housing units. Domestic wastewater does not include industrial process wastewater.

**Enduring Location**—A location is enduring when DoD intends to maintain access and use of that location for the foreseeable future. The following types of sites are considered enduring for U.S. Government purposes: main operating base, forward operating site, and cooperative security location.

**Enforcement Action**—A formal, written notification by the EPA or other authorized federal, state, interstate, regional, or local environmental regulatory agency of violation of any applicable statutory or regulatory requirement.

**Facility Response Plan**—A plan required to be prepared IN ACCORDANCE WITH Title 40, Code of Federal Regulations, Part 112.20 by an owner or operator of a non-transportation related facility that, because of its location, reasonably can be expected to cause substantial harm to the environment through the discharge of oil into or on navigable waters or adjoining shorelines.

**Federally Owned Treatment Works**—Wastewater treatment works that are federally owned and addressed in the *Federal Facility Compliance Act of 1992* (42 USC Section 6939e, *Federally Owned Treatment Works*).

**Final Governing Standards**—The primary definitive set of environmental criteria and standards applicable to DoD components located overseas at enduring installations and facilities. The Final Governing Standards are developed by the lead environmental component for a specific country and incorporate provisions of minimum standards established by DoD in the Overseas Environmental Baseline Guidance Document and those of the Host Nation where the U.S. installation or facility is located.

**Formal External Inspection**—An inspection of the external tank materials and systems conducted by a certified inspector as prescribed by an industry standard such as Steel Tank Institute SP001.

**Formal Internal Inspection**—An inspection of the internal tank materials and systems conducted by a certified inspector as prescribed by an industry standard such as Steel Tank Institute SP001.

**General Permit**—A National Pollutant Discharge Elimination System permit that covers several facilities that have the same type of discharge and are located in a specific geographic area. A general permit applies the same or similar conditions to all dischargers covered under the general permit. Using a general permit to cover numerous facilities reduces paperwork for permitting authorities and permit holders and ensures consistency of permit conditions for similar facilities.

**Host Nation**—A nation other than the U.S. that which receives the force or supplies of allied nations or North Atlantic Treaty Organization organizations, the former force or supplies to be located on, to operate in, or to transit through its territories.

**Individual Permit**—A National Pollutant Discharge Elimination System permit specifically tailored to the types of discharges from an individual facility. Once a facility submits the appropriate application(s), the permitting authority develops a permit for that particular facility



based on the information contained in the permit application (e.g., type of activity, nature of discharge, receiving water quality). **Note:** For individual permits, Wastewater treatment plants can be found in the EPA's Electric, Gas, and Sanitary Services category.

**Industrial Wastewater**—Wastewater from industrial activities such as electroplating, metal finishing, aircraft maintenance, corrosion control, vehicle maintenance, and other industrial processes at Air Force installations.

**Infiltration**—Groundwater that leaks into wastewater collection systems due to leakage through pipe breaks or joints.

**Inflow**—Stormwater flow into wastewater collection systems.

**Installation**—An enduring location consisting of a base, camp, post, station, yard, center, or other DoD activity under the operational control of the Secretary of a Military Department or the Secretary of Defense.

**Installation Support Section**—The civil engineering transformation has transitioned environmental compliance staff into base-level and AFCEC Installation Support Section organizations to meet environmental regulatory program requirements. The AFCEC Installation Support Section is part of Air Force Civil Engineer Center, located in San Antonio, Texas. Air Force Reserve Command and National Guard Bureau maintain their MAJCOM functions and responsibilities for environmental programs; no Installation Support Sections are assigned to Air Force Reserve Command and National Guard Bureau commands.

**Large-Capacity Cesspool**—A cistern, well, or pit for retaining the sediment of a drain or for receiving untreated domestic sewage. A cesspool is not designed for receiving industrial wastewater. EPA regulations required all existing large-capacity (typically serving 20 or more persons) cesspools to be closed and replaced with an alternative wastewater system by April 5, 2005. Since 2000, the EPA has prohibited the construction of new large-capacity cesspools nationwide regulations. The regulations do not allow an extension of the deadline.

