Fairchild AFB Open House Poster Guide

Stage

Snacks and Gathering

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ATSDR Table

ATSDR 1

ATSDR 2

ATSDR 3

Table

Public Code of Conduct for Fairchild Air Force Base Restoration Advisory Board (RAB)

- ☑ Commentors shall be courteous and respectful at all times.
- ☑ Interruptions will not be tolerated during the RAB presentations or while another person is speaking.
- ☑ Profanity or any use of inappropriate language during the presentations or public comment period is prohibited.
- ☑ Instigating any type of mass outbursts by the public will not be tolerated.
- ☑ The RAB facilitator may limit length of comments to manage meeting and presentation times. Public comments during the public comment opportunity will be limited to ten minutes.
- ☑ The RAB facilitator will moderate the meeting to ensure the meeting stays on schedule and focused on the topics at hand.
- ☑ All members of the public are asked to remain seated in the area designated for the public during the RAB presentation.
- ☑ Racist, sexist, or homophobic comments will not be tolerated.

Washington State Department of Health

SPOKANE REGIONAL HEALTH DISTRICT

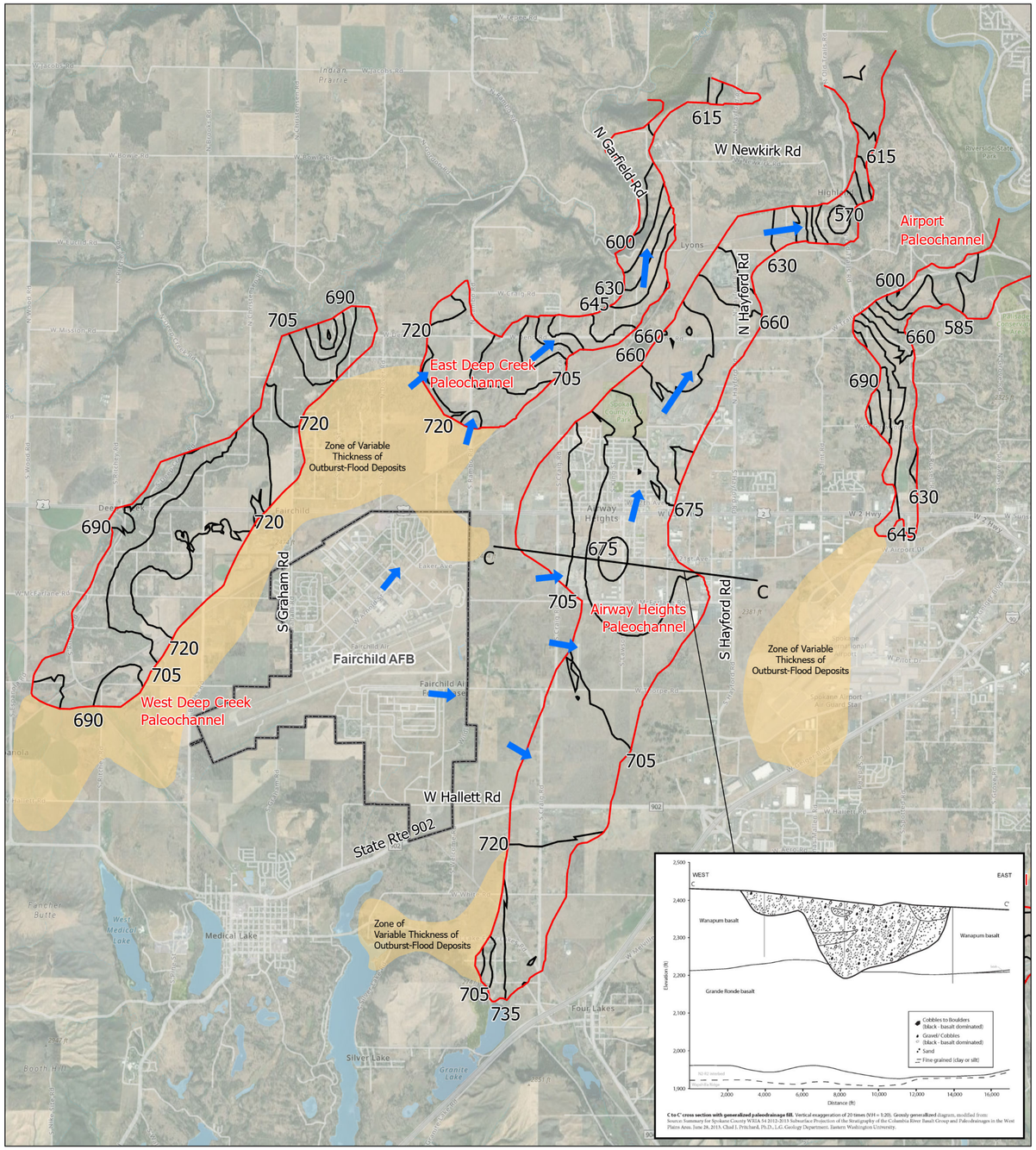
EPA

DUPLUM INCOLUMITATIS

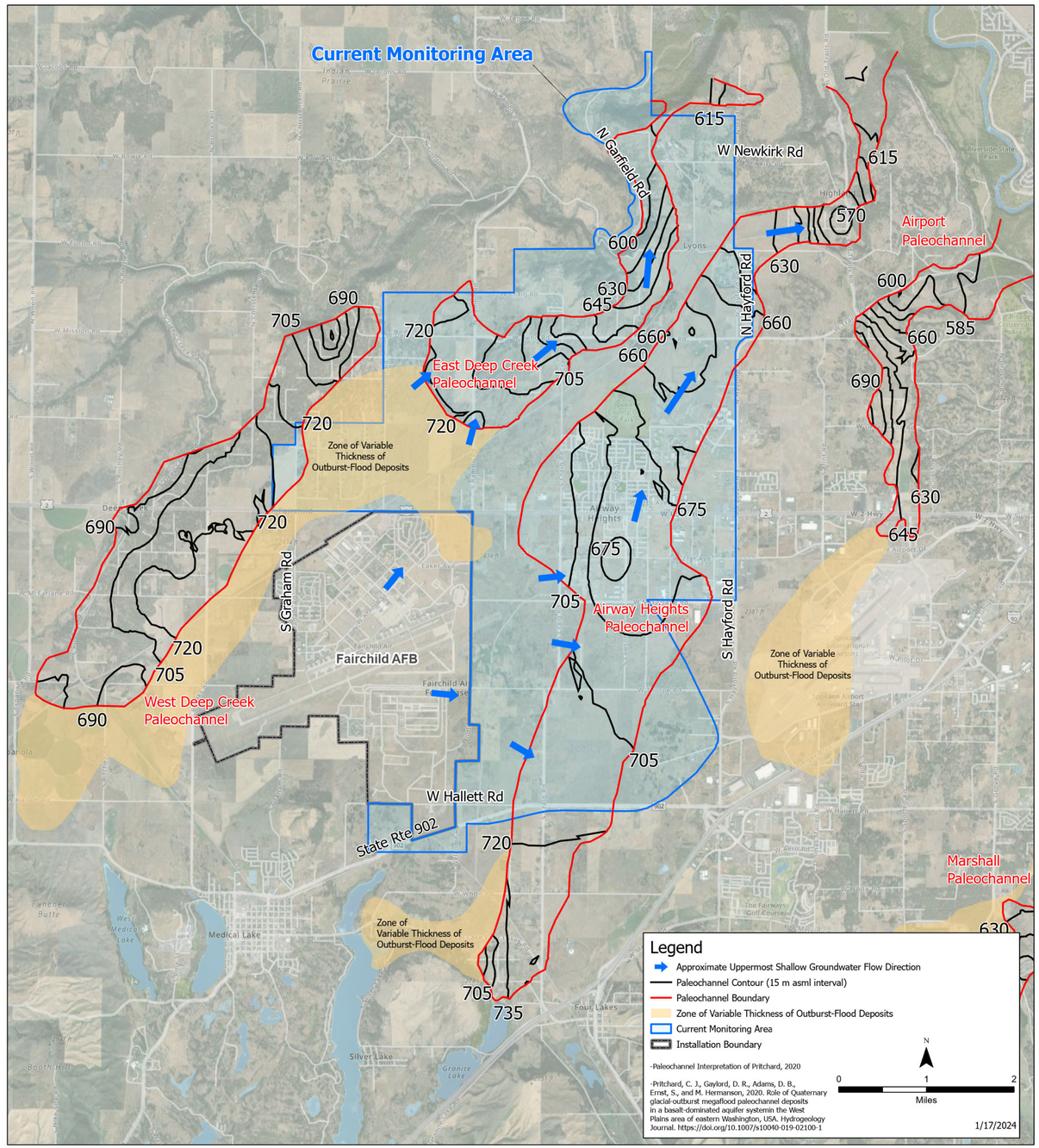
AIR FORCE CIVIL ENGINEER CENTER

TEAM FAIRCHILD

West Plains Hydrology: Mapping of Paleochannels and Sampling Overview



C to C' cross section with generalized paleodrainage fill. Vertical exaggeration of 20 times (VH = 1:20). Grossly generalized diagram, modified from: Source: Summary for Spokane County WRIA 54 2012-2013 Subsurface Projection of the Stratigraphy of the Columbia River Basalt Group and Paleodrainages in the West Plains Area. June 28, 2013. Chad J. Pritchard, Ph.D., L.G. Geology Department, Eastern Washington University.



Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

Chemical Properties and Uses:

- PFAS are a group of highly durable chemicals resistant to heat, water, and oil. Since the 1940s, they've been used in various applications like non-stick cookware, stain-resistant fabrics, waterproof clothing, and certain firefighting foams.
- The Air Force widely used AFFF containing PFAS at bases across the country. Among the vast group of PFAS chemicals, PFOA (perfluorooctanoic acid) and PFOS (perfluorooctanesulfonic acid) are the most common.

Environmental Persistence & Ecological Impacts

- PFAS are known for their extremely strong carbon-fluorine bonds, making them resistant to degradation. This durability leads to persistent accumulation in the environment and in biological organisms.
- Due to their accumulation and resistance to breakdown, PFAS poses potential ecological risks. This has led to increased regulatory attention and efforts to develop safer and more environmentally friendly alternatives.

Phase-Out Initiatives:

- In 2006, the U.S. Environmental Protection Agency (EPA) initiated a program encouraging manufacturers to stop producing PFAS due to environmental and health concerns. Many manufacturers agreed, leading to the significant phase-out of these substances by 2015.

Eliminating of AFFF Usage:

- The Department of Defense (DoD) prioritizes eliminating AFFF in military installations. Use of AFFF for land-based testing or training has ceased. The DoD aims to replace the AFFF with a PFAS-free alternative that meets rigorous firefighting criteria by October 1, 2024.

Policy Implementation:

- Aligned with DoD guidelines, the established threshold for combined or individual levels of PFOS and PFOA is set at 70 parts per trillion (ppt).

PFOS/PFOA Sampled Area Site Inspection Results

Sampling Summary (As of December 2023)

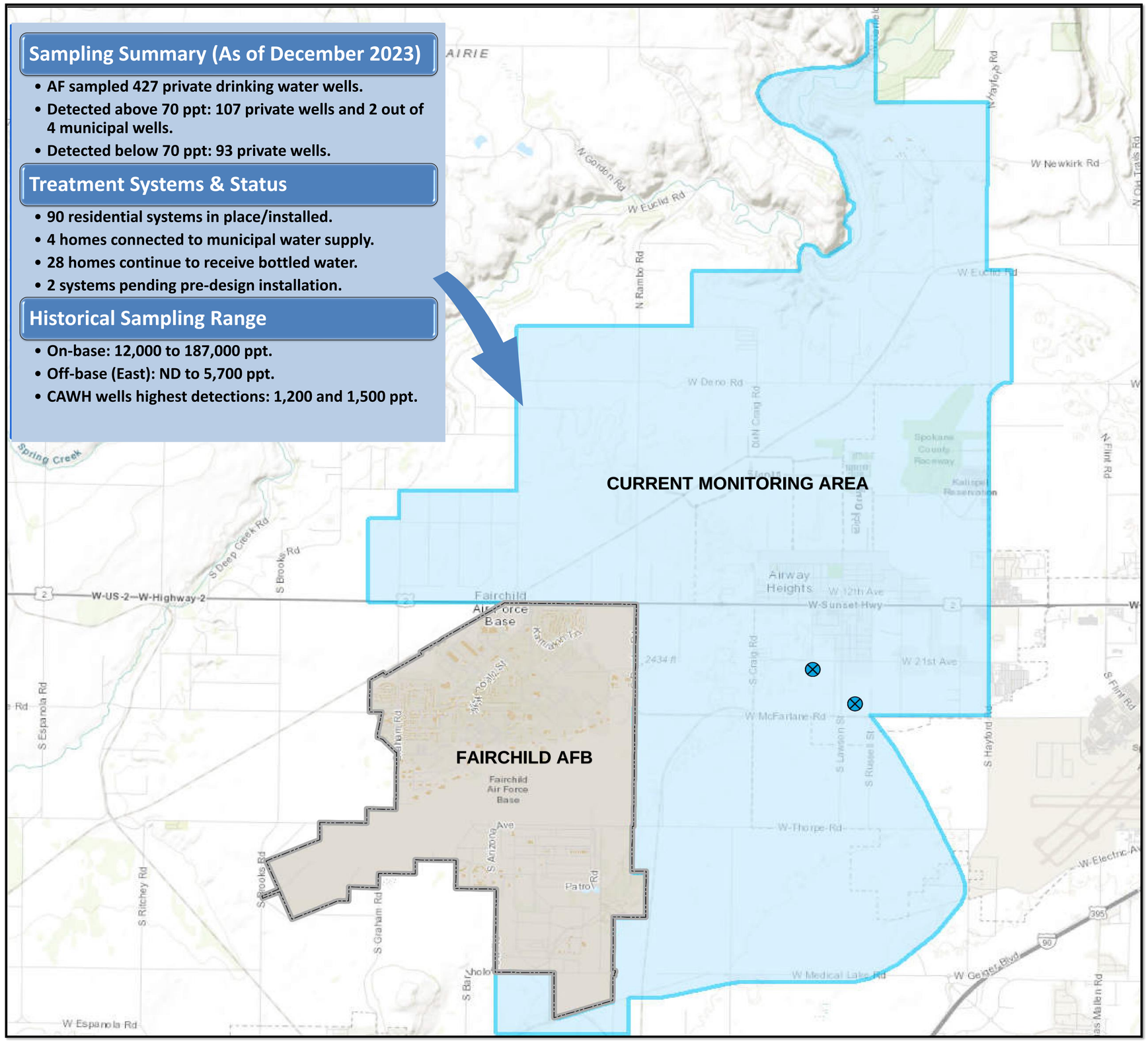
- AF sampled 427 private drinking water wells.
- Detected above 70 ppt: 107 private wells and 2 out of 4 municipal wells.
- Detected below 70 ppt: 93 private wells.

