PFAS Investigation Update – Hill AFB

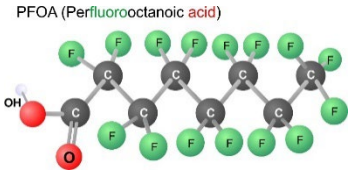
City of South Weber

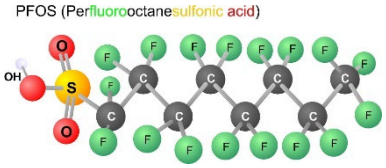
Jarrod Case – AFCEC/CZOM Hill Section

20 May 2025

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a class of 9,000+ synthetic fluorinated organic chemicals used in industrial and consumer products, including nonstick cookware, water-proof fabric, some food packaging, and the firefighting agent Aqueous Film Forming Foam (AFFF).






Non-Stick Cookware


Takeout Containers


Building & Construction


Fuel Cells


Firefighting Foam


Sealants & Adhesives


Pesticides


Camping Equipment


Medical & Food Tubing


Breathable & Waterproof Apparel


Medical Equipment


Glass


Plastics & Rubber


Paints


Electronics


Electrical Insulation


Laboratory Equipment


Cleaning Products


Textiles


Stain- & Water-Resistant Treatments


Pharmaceuticals


Printing


Semiconductors & Circuit Boards


Photographic Film & Processing


Windshield Washer Fluid


Lubricants


Personal Care Products


Cement Additives


Oil & Gas Drilling


Paper & Packaging

EPA Maximum Contaminant Levels

- **26 April 2024 - EPA published legally enforceable drinking water standards, or Maximum Contaminant Levels (MCLs), under the Safe Drinking Water Act (SDWA):**
  - **Five PFAS compounds - PFOA, PFOS, PFNA, PFHxS, and HFPO-DA**
  - **Hazard Index Level of 1 for mixtures of two or more PFAS compounds including: PFHxS, PFNA, HFPO-DA, and PFBS**

Chemical	Maximum Contaminant Level (MCL)
PFOA	4.0 ppt
PFOS	4.0 ppt
PFNA	10 ppt
PFHxS	10 ppt
HFPO-DA (GenX)	10 ppt
Mixture of two or more: PFNA, PFHxS, HFPO-DA, and PFBS	Hazard Index of 1

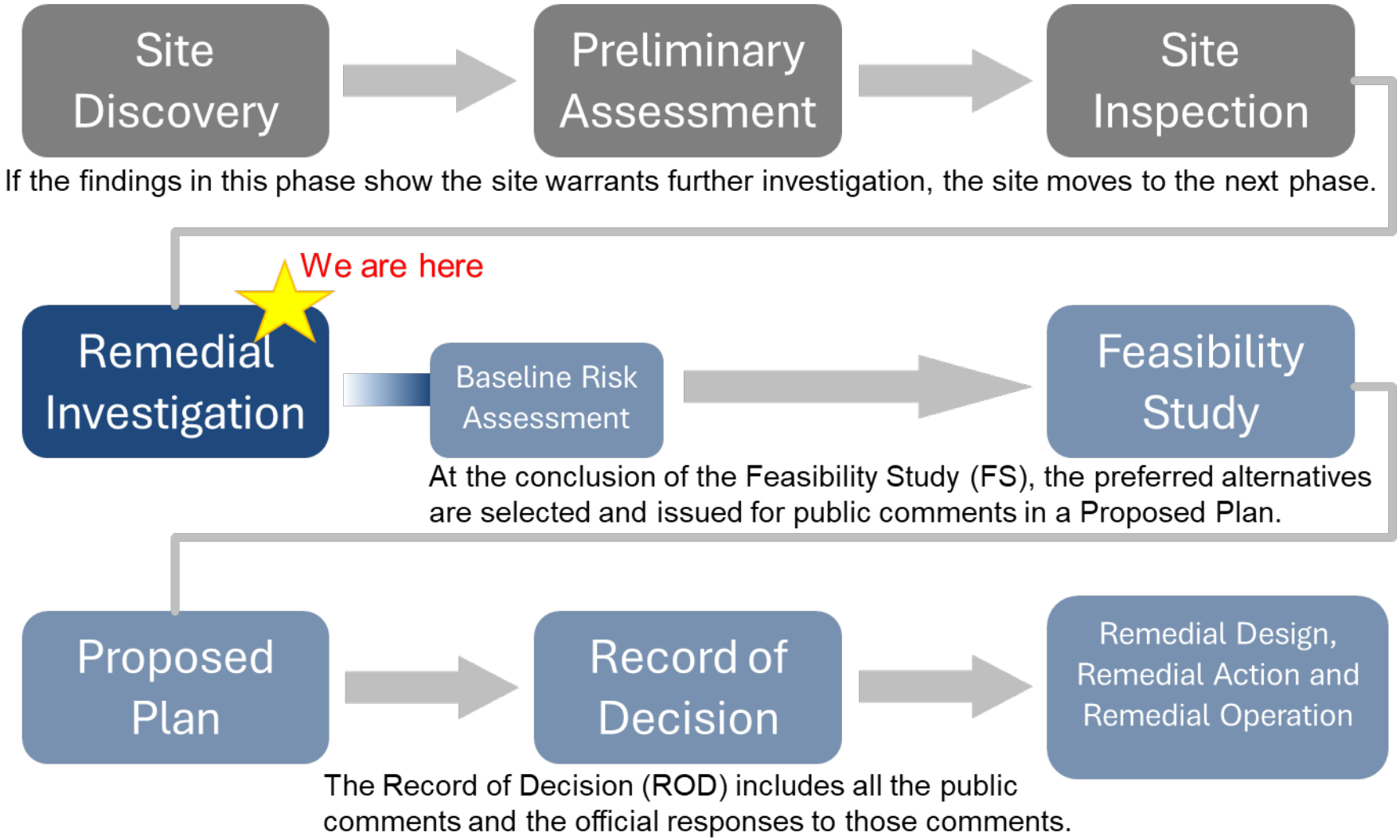
ppt: Parts per trillion. A part per trillion is equivalent to one drop of water in 20 Olympic-sized swimming pools.