**Lift Station**—A wastewater collection system component pumping wastewater from a gravity sewer to a sewer or treatment plant at a higher elevation.

**Major Lift Station**—A pump station that, if it fails to operate as designed, will cause non-compliance with wastewater regulations and degrade mission operations.

**Municipal Separate Storm Sewer System**—A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains), owned and operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the Clean Water Act that discharges to waters of the U.S. See 40 CFR 122.26(b) (8) for the complete definition.

**National Pollutant Discharge Elimination System**—A national program under Section 402 of the *Clean Water Act* for regulating pollutant discharges from point sources to waters of the U.S. Discharges are illegal unless authorized by a National Pollutant Discharge Elimination System permit.

**Non-point Source**—A pollutant source that does not meet the definition of "point source." Non-point source pollution generally results from land runoff, atmospheric deposition, drainage, or seepage.

**Notice of Intent**—An application to notify the permitting authority of a facility's intention to be covered by a general permit.

**Notice of Termination**—An application used to notify the permitting authority of a facility's termination of coverage under a general permit.

**Oil**—Has the meaning provided for "oil" in Title 40, CFR Part 112.2. It generally includes crude oil, fuel oil, gasoline, jet fuel, mineral oil, sludge, oil refuse, greases, oil mixed with wastes other than dredged spoil, or any other kind or form of oil. However, "oil" as used in this AFMAN does include "animal oils" such animal, fish or marine mammal fats, oils or greases; and "vegetable oils" such as oils from seeds, nuts, fruits, or kernels to the extent that the latter oils are stored in tanks on Air Force installations.

**Overseas**—Any geographic area outside the legal jurisdiction or exclusive management authority of the U.S.; any area outside the U.S. (e.g., foreign countries and territories).

**Overseas Environmental Baseline Guidance Document**—The Overseas Environmental Baseline Guidance Document is a set of objective criteria and management practices developed by DoD, pursuant to DoDI 4715.05, *Environmental Compliance at Installations Outside the United States*. It specifies the minimum criteria for environmental compliance at DoD installations and other enduring locations overseas where no Final Governing Standards have been established. It is designed to protect human health and the environment and reflects generally accepted environmental standards applicable to DoD installations and activities in the United States. The Overseas Environmental Baseline Guidance Document is used to develop and update country-specific Final Governing Standards for all DoD components located in that Host Nation.

**Oil/Water Separator**—A device designed to separate gross amounts of oil and suspended solids from the wastewater effluents of oil refineries, petrochemical plants, and other industrial sources. Gravity oil/water separators are designed to separate free oil from waste streams and cannot remove non-petroleum materials, emulsified or soluble petroleum, and detergent solutions.

**Point Source**—Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural stormwater runoff.

**Pollutant**—Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the *Atomic Energy Act of 1954*, as amended (42 USC 2011 et seq.), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water (40 CFR 122.2, *Definitions*).

**Pretreatment**—The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a publicly owned treatment works (40 CFR 403.3(q)).

**Publicly Owned Treatment Works**—A treatment plant belonging to a state, county, regional agency, or municipality that treats domestic wastewater or pretreated industrial wastewater.

**Responsible Official**—The responsible official for National Pollutant Discharge Elimination System permits is the Air Force installation commander. All permit applications, reports, and forms must be signed or certified by the installation commander except to the extent delegations are authorized under applicable federal or state requirements.

**Septic System**—A septic system is a septic tank and a trench or bed surface/subsurface wastewater infiltration system typically of a small scale. Septic systems are common in areas with no connection to main sewerage pipes. Air Force policy is to eliminate septic systems where practical and connect to sanitary treatment works via sewage collection pipes.