Treatment Systems & Status

- 90 residential systems in place/installed.
- 4 homes connected to municipal water supply.
- 28 homes continue to receive bottled water.
- 2 systems pending pre-design installation.

Historical Sampling Range

- On-base: 12,000 to 187,000 ppt.
- Off-base (East): ND to 5,700 ppt.
- CAWH wells highest detections: 1,200 and 1,500 ppt.



Legend

- City of Airway Heights (CAWH) Wells
- Current Monitoring Area
- Fairchild AFB Installation Boundary

Fairchild AFB PFOS/PFOA Sampled Area & Site Inspection Results

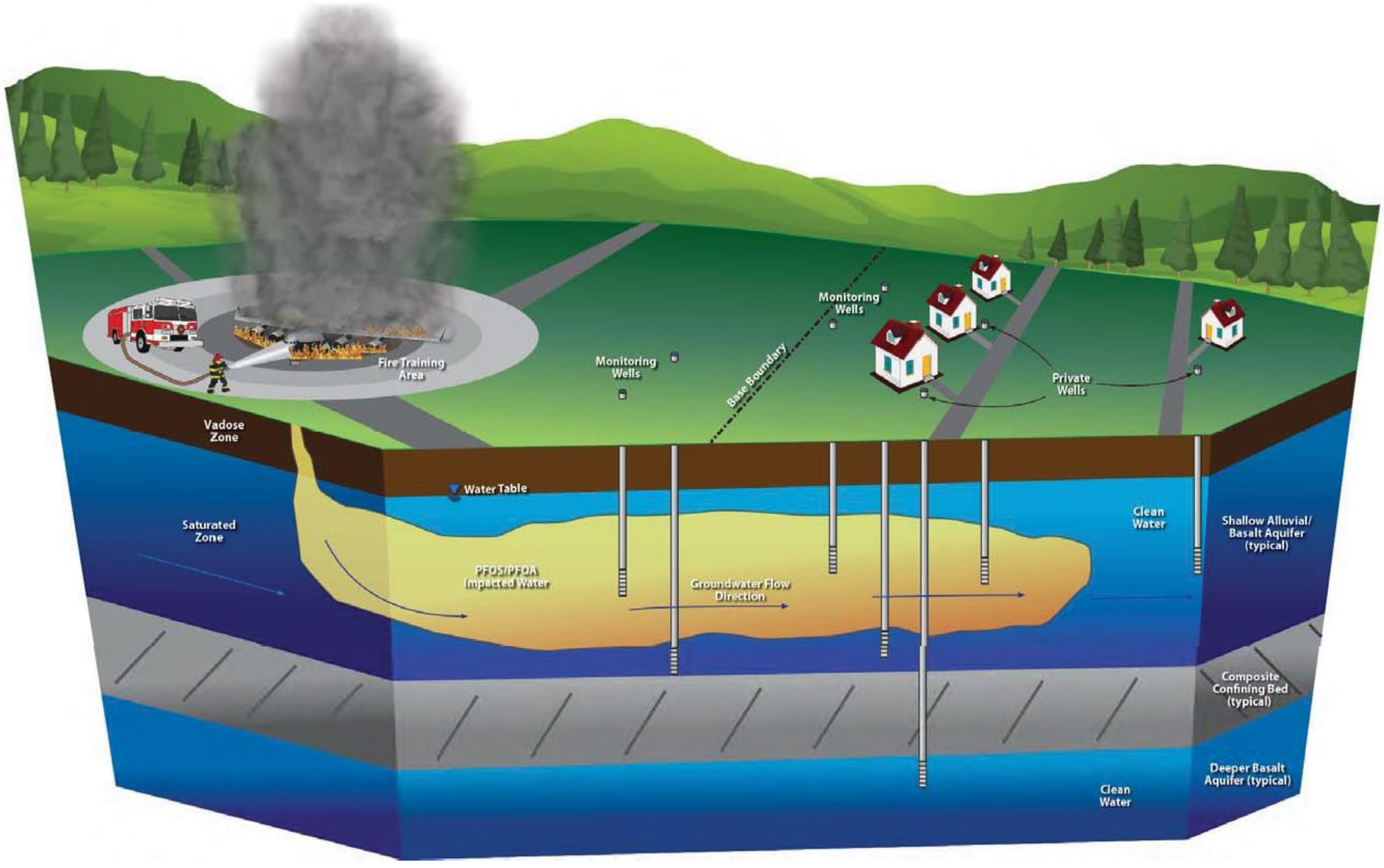
Dec 2023

N

0 0.5 1 2 Miles

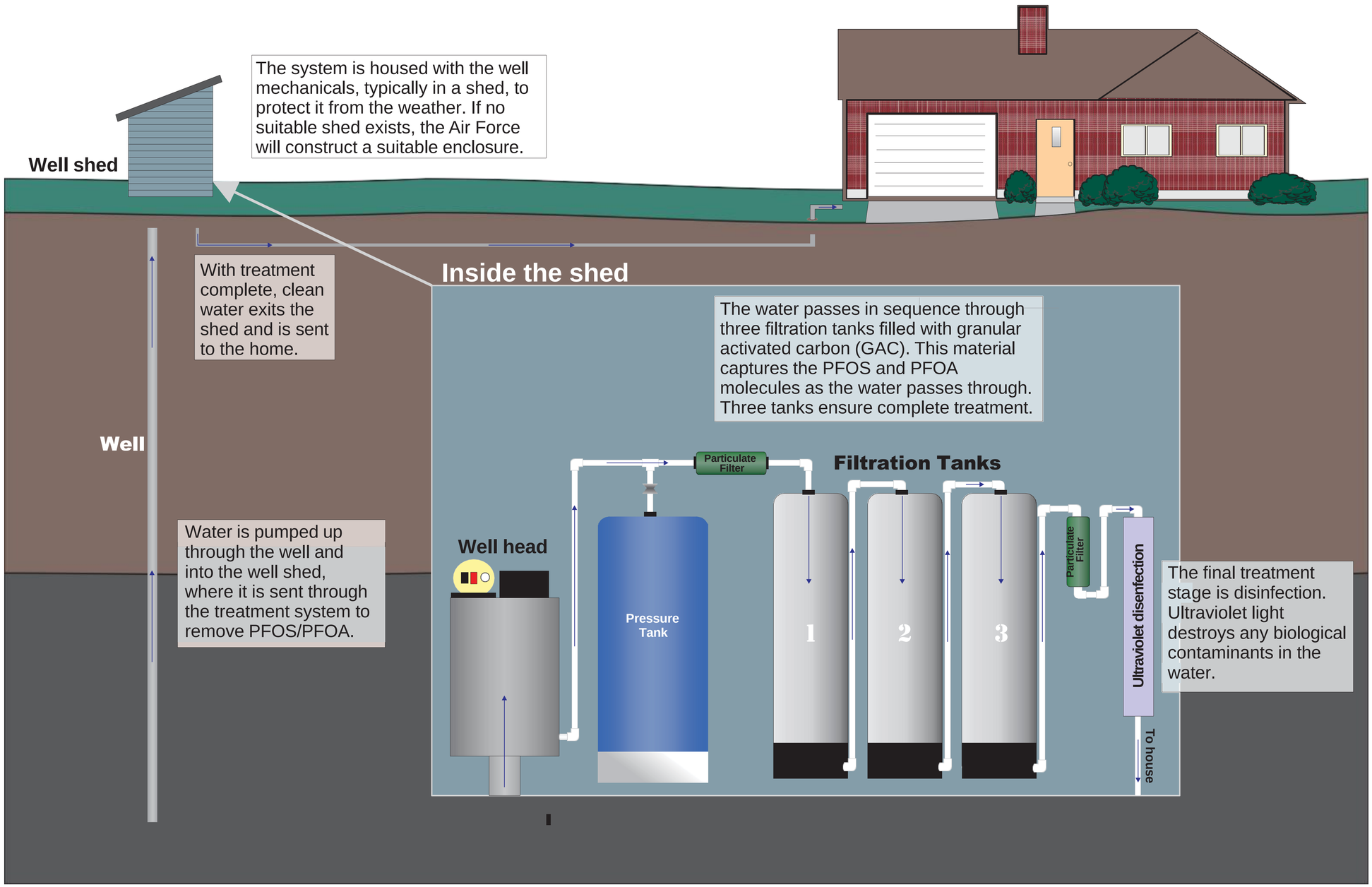
PFOS:	perfluorooctanesulfonic acid
PFOA:	perfluorooctanoic acid
ppt:	parts per trillion
ND:	Non-Detect