MCLs - Air Force Plan of Action

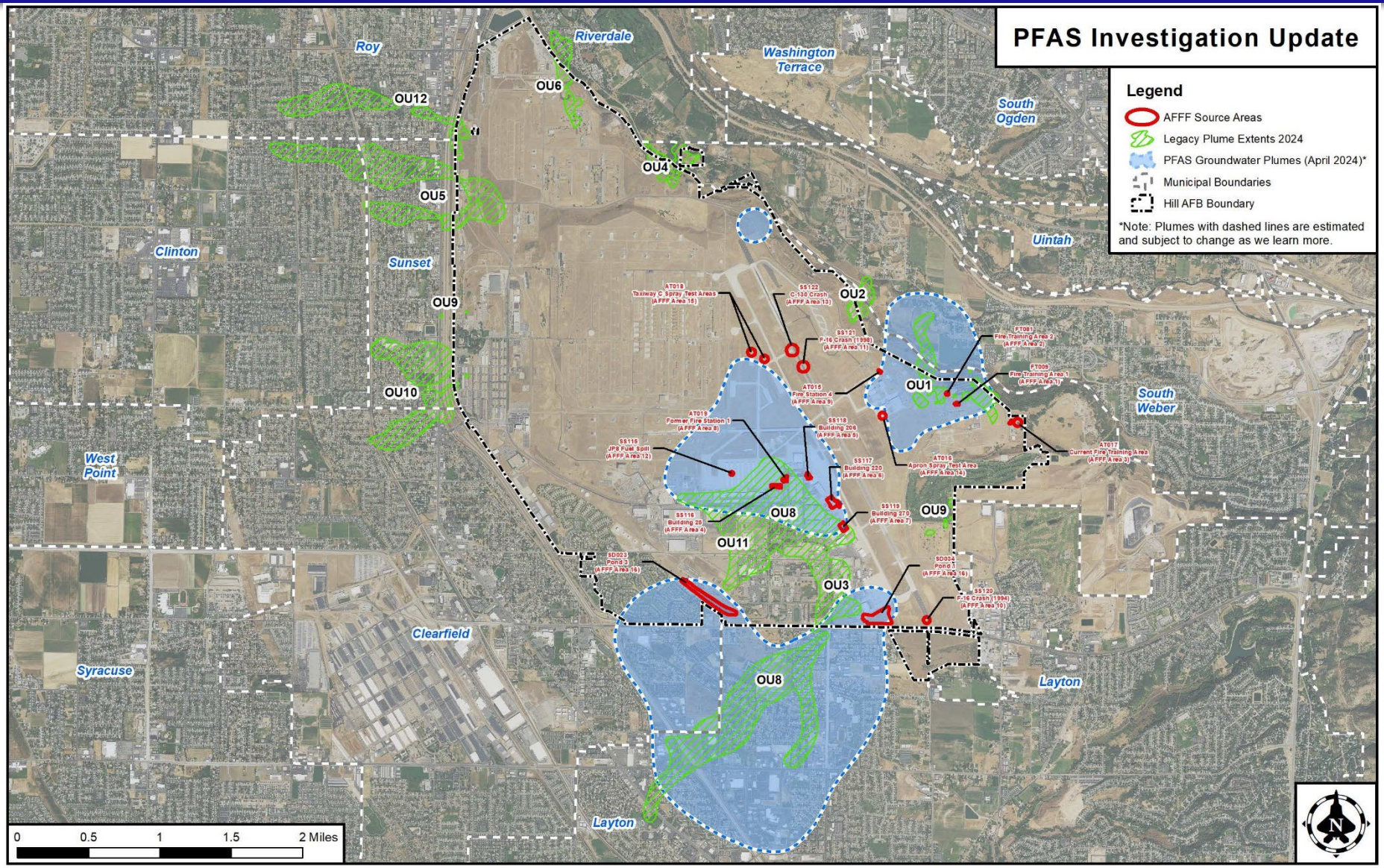
- **No one on or around Hill AFB is drinking water with PFOS and/or PFOA from the Air Force above the MCLs.**
- **Rule provides five years for regulated drinking water purveyors to comply with the MCLs**
- **DoD will work to implement these standards at all private drinking water wells impacted by PFAS from DoD activities**
- **MCLs can be used as cleanup standards or as a risk trigger level to take short-term actions (e.g., private drinking water well treatment), under the federal cleanup law, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**
  - **Air Force is reviewing existing PFAS sampling results**
  - **Air Force will be expanding existing cleanup investigations, and assess "background" levels of PFAS**
  - **Providing drinking water treatment for impacted off-base wells on prioritized basis, with focus on installing enduring solutions such as municipal connections or whole house filtrations**
  - **Prioritizing locations where known levels of PFAS in drinking water from Air Force activities are the highest (>3 x MCL first, followed by <3 x MCL)**