**Spill Prevention, Control, and Countermeasures Plan**—A plan that establishes protective measures and procedures to prevent and contain any accidental release of oil and oily materials into the waters of the U.S.

**Stormwater**—Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground.

**Stormwater Pollution Prevention Plan**—A series of steps and activities to identify sources of stormwater pollution at an industrial or construction site, including actions to be taken that will prevent or control stormwater contamination.

**Total Maximum Daily Load (TMDL)**—The maximum amount of a pollutant that a water body can receive and still meet applicable water quality standards. It is the sum of the allocations for point sources (called waste loads (WLA)) and allocations for nonpoint sources (called loads (LA)) and natural background with a margin of safety (MOS) (CWA section 303(d)(1)(c)). The TMDL can be described by the following equation:  $TMDL = LC = WLA + LA + MOS$

**Underground Storage Tank (UST)**—Any tank or combination of tanks (including underground pipes connected to the tank) that contains an accumulation of regulated substances, where 10 percent or more of the volume (including underground pipes connected to the tank) lies beneath the ground surface. Definition and exclusions of USTs for regulatory purposes is provided in 40 CFR 280.12.

**Watershed**—A geographical area that drains to a specified point on a water course, usually a confluence of streams or rivers; also known as drainage area, catchment, or river basin.

**Waters of the United States**—All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide. Waters of the United States include all interstate waters and intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds. (See 40 CFR 122.2 for the complete definition.)

**Water Quality Compliance**—Conformity with current federal, state, and local clean water laws and regulations. In overseas locations, maintain conformity with applicable international requirements and Final Governing Standards, or, if no Final Governing Standards exists, the Overseas Environmental Baseline Guidance Document.

**Water Quality Standards**—Written goals for state waters, established by each state and approved by the EPA.

**Wetlands**—Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in seasonally saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural or manmade ponds.

## Attachment 2

**IMPLEMENTING INSTRUCTIONS FOR AIR FORCE WATER RIGHTS  
DOCUMENTATION AND DATA RETENTION**

**A2.1. Implementation.** Implementation requires all installations to complete the following three actions required by [paragraph 4.3.1](#):

A2.1.1. Systematically locate and retain existing water rights documentation and data as described in [paragraph A2.4](#);

A2.1.2. Create an index listing each record located, where it is being retained, and the point of contact for each record ([Table A2.1](#));

A2.1.3. Maintain this index in the installation civil engineer real property office, with copies provided to the installation legal office. This index will serve as the official record of water rights information for the base. **(T-1)**.

**Table A2.1. Index of Retained Water Rights Documentation and Data.**

Installation:				
Date:				
Document (including year)	Location on Base Where Document is Retained	POC, Organization, Contact Information	File Title	Table and Rule #
e.g., Public Land Order No. XX- XX, 1939	Bldg. 100, Room C	John Public, A4C Real Estate, DSN:555-1234	Reports of Soil and Water Consolidated Reports	T 32 - 38 R 04.00

**A2.2. Points of Contact.**

A2.2.1. Form an informal or formal working group with members who will maintain water rights records (e.g., civil engineer operations and installation management flights, bioenvironmental engineering, historian, contracting, legal) to set out the course for this effort and assist with completing their portions of the index.

A2.2.2. The index is designed to be maintained as a spreadsheet but the installation can use whatever suits their purpose as long as equivalent information is maintained. (Future data management systems will allow inclusion of water rights information).

### A2.3. Process.

A2.3.1. Use the organization's file plan to label water rights records, making sure it is designated for permanent retention (*Retire as permanent*). Follow the procedures for establishing permanent records as explained in AFI 33-322, *Records Management and Information Governance Program*.

A2.3.2. Include a statement in the file plan and on the file equivalent to, "This data is indexed as Water Rights Records. All activities and inquiries related to the disposition or use of this data must be referred to the installation legal office." (T-1).

A2.3.3. The point of contact should maintain a working copy of the index for updating.