How PFOS/PFOA Could Move into Drinking Water



Residential Private Well Water Treatment System

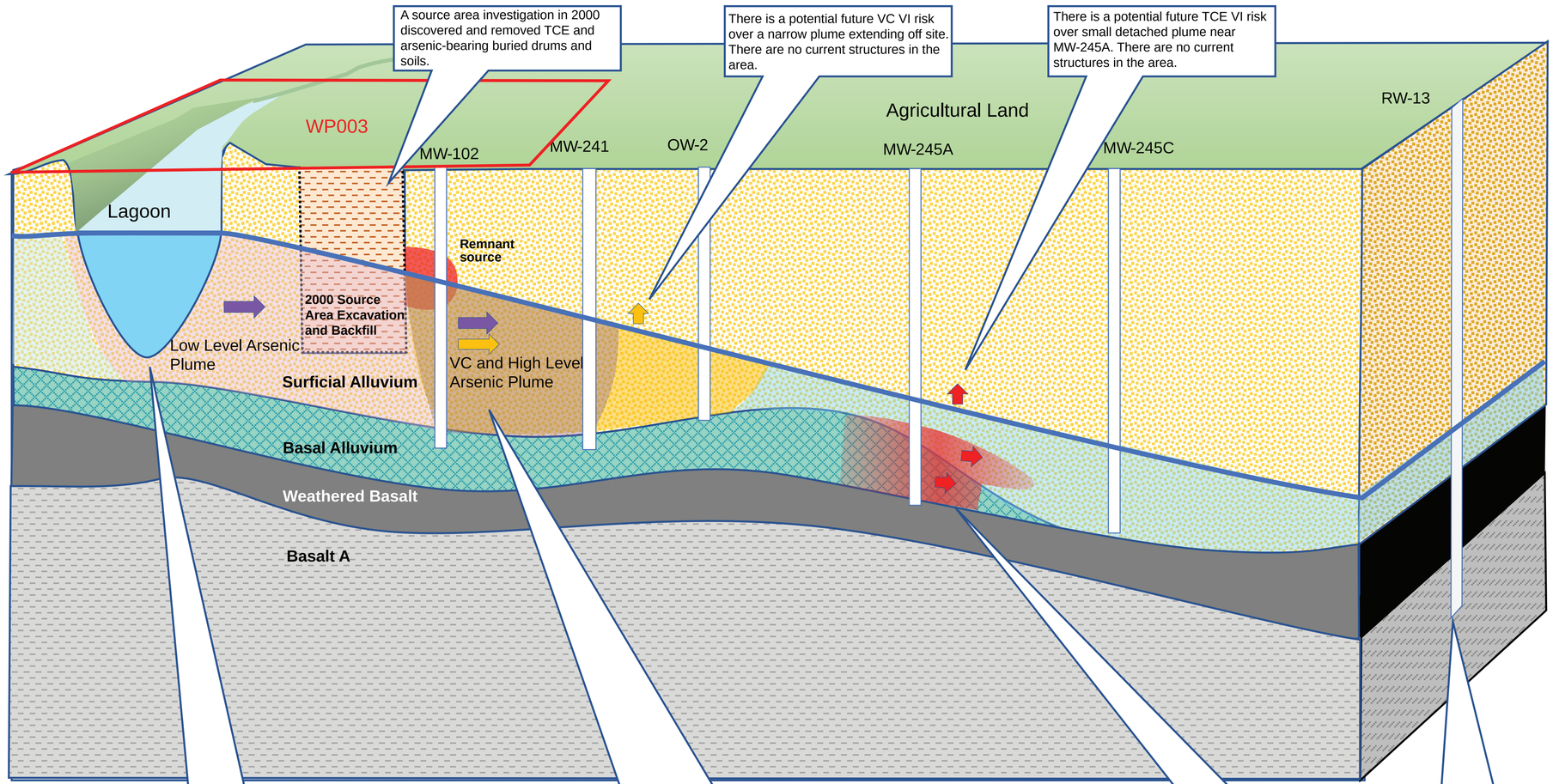
This illustration shows a typical treatment system the Air Force will provide for a residential drinking water well and is intended to show the basics of how the system works. Because each well and house is different, the system will be customized to meet the needs of each home. The Air Force will work with the homeowner to ensure the system will provide clean drinking water with a minimal loss of flow or pressure.