CERCLA Process

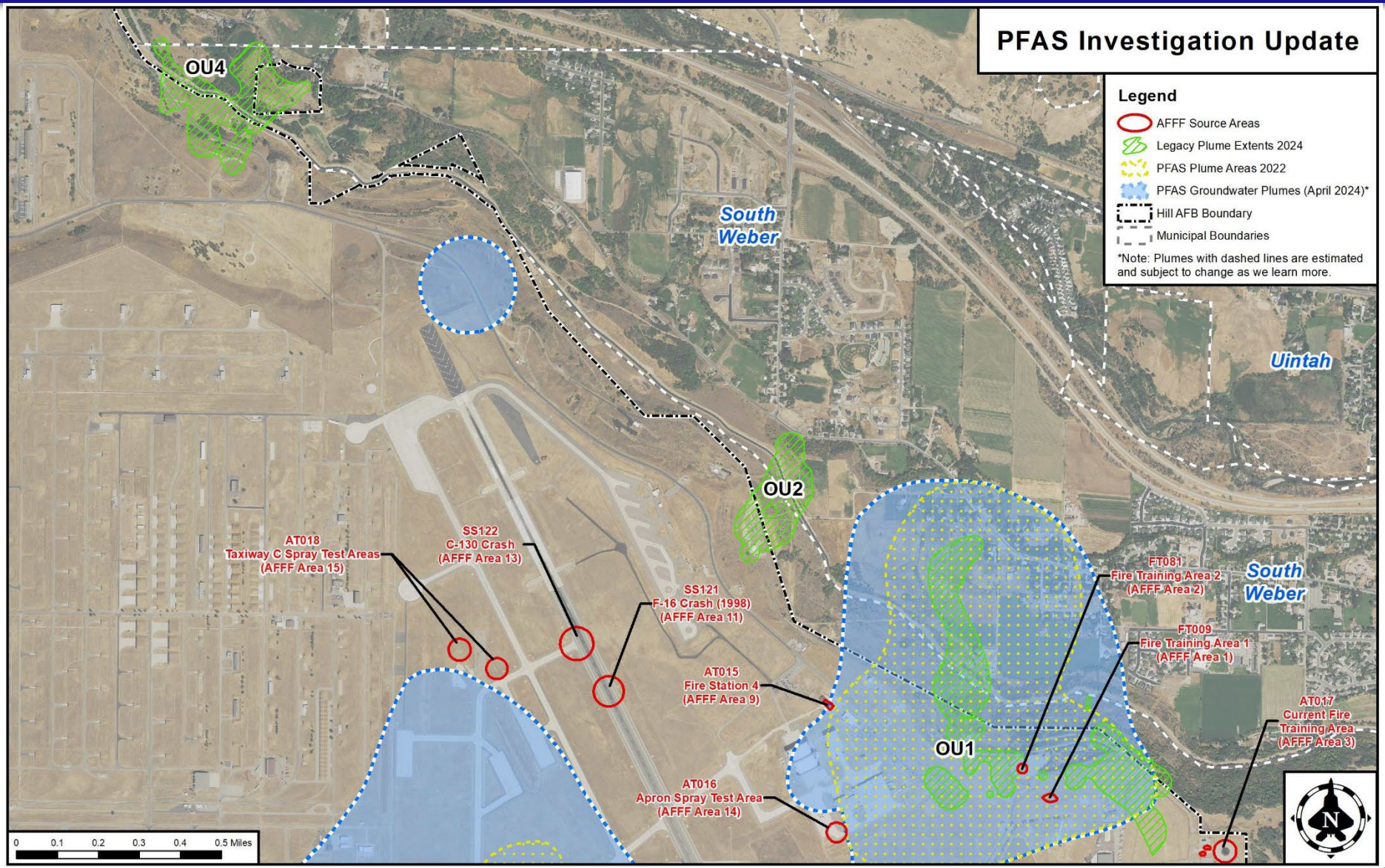
Comprehensive Environmental Response, Compensation, & Liability Act