### A2.4. Retention of Water Rights Documentation and Data.

A2.4.1. The Base Civil Engineer or appointee should locate and retain the following documentation and data for each Air Force installation. While intended to be comprehensive, collecting the information below may not cover all necessary records. It is expected that data collection will not just be limited to the data described below but will involve the collection of additional data.

A2.4.2. Whenever possible, the Base Civil Engineer or appointee should preserve the original documents. If original documents are not available or are in poor condition, clean copies are acceptable. Organizations should also locate and retain documentation and data from the earliest available date or timeframe, from the time the Air Force installation was established as a military facility up to the present, or as far back as historical records are available. To help assist installations to locate these documents, the base civil engineer organization(s) likely to have the information are shown below, italicized in brackets. In some cases, the documentation may be located in organizations outside the civil engineer organization, such as the base history office, installation legal office, and Bioenvironmental Engineering office. Questions from civil engineer offices about specific documentation and data to locate and retain should be directed to the installation legal office.

A2.4.2.1. If Installation Purchases Water: Documents showing the name(s) of the water provider(s) and what percentage of water demand is met by the purchased water [*Operations*].

A2.4.2.2. If Installation Supplies Own Water:

A2.4.2.2.1. Real property documents showing how the installation was acquired, including executive orders, withdrawal legislation, public land orders, purchase agreements, deeds, condemnation, gifts, and the date(s) of acquisition [*Installation Management*].

A2.4.2.2.2. Documents showing the names and locations of each diversion structure (e.g., well #1), the source of the water, depth of each well, and what percentage (or range) of the water demand has been historically met by this water supply [*Operations, Programs*].

A2.4.2.2.3. Documents listing the priority date, if any has been assigned by the state or local water authority, of each diversion structure and the stated basis for that date [*Operations, Engineering, and Installation Management*].

- A2.4.2.2.4. Documents that demonstrate current and historical water usage on the installation, such as water logs and meter records, diaries from infrastructure managers, and water purchase contracts. Specify the maximum diversion rate in cubic feet per second or acre-feet [*Operations*].
- A2.4.2.2.5. Documents pertaining to the establishment of water sources, including well drilling/construction information, well maintenance records, and installation maps with water wells plotted. [*Operations, Engineering, Installation Management*].
- A2.4.2.2.6. Documents that show major uses of water at the installation (e.g., municipal, irrigation, training, recreational, industrial, firefighting, habitat enhancement), as well as documents showing anticipated future water use [*Operations*].
- A2.4.2.2.7. Water consumption/withdrawal permits (including all closed and pending) and applications for permits and certificates. [*Installation Management, Operations*].
- A2.4.2.2.8. Documents of water being sold or supplied to others, including any Memorandums of Understanding. Identify each user as DoD, non-federal entities (e.g., credit unions or restaurants), or an off-base user [*Operations, Engineering, Installation Management*].
- A2.4.2.2.9. Regulatory reporting documents to the state, including annual reports pursuant to Safe Drinking Water Act community water system reporting [*Installation Management*].
- A2.4.2.2.10. Environmental reports that studied or contains information on the installation's hydrology [*Installation Management*].
- A2.4.2.2.11. Documents showing any *Clean Water Act*, *Safe Drinking Water Act*, or Title 16 USC §§1531 – 1544, *Endangered Species Act*, issues which may affect or constrain water supply at the installation [*Installation Management*].
- A2.4.2.2.12. Any other available records, documentation, or data relating to water use, water rights, or the installation's access to water resources.
- A2.4.2.2.13. Documents showing any other issues that may affect the installation's ability to maintain an adequate water supply.
- A2.4.2.3. If Installation Recycles Water for Re-Use: Documents that show the volume of recycled water used, as well as what the recycled water is used for (e.g., municipal, irrigation, training, recreational, industrial, fire-fighting, habitat enhancement) [*Operations*].