WP003 Conceptual Site Model

West

East

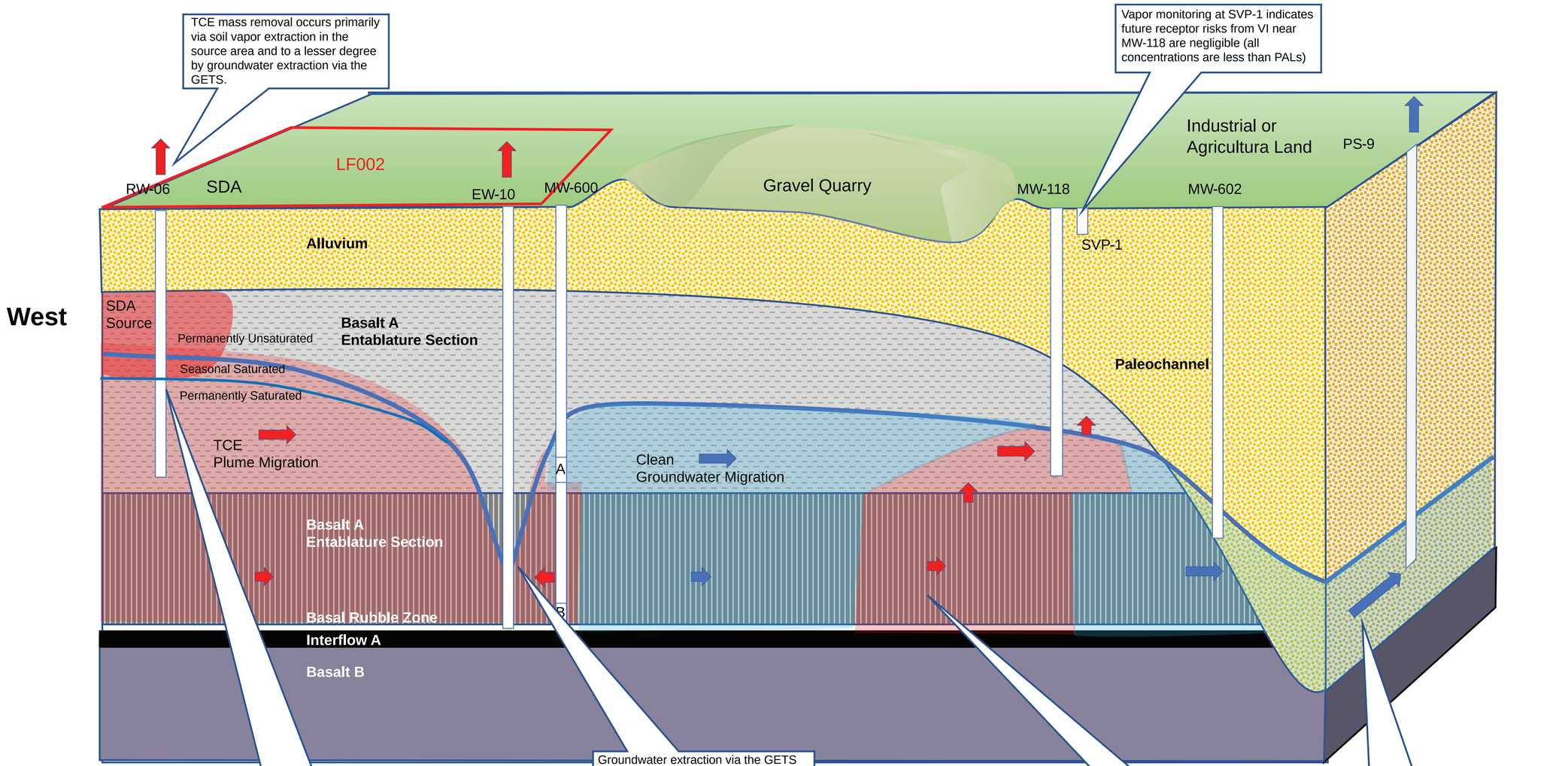


Legend

- Surficial Alluvium
- Basal Alluvium
- Weather Basalt
- Basalt A
- Groundwater Level
- Source Area
- TCE Plume
- VC Plume
- Arsenic Plume
- TCE Mass Flux
- VC Mass Flux
- Arsenic Mass Flux
- Well

Bay West

LF002 Conceptual Site Model

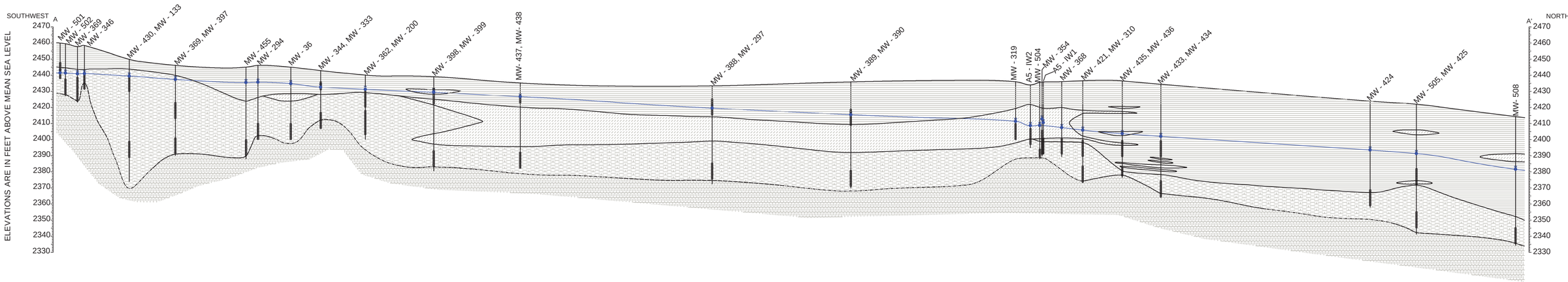


Bay West

Fairchild AFB SS039 Geology

N

0 1,000 2,000 4,000 Feet



Legend

- Monitoring Well Screen Interval with November 2021 TCE Results in mg/L
- NS Not Sampled
- ND Nondetect
- Measured Water Level and Interpreted Water Table
- Formation Boundary
- Estimated Formation Boundary

- Alluvium
- Silt/Clay
- Weathered Basalt
- Basalt

300 150 0 300
HORIZONTAL SCALE IN FEET

20 10 0 20
VERTICAL SCALE IN FEET

URS
Architects Engineers Planners

Community Involvement Plan (CIP)

The Community Involvement Plan (CIP) is an essential component of environmental restoration programs, particularly in sites managed under the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA). Designed to ensure meaningful community engagement throughout the cleanup process in alignment with the National Contingency Plan (NCP) under 40 CFR Part 300.

Objectives and Goals

- **Regulatory Compliance and Transparency:** Align with NCP requirements, ensuring all activities are conducted transparently.
- **Informed Community Engagements:** Enable the community to understand and engage in the cleanup process.
- **Education & Awareness:** Disseminate comprehensive information about environmental impacts, health risks, and the remediation process.
- **Responsive Interaction:** Develop a robust system for gathering and addressing community feedback, ensuring concerns are integrated into decision-making.

Key Components of the CIP

- **Community Profiles:** In depth narratives outlining demographics, cultural dynamics, and specific needs of the affected communities.
- **Communication Strategies:** Tailored plans specifying objectives, target audience, key messages, and diverse channels for effective communication and feedback.
- **Fact Sheet and Public Notices:** Essential tools for concise, clear dissemination of site-related information and public involvement opportunities.
- **Public Meeting and Sessions:** Platform for direct interactions, information exchange, and addressing community inquiries in a structured setting.
- **Technical Assistance and Risk Communication:** Initiatives to enhance community understanding of technical and environmental aspects, facilitating informed participation in decision-making.

Collect Community Data
✓Conduct Community Interview
ETC: Mar 2024
(In progress)