Current Status of PFAS Investigation at Hill AFB



PFAS in South Weber



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Questions

Air Force Civil Engineer Center

Operable Unit 2
1,4-Dioxane

City of South Weber

Julie McNeill – AFCEC/CZOM Hill Section

20 May 2025

What is 1,4-Dioxane?

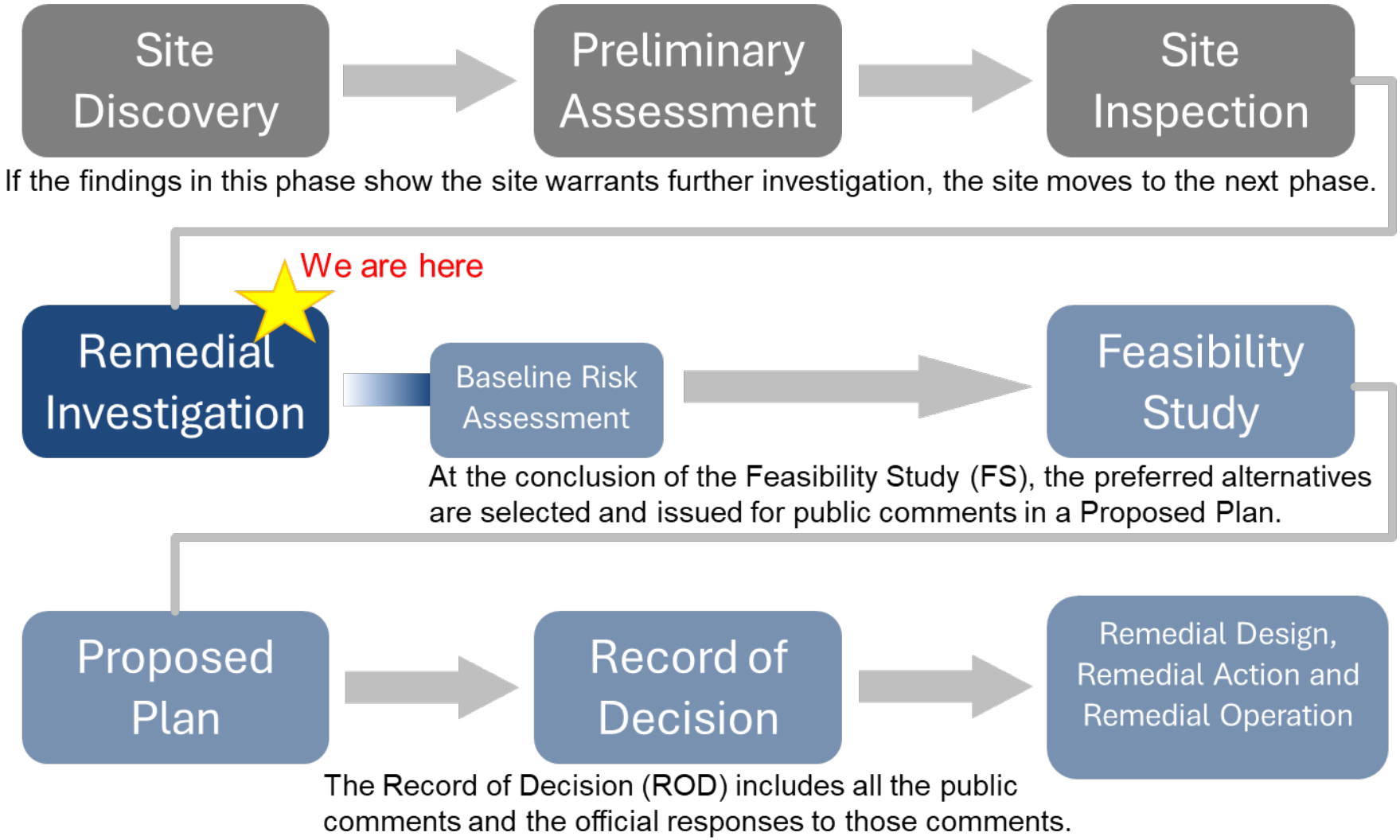
- What is 1,4-Dioxane?
  - Considered an emerging contaminant; no Federal regulatory standards (e.g., no Maximum Contaminant Level [MCL]) or State standards
  - Dissolves easily in water
  - Used as a stabilizer for chlorinated solvents (e.g., trichloroethene [TCE])
  - Trace contaminant in some chemicals used in cosmetics, detergents, and shampoos (however 1,4-dioxane is reduced to low levels before production)