### Attachment 3

## WATER CONTINGENCY RESPONSE PLAN (WCRP)

### A3.1. Development and Update.

A3.1.1. Subject Matter Expert Team. Appointed by the Base Civil Engineer, each installation subject matter expert team must include, as a minimum, representatives from civil engineer readiness, operations, and installation management flights, bioenvironmental engineering, and security forces. **(T-2)**. Air Force Civil Engineer Center Readiness and Operations Directorates and Air Force Medical Support Agency, Bioenvironmental Engineering Branch (AFMSA/SG3PB) can provide technical support for plans development.

#### A3.1.2. Guidelines.

A3.1.2.1. Goal. The goal of each Water Contingency Response Plan is to provide adequate guidance to enable civil engineer personnel to effectively respond to credible threats and hazards, maintain or restore the installation's water system and support its peacetime and wartime missions. AFI 48-144 and AFI 41-106, *Medical Readiness Program Management*, contain additional criteria.

A3.1.2.2. Objectives. Specific objectives include planning for credible threats and hazards, identifying the infrastructure's critical control points, and providing emergency procedures to lessen the impact of intentional and non-intentional water contamination or supply (service) disruption. For overseas criteria, reference DOD 4715.5-G, *Overseas Environmental Baseline Guidance Document*.

A3.1.2.3. Format. A Water Contingency Response Plan may be developed as a standalone planning document and include response guides (**paragraph A3.2**), or be divided to include appropriate existing base response, contingency, or recovery plans (e.g., a continuity of operations plan as mandated by AFI 10-208, *Continuity of Operations (COOP)*; a civil engineer contingency response plan and an installation emergency management plan as mandated by AFI 10-2501, *Emergency Management Program*; or a terrorism incident response plan as mandated by AFI 10-245, *AF Antiterrorism Standards*). Alternatively, a Water Contingency Response Plan may be an addendum or appendix to one of these plans. For further Antiterrorism security engineering criteria, refer to UFC 4-020-01, *DOD Security Engineering Facilities Planning Manual*; UFC 4-020-02FA, *Security Engineering: Concept Design (FOUO)*; and UFC 4-020-03FA, *Security Engineering: Final Design (FOUO)*.

#### A3.1.2.4. Content.

A3.1.2.4.1. Minimum Contingencies. A Water Contingency Response Plan will address these potable water system-related contingencies as a minimum:

A3.1.2.4.1.1. Intentional and non-intentional water contamination and water service disruption threats and hazards.

A3.1.2.4.1.2. Failure, misrepresentation, and manipulation of the water system's utility monitoring and control system.

A3.1.2.4.1.3. Water system related inventory elements listed in **Table A4.1** , or



references to the plans containing those elements' information.

#### A3.1.2.4.2. Required Inventory Elements.

A3.1.2.4.2.1. Descriptive inventory and selection rationale of credible intentional and non-intentional contamination and service disruption threats and hazards the Water Contingency Response Plan is intended to address.

A3.1.2.4.2.2. Descriptive inventory of existing installation-specific Emergency Response Plans, checklists, and other guidance documents.

A3.1.2.4.2.3. Description of water purveyor-owned water systems and any critical control points supplying potable water to the installation.

A3.1.2.4.2.4. Descriptive inventory of installation-owned water system components and critical control points needed for responding to water system-related contingencies ([paragraphs A3.1.2.4.2.4.1](#) through [A3.1.2.4.2.4.7](#)):

A3.1.2.4.2.4.1. Raw water supply, water treatment, water storage, and water distribution system critical components and control point elements.

A3.1.2.4.2.4.2. Water system critical control and monitoring point elements; supporting water system electrical components, equipment resources, and system elements.

A3.1.2.4.2.4.3. Initial threat warning and evaluation plan.

A3.1.2.4.2.4.4. Immediate operational response action, characterization, and sampling plan. **Note:** Sampling tasks must be cross-referenced with the medical contingency response plan.

A3.1.2.4.2.4.5. Bioenvironmental Engineering response and sample analysis plan.