→ Identify Community Issues and Interest

→ Develop Community Involvement Objectives and Techniques

→ Prepare Community Involvement Plan
ETC: Jun/Jul 2024

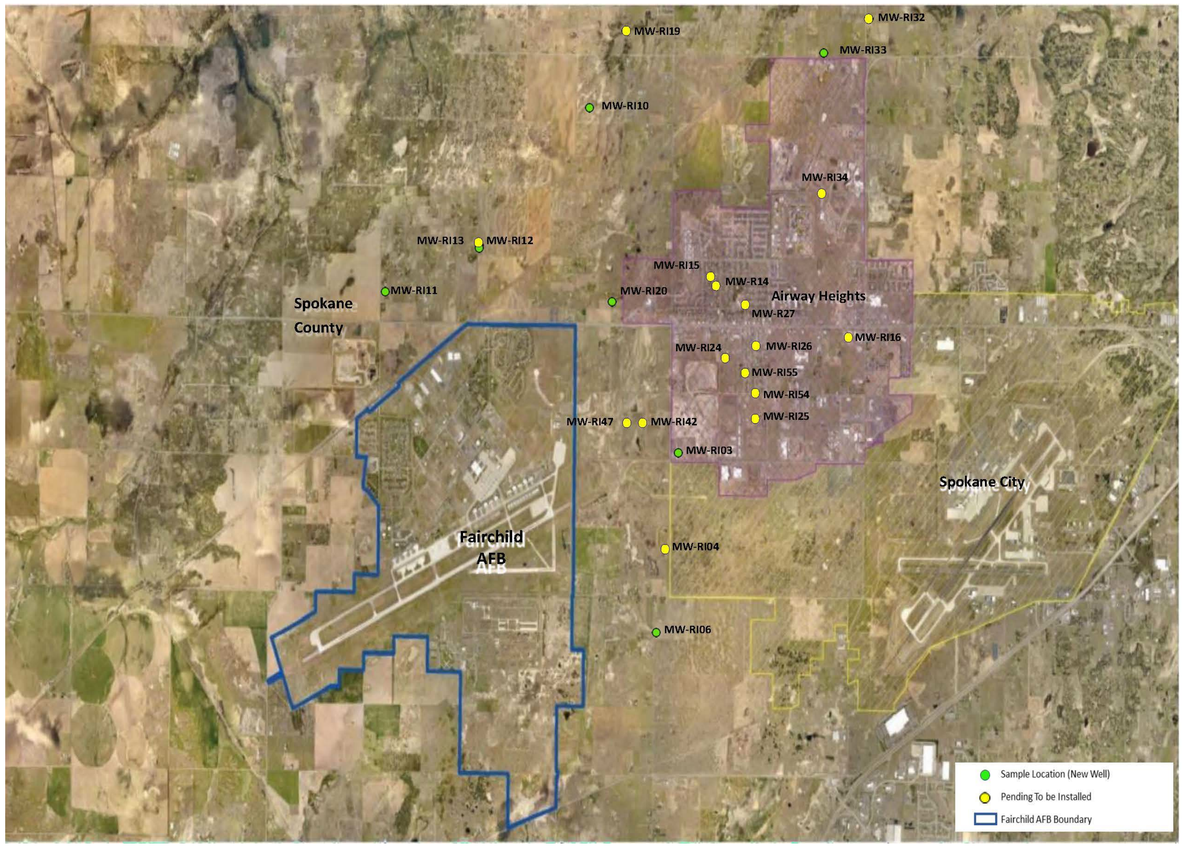
*ETC: Estimated Time of Completion

Adherence to the CIP requires ongoing evaluation and adaptation. The plan will be revisited and updated every five years or as necessitated by changing site conditions or community needs, ensuring relevance and effectiveness in community engagement.

The CIP, as mandated by the NCP and integrated within the CERCLA framework, is not merely a procedural formality but a vital mechanism for responsible and inclusive environmental stewardship. It signifies a proactive approach to community involvement, emphasizing transparency, education, and active participation in environmental restoration efforts.

Off-Base Per-and Polyfluoroalkyl Substances (PFAS) Remedial Investigation (RI) - April 2023

Monitoring Wells Spokane Country and Airway Heights

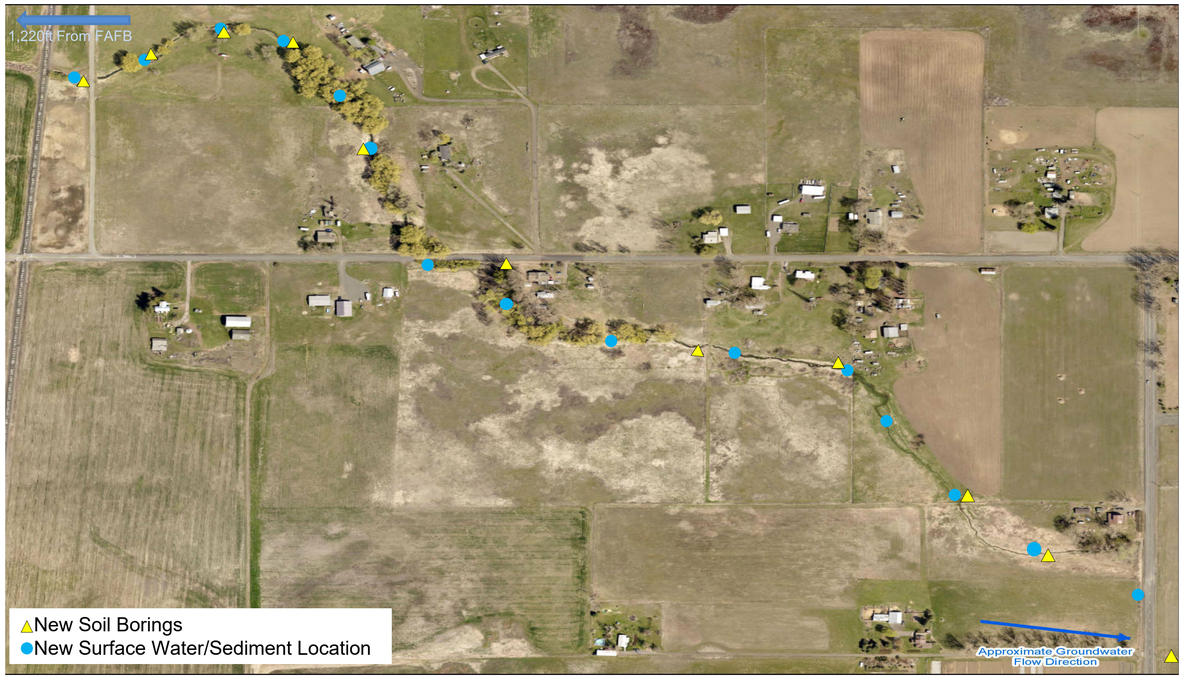


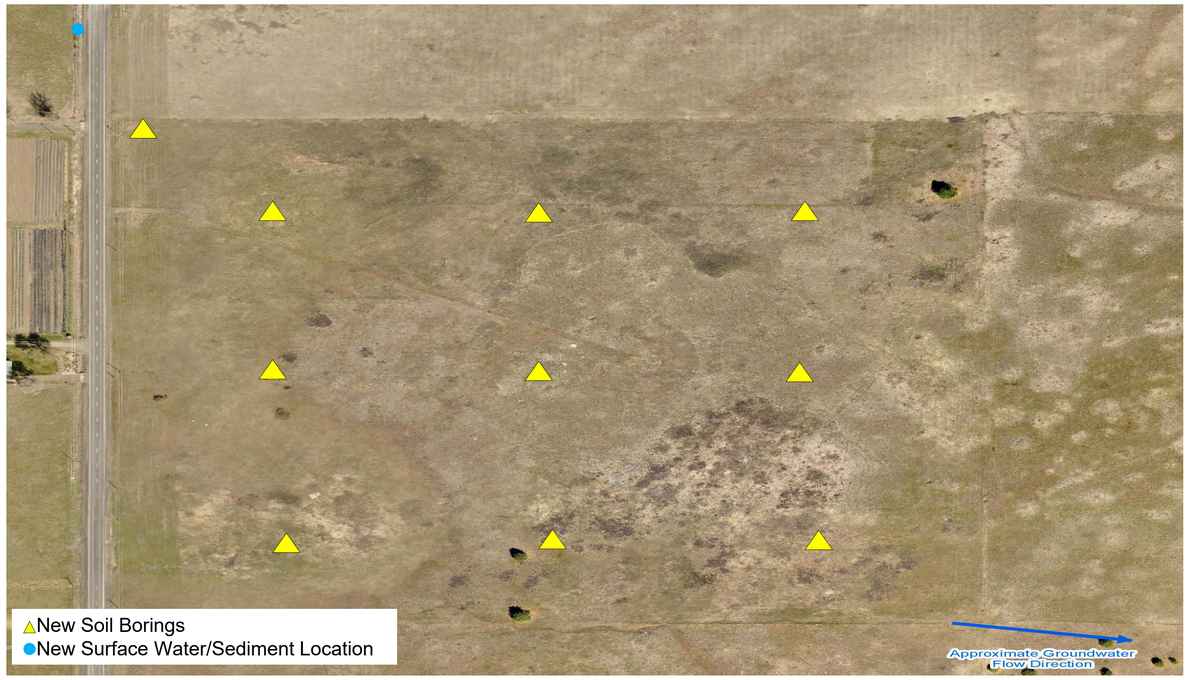
Sample Results

Location	Sample Date	Well Depths (ft)	PFOS (ppt)	PFOA (ppt)
MW-RI03	12-Apr-23	17.0	21	8
MW-RI06	13-Apr-23	50.4	1,800	330
MW-RI10	13-Apr-23	192.0	280	92
MW-RI11	12-Apr-23	40.0	2.2	0.8
MW-RI12	13-Apr-23	36.0	7.8	24
MW-RI20	12-Apr-23	65.0	7.2	8

ppt	parts per trillion
ft	feet
MW	monitoring wells
RI	Remedial Investigation
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonic acid

Phase I: RI Proposed Flowage Easement New Borings





Restoration Advisory Board (RAB)

The RAB is an advisory group of citizens, community leaders and regulatory agencies. Its purpose is to work with the Air Force in developing solutions for cleaning up contamination both on base and off base. The RAB brings community concerns to the Air Force so the community's input can be considered in developing cleanup plans.