No EPA MCL

- No federal or state MCL (drinking water standard)
- Environmental Protection Agency (EPA) Tapwater Regional Screening level 0.46 parts per billion (ppb)
- 1 ppb = 1 blade of grass in a football field of grass
- If RSL is exceeded, additional evaluation is warranted

CERCLA Process

Comprehensive Environmental Response, Compensation, & Liability Act

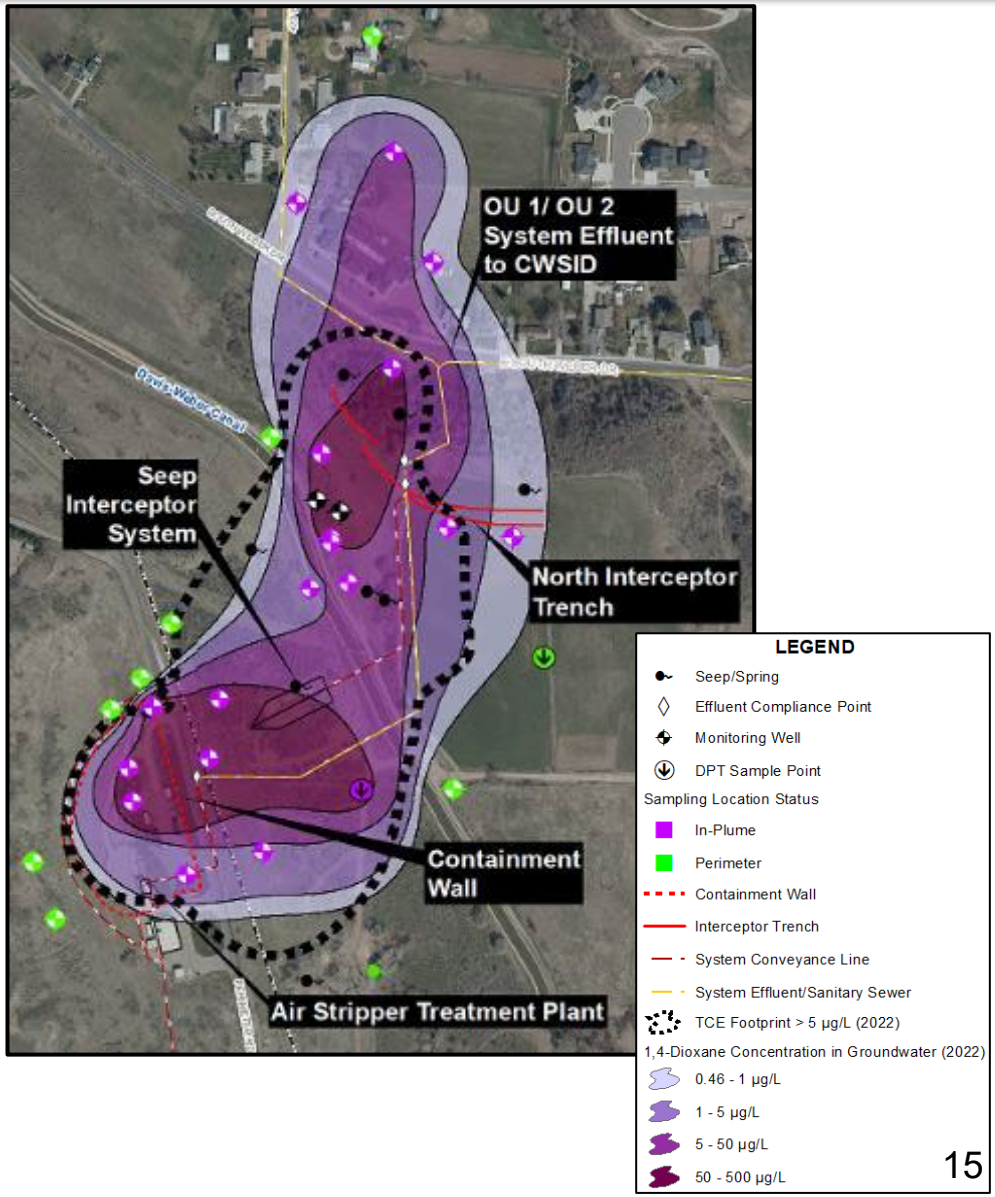


RI Objectives

- 1,4-Dioxane Remedial Investigation (RI) Scope:
  - Determine the depth and horizontal extent of groundwater plume
  - Evaluate 1,4-dioxane concentrations in water sent to sewer system
  - Evaluate risk for exposure to 1,4-dioxane in environmental media (e.g., soil and groundwater)

1,4-Dioxane RI Findings

- Footprint similar to TCE plume; however, 1,4-dioxane plume extends further
  - 1,4-dioxane moves easier in groundwater
- Existing treatment systems working as demonstrated by break at Seep Interceptor
- Plume depth known
- Data gap investigation needed at toe of plume for horizontal extent