A3.1.2.4.2.4.6. Remediation and recovery plan.

A3.1.2.4.2.4.7. Demand reduction plan and priority facility return-to-service plan.

### A3.2. Response Guide Development.

A3.2.1. Guidelines. Develop individual response guides for each water system serving a population of 25 or more users. Response guides will include response actions for water contamination or service disruption based on likely hazards and threat scenarios identified in the Water Vulnerability Assessment.

#### A3.2.2. Required Elements.

A3.2.2.1. A list of response organizations, functional positions, telephone numbers, and designated areas of responsibility or assistance.

A3.2.2.2. Initial threat warning tasks and evaluation tasks.

A3.2.2.3. Immediate operational response actions, characterization, and sampling tasks (cross-reference sampling tasks with the Medical Contingency Response Plan).

A3.2.2.4. Public health response and sample analysis tasks.

A3.2.2.5. Remediation and recovery tasks.

A3.2.2.6. Drawings and photographs of critical components to implement identified tasks.

**A3.3. Classification.** Most Water Contingency Response Plan will bear “For Official Use Only (FOUO)” labeling. However, the level of detail in a Water Contingency Response Plan could warrant a more restrictive classification. Each base should review its draft Water Contingency Response Plan to determine the appropriate classification level prior to the Water Contingency Response Plans publication. **Note:** Water Contingency Response Plans are more accessible when marked “FOUO.” When possible, classified content should be removed or published in a separate classified volume.

## Attachment 4

## TANK INVENTORY MINIMUM DATA FIELD REQUIREMENTS

**A4.1.** Installations maintain an inventory of above ground storage and underground storage tanks. Accurate inventories are essential to environmental regulatory compliance and effective tank management. The minimum essential data required includes, but is not limited to:

**Table A4.1. Tank Inventory Minimum Data Field Requirements.**

DATA FIELD	PURPOSE	DESCRIPTION / EXAMPLE
ID Number	Unique Identification Number to keep track of tank on the installation.	AA-1035-1-AST. Use a standard format where AA – is the organization two letter code assigned by the installation for each organization that has tanks, 1035 is typically the facility number, 1 – is the number of the tank at this location. For example if there were three tanks at this same location this number would be either 1, 2 or 3 to uniquely identify each of the tanks, and finally the letters AST indicate this is an aboveground storage tank. The last three letters would be UST if this tank were an underground storage tank.
Location	The number of the building where the tank is located or is the closest real property asset where the tank is located.	A number preferably from the installation real property records for the asset, which is a tank. If there is no real property record facility number, use the closest facility number to the tank.
Real Property ID Code	Enter the real property ID code from real property records if an assigned real property asset.	This is the unique number assigned to real property assets. Some assets and equipment do not have real property ID codes.
Manufacturer	The name of the manufacturer of the tank	Company name
Date Manufactured	To record date tank system was made. This is not the date the tank was installed	Date (at minimum the year is inputted)
Installation Date	Date the tank was installed	Date; if unknown input 1901/01/01
Model Number	The unique manufacturer's model number	Input if available, otherwise the STAR system creates a default number
Serial Number	To uniquely identify the tank	From the name plate data on the tank