RAB HISTORY

- RAB evolved from Technical Review Committee, which is required by law.
- Defense Department began RABs to encourage dialog between its installations and their neighboring communities.
- "RAB concept" developed by a citizen working group tasked to improve how communities are involved in cleanups.
- RAB established at Fairchild in 1995.
- RAB has been involved in evaluating priorities, reviewing annual cleanup program budgets and forming working groups to study issues in greater depth.

RAB MEMBERSHIP

- RAB headed by Air Force and Community Co-chairs.
- Air Force Co-chair: Col. Charles Fletcher
- Community Co-chair: Mr. Jon Welge
- U.S. Environmental Protection Agency and Washington Dept. of Ecology
- Representatives from the city of Spokane and the Spokane County Health Department.
- Includes members from academia, business and the community

RAB MISSION

- Bring the community's interests and concerns to the attention of the Air Force.
- Work with the Air Force to ensure investigations and cleanup plans consider the needs of the communities involved.
- Review and provide feedback on important investigations, reports and cleanup actions.
- Assist the Air Force by taking accurate information back to the communities.
- Help local citizens understand the cleanup process and encourage them to participate.

GET INVOLVED

- Attend RAB meetings. Meeting dates and times are advertised in local newspapers.
- Contact your RAB representative. Let this person know your ideas and concerns.
- Become a RAB member. Currently seeking community members from Airway Heights and surrounding areas. If interested, please fill out an application.
- For more information: Contact Megan Riccobono at (509) 247-2450.

Washington State Department of Health
SPOKANE REGIONAL HEALTH DISTRICT
EPA
DUPLUM INCOLUMITATIS
AIR FORCE CIVIL ENGINEER CENTER
TEAM FAIRCHILD

Fairchild AFB Five-Year Review (FYR)

Purpose of Fairchild AFB FYR

- Hazardous waste has been generated historically due to aircraft maintenance and refueling operations, including environmental releases from landfilling, wastewater discharges, fire training, and accidental spills.
- Investigation of potentially hazardous waste releases began in 1984 as part of the four-phase Installation Restoration Program (IRP).
- In 1989, Fairchild AFB was listed on the EPA's National Priority List (NPL).
- A Federal Agreement was signed in 1990 to establish schedules for environmental investigation and remediations.

Progress since the Last FYR

- Basewide updates for on-base Land Use Controls (LUCs) in the Installation Development Plan (IDP) in the Air Force Comprehensive Planning Platform (CPP).
- Enhancement of off-base LUCs at Operable Units (OUs) to prevent contaminated groundwater use and address vapor intrusion.
- Complete assessment of on- and off-base impacts for current and new Contaminants of Concern (COCs) at various OUs.
- Revision of site COCs through administrative measures at select OUs.
- Completion of Interim Record of Decision (ROD) activities at OU-5 for evaluating remedy performance.

OUs Classification and Description

- Nine OUs at Fairchild AFB are categorized based on environmental risk levels.
- OUs are prioritized from Priority One (highest risk) to Priority Three (lowest risk).
- Ous 1 through 9 include 36 distinct IRP sites.
- The following list describes the existing OUs at Fairchild AFB.
  - **OU-1:** Craig Road Landfill (CRL), off-Base Priority I IRP site;
  - **OU-2:** Priority I, on-base Priority I IRP sites;
  - **OU-3:** Priority II, on-base Priority II IRP sites;
  - **OU-4:** Priority III, on-base Priority III IRP sites SD034, SD038, and SS019 (no further action);
  - **OU-5:** SS-39, on-base Priority III IRP site SS039 formerly in OU-4;
  - **OU-6:** SR-939 Munitions Site, on-base MMRP site;
  - **OU-7:** SD-37 Interim, formerly part of OU-4 (no decision document);
  - **OU-8:** Priority Three Sites RW011 & WP036; and
  - **OU-9:** PFAS (no decision document)

Record of Decisions

- Specific RODs issued for OUs 1, 2, 3, 5, 6, and 8.
- The following Ous addressed by the following RODs:
  - **OU-1:** ROD Craig Road Landfill (USAF 1993a);
  - **OU-2**: ROD On-Base Priority One OUs (USAF 1993b);
  - **OU-3:** ROD for Priority Two Sites (USAF 1995b);
  - **OU-5**: Interim ROD OU5-Spill Site 39 (SS-39) Chlorinated Hydrocarbon Plume (USAF 2011); and
  - **OU-6:** SR-939 Munitions Site – ROD for (USAF 2021)
  - **OU-8:** ROD Site RW011 and Site WP036 (USAF 2022)

Sites Achieving Unlimited Use/Unrestricted Exposure (UU/UE) Status Since the Last FYR

- OT016 - Achieved UU/UE status in April 2019.
- OT017 - Achieved UU/UE status in December 2019.
- ST010 - Achieved UU/UE status in December 2021.
- FT032 - Achieved UU/UE status in 2018.
- DP022 - Achieved UU/UE status in 2020.
- DP024 - Achieved UU/UE status in 2020.

Sites Pending Unlimited Use/Unrestricted Exposure (UU/UE) Designation

- SSO33 - Pending UU/UE designation.
- ST035 - Pending UU/UE designation.

AFFF Release and PFAS Investigation Details

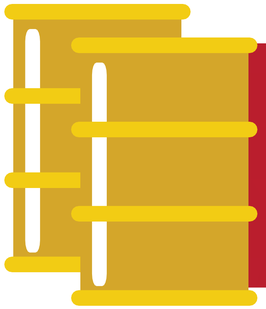
- Investigation of 19 areas for potential PFC releases, leading to detailed SI of selected areas.
- Identification of potential off-base groundwater receptors and initiation of remedial measures.
- Ongoing Remedial Investigation (RI) since 2020 to define the nature and extent of PFAS contamination.
- PFOS/PFOA impacts identified in all AFFF areas, affecting several OUs.
- Due diligence activities for non-AFFF PFAS sources are underway, with a new OU established specifically for PFAS impacts.
- Creation of a new OU specifically to address PFAS impacts at Fairchild AFB.
- These areas were initially identified as AFFF Areas 1 through 5 and assigned site-specific IDs as follows:
  - Area 1 - FT004P-Sub/FT-1 Fire Training Area
  - Area 2 - RS003P/Calibration Area)
  - Area 3 - SS008P-Sub/Pumphouse B/Crash Site
  - Area 4 - RS002P/B-52 Crash Location 1994
  - Area 5 - RS001P/Fire Station 1

Specific OU Analysis in Relation to AFFF and PFAS

- OU-1: No known AFFF use or disposal at Craig Road Landfill; undergoing evaluation for non-AFFF PFAS sources.
- OU-2: Varying impact likelihood on sites based on their position relative to known AFFF areas.
- OU-3: Confirmed PFAS impacts to soil and groundwater at specific sites.
- OU-5: Confirmed PFAS impacts within the SS039 boundary.
- OU-8: Evaluation of RW011 and WP036 for potential PFAS impacts

ROD	Record of Decision	**SI**	Site Investigation
OU	Operable Unit	**AFFF**	Aqueous Film Forming Foam
UU/UE	Unlimited Use/Unrestricted Exposure	**PFC**	perfluorinated compounds