Effluent Findings

- **Treatment system effluent:**
  - **1,4-Dioxane concentrations above tap water RSL in all 3 treatment system effluents**
- **Municipal sewer system outfalls:**
  - **Increasing concentrations further away from OU2 discharge indicate sources outside Hill AFB may be contributing to the municipal sewer**

Summary of RI Risk Evaluation

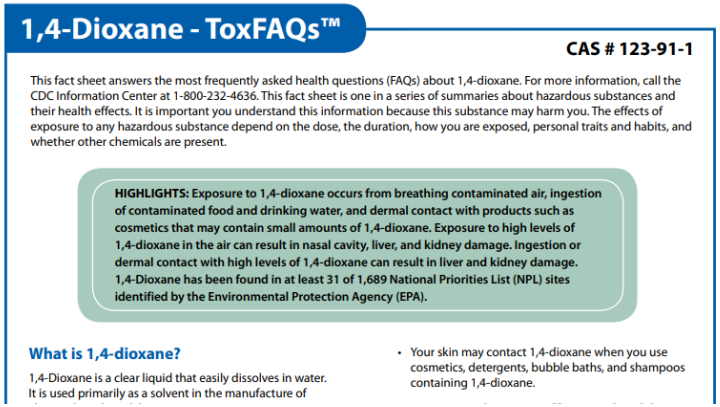
- Shallow groundwater not a known drinking water source
- No known off-base release to soil
- Although shallow groundwater was historically used for irrigation/livestock, 1,4-dioxane does not bioaccumulate, biomagnify, or bioconcentrate in the food chain
- Sampling results are below ecological screening levels

Next Steps

- Continue groundwater restrictions through well permit requests
- Continue monitoring 1,4-dioxane at toe of the plume wells
- Perform data gap investigation to determine horizontal extent at toe of plume
- Collect surface water/seep samples, if present