Dimensions	To record the physical size of the tank system (rectangular: L x W x H or cylindrical L x D)	Length by Width by Height in inches or feet, for example: 55" x 42" x 83" or 55" x 48"
Material	The principal construction material the tank is made	For example, carbon steel; fiberglass
Tank Designation	Is this a AST or UST	AST or UST
Roof Type	What is the construction character of the tank roof	For example, flat heads or pressed heads, or NA if a tank is inside a generator cabinet (enter in STAR description field)
Piping Type	What is the construction material of the tank piping	For example, aluminum, cast iron, copper, fiberglass, plastic, steel, etc.
Piping Corrosion Control	What type of corrosion control is used to protect tank piping	For example, epoxy, impress current, paint, etc.
Tank Corrosion control	What type of corrosion control is used to protect the tank	For example, coated, epoxy, gelcoat, impress current, etc.
Secondary Containment	To record whether the AST tank has the regulatory required secondary containment	Yes or No or NA
Percent Secondary Containment	The percent of the working capacity of the AST the secondary containment system can hold	For example, 125%
Leak Detection	To record whether the tank has the required leak detection system installed	Yes or No or NA; input in "Tank Description" block type of leak detection; examples are automatic tank gauge, vapor monitoring, statistical inventory reconciliation, etc.
Spill Protection	Document if tank has required spill and overfill protection	Yes or No or NA; If yes select, automatic shutoff, catchment basin or overfill alarm
Vapor control	Indicate the type of vapor control mechanism for the tank	for example, closed system, emergency pop-off vent, none, open to atmosphere, pressure release vent, or unknown
Federally Regulated	Documents if this tank is subject to U.S. federal tank regulations	Yes or No
State/Locally Regulated	Captures whether this tank is regulated by state or local agencies	Yes or No
Type of Regulation	Captures regulatory agencies tank tracking status	If applicable input permit or registration number, issue date or registration date, and expiration date

RCRA Regulated	Is this a UST regulated by RCRA Subpart I	Yes or No
SPCC	Is this tank included in the SPCC plan	Yes or No
Owner	In STAR, this is the unit / organization that requires the tank	Input the organization long name and symbol
DLA Managed	Documents if tank stores DLA capitalized fuel	Yes or No
Pressurized tank system	Is this a pressured tank system	Yes or No
STI	What is the Steel Tank Institute Category for this tank (See STI SP 001-Standard for the Inspection of above ground storage tanks)	example, 1, 2 or 3
Latitude	What is geospatial location of the tank	example, 31.426268 degrees; This may be inputted when "Location" is defined in STAR
Longitude	What is geospatial location of the tank	For example, 100.412724 degrees; This may be inputted when "Location" is defined in STAR
Volume and Shape	The shell volume is the nominal interior volume as provided by the tank manufacturer for shop build tanks or the calculated volume for field erected tanks	For example, 500 gallons or 66.8 cubic feet; cylinder / rectangular
Contents	The type of POL or other product stored in the tank	For example, diesel, JP-8, used oil, etc.
Primary Contact Name	Primary Emergency Contact Person or Organization	Self-explanatory
Primary Contact Phone	Primary Emergency contact Person or Organization phone	Self-explanatory
Secondary Contact Name	Secondary Emergency Contact Person or Organization	Self-explanatory
Secondary Contact Phone	Secondary Emergency contact Person or Organization phone	Self-explanatory
Facility Manager Name	The name of the facility manager where the tank is located	Self-explanatory

Facility Manager Phone	The phone number of the facility manager	Self-explanatory
Environmental POC Name	The name of the asset or environmental manager responsible for the tank inventory on this installation	Self-explanatory
Environmental POC Phone	The phone number of the asset or environmental manager responsible for the tank inventory on this installation	Self-explanatory
Environmental POC email	The email address of the asset or environmental manager responsible for the tank inventory on this installation	Self-explanatory
POC Date	Date the POC information was last updated for primary contact, secondary contact, facility manager and environmental POC	Date
Legible Name Plate	Is there a legible name plate attached to the tank	Yes or No
Date Removed	The date the tank was removed from the installation	Date
Status	Is the tank in service or out of service	Options: 1) In-service; 2) Out of service with date and narrative reason for change of status
Description	A narrative that describes information about the tank not captured in other STAR data fields	Include but not limited to information like, purpose of tank (e.g., what does the tank support), unusual construction / installation conditions, access restrictions, etc.
Records	Important documentation for regulatory compliance and management	Records may include, but not limited to third party engineering studies or inspections; regulatory inspection findings; Photos of tank; UST tightness test results; tank registrations / permits;