Resources

- **EPA 2017 Technical Fact Sheet – 1,4-Dioxane**
  - **Available online at https://19january2021snapshot.epa.gov/sites/static/files/2014-03/documents/ffrro_factsheet_contaminant_14-dioxane_january2014_final.pdf**
- **ATSDR 2015 ToxFAQs for 1,4-Dioxane**
  - **Available online at https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=954&toxid=199**



1,4-Dioxane - ToxFAQs™

CAS # 123-91-1

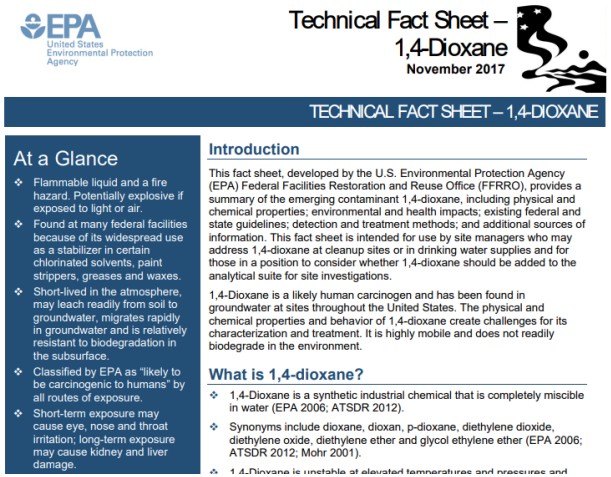
This fact sheet answers the most frequently asked health questions (FAQs) about 1,4-dioxane. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to 1,4-dioxane occurs from breathing contaminated air, ingestion of contaminated food and drinking water, and dermal contact with products such as cosmetics that may contain small amounts of 1,4-dioxane. Exposure to high levels of 1,4-dioxane in the air can result in nasal cavity, liver, and kidney damage. Ingestion or dermal contact with high levels of 1,4-dioxane can result in liver and kidney damage. 1,4-Dioxane has been found in at least 31 of 1,689 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is 1,4-dioxane?

1,4-Dioxane is a clear liquid that easily dissolves in water. It is used primarily as a solvent in the manufacture of

- Your skin may contact 1,4-dioxane when you use cosmetics, detergents, bubble baths, and shampoos containing 1,4-dioxane.



EPA United States Environmental Protection Agency

Technical Fact Sheet – 1,4-Dioxane

November 2017

TECHNICAL FACT SHEET – 1,4-DIOXANE

At a Glance

- Flammable liquid and a fire hazard. Potentially explosive if exposed to light or air.
- Found at many federal facilities because of its widespread use as a stabilizer in certain chlorinated solvents, paint strippers, greases and waxes.
- Short-lived in the atmosphere, may leach readily from soil to groundwater, migrates rapidly in groundwater and is relatively resistant to biodegradation in the subsurface.
- Classified by EPA as "likely to be carcinogenic to humans" by all routes of exposure.
- Short-term exposure may cause eye, nose and throat irritation; long-term exposure may cause kidney and liver damage.

Introduction

This fact sheet, developed by the U.S. Environmental Protection Agency (EPA) Federal Facilities Restoration and Reuse Office (FFRRO), provides a summary of the emerging contaminant 1,4-dioxane, including physical and chemical properties; environmental and health impacts; existing federal and state guidelines; detection and treatment methods; and additional sources of information. This fact sheet is intended for use by site managers who may address 1,4-dioxane at cleanup sites or in drinking water supplies and for those in a position to consider whether 1,4-dioxane should be added to the analytical suite for site investigations.

1,4-Dioxane is a likely human carcinogen and has been found in groundwater at sites throughout the United States. The physical and chemical properties and behavior of 1,4-dioxane create challenges for its characterization and treatment. It is highly mobile and does not readily biodegrade in the environment.

What is 1,4-dioxane?

- 1,4-Dioxane is a synthetic industrial chemical that is completely miscible in water (EPA 2006; ATSDR 2012).
- Synonyms include dioxane, dioxan, p-dioxane, diethylene dioxide, diethylene oxide, diethylene ether and glycol ethylene ether (EPA 2006; ATSDR 2012; Mohr 2001).
- 1,4-Dioxane is unstable at elevated temperatures and pressures and

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Questions