THE CERCLA PROCESS
ROAD MAP TO THE ACTION MEMORANDUM



SITE DISCOVERY

SITE EVALUTAION

NPL LISTING

EARLY REMOVAL ACTION
ENGINEERING EVALUATION
COST ANALYSIS
(EE/CA)

PUBLIC COMMENT

REMEDIAL INVESTIGATION (RI)

EARLY REMOVAL ACTION
ACTION MEMORANDUM
AND RESPONSIVENESS
SUMMARY

FEASIBIITY STUDY (FS)

PROPOSED PLAN

PUBLIC COMMENT

REMEDY SELECTION

REMEDIAL DESIGN (RD)

REMEDIAL ACTION (RA)

OPERATION & MAINTENANCE (O&M)

NPL DELETION

Fairchild AFB Municipal Water Connection Study

Study Purpose

- The study evaluates the feasibility of connecting residences affected by Per- and Polyfluorinated Substances (PFAS)-contaminated well water to a municipal water supply.
- PFAS, a group of synthetic chemicals known for their persistence in the environment and in the human body, have been detected in the well water of several residences near the base. The health risks associated with long-term exposure to PFAS compounds necessitate an urgent evaluation of alternative water sources for these residences.

Primary Objectives

- Evaluate connecting 87 residences currently using Point of Entry Treatment Systems (POETS), with well water levels of perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) exceeding 70 nanograms per liter (ng/L).
- Assess the feasibility of extending municipal connections to additional residences detecting PFAS presence, utilizing laboratory limits of detection for identification.

The study systematically assesses two primary alternatives

- **Alternative A**: This involves connecting the affected residences to an established municipal water supply, followed by the decommissioning of the existing POETS currently in use. This alternative aims to provide a long-term, sustainable solution by integrating the residences into the city's water infrastructure.
- **Alternative B**: This focuses on the continued operation and maintenance of POETS for each residence. While this alternative maintains the current independent water treatment systems at each residence, it necessitates ongoing monitoring and maintenance.

Methodological Approach

- Comprehensive definition of evaluation alternatives: Alternative A (municipal connection and POETS decommissioning) and Alternative B (ongoing POETS operation and maintenance).
- Identification of potential municipal water supply connections, with focus on the City of Spokane and surrounding municipalities.
- Detailed approach development for municipal water connection, including layout planning for transmission mains (TMs), distribution mains (DMs), and service lines (SLs).
- Pipe sizing and construction materials, adhering to City of Spokane's requirements and engineering standards.

Evaluation Scenarios

- Detailed analysis of different scenarios, including 87 residences (baseline) and expanded scenarios connecting up to 628 residences.
- Consideration of real and nominal discount rates in cost-benefit analysis, reflecting different economic perspectives.
- Scenario-specific implications for POETS decommissioning, municipal connection requirements, and water main construction.

Key Technical Findings

- Feasibility variations based on geographic clustering and municipal jurisdiction boundaries.
- Administrative feasibility concerns with City of Spokane connections due to city limits and Growth Management Act implications.
- Piping Materials: ductile iron pipe for larger water mains, high-density polyethylene for smaller service lines.
- Pipe sizing determined using the Hazen-Williams equation, ensuring low head losses and appropriate flow velocities.

Study Outcome

- The outcomes of this study will guide decision-making processes for environmental health and safety measures, ensuring that the selected approach aligns with both the immediate needs of the affected residents and the long-term sustainability and regulatory compliance of the water supply system. This comprehensive approach aims to deliver a solution that is environmentally sound, technically feasible, and economically viable, thereby safeguarding the health and well-being of the community in and around Fairchild Air Force Base.

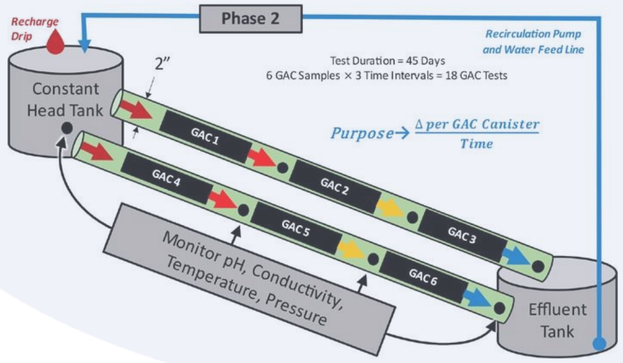
Projected Timeline Next Steps

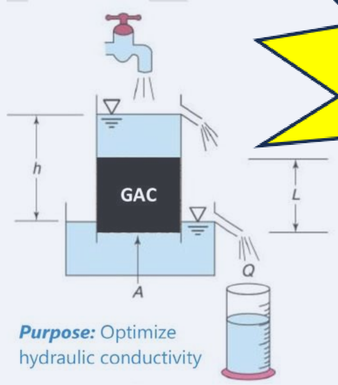
- Submission of findings to City of Spokane for evaluation of administrative and logistical feasibility
- Further discussion with city engineers and stakeholders to address administrative challenges.
- Continuous monitoring and updating of cost-benefit analysis to reflect real-time economic factors.

PFAS-Impacted Stormwater

Can we remove PFAS from stormwater with <u>effective</u>, <u>sustainable</u>, <u>passive</u> treatment?

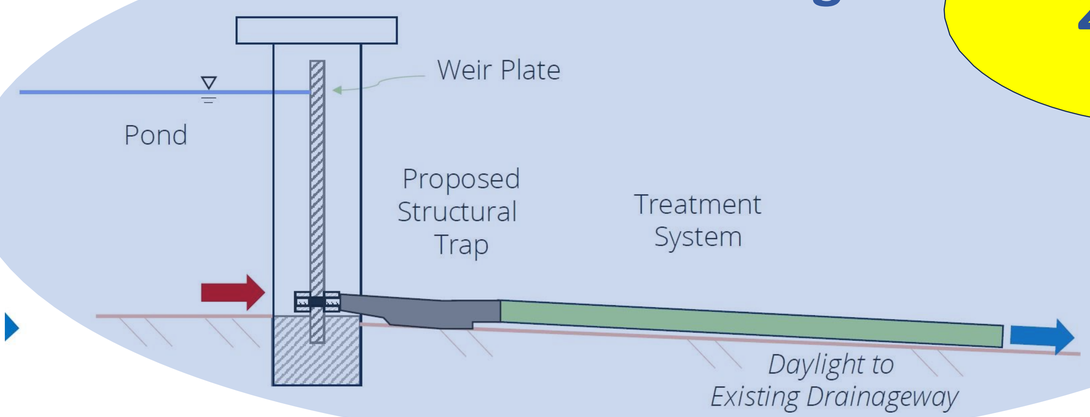
Bench Scale Testing





Underway

Full Scale Testing



2024 - 2025

Concept

- Use gravity (vs. pumps/electricity) to move water through treatment system
- Prefilter out suspended solids/interferants
- Remove PFAS with Granular Activated Carbon (GAC)
- Replace GAC with easily removable cartridges and GAC regeneration

Today

- Bench scale testing at South Dakota Mines [Engineering, Science and Technology University]

Next

- South Dakota Mines design and test full scale system at Fairchild Air Force Base

SOUTH DAKOTA MINES
An engineering, science and technology university

PFAS: Per- and polyfluoroalkyl substances

Air Force Civil Engineer Center contract FA8903-22C-0031

FT004 Data Gap Study and Pilot Test

Fairchild AFB ♦ Washington

Perfluorooctanoic acid (PFOA)
& Perfluorooctane sulfonate (PFOS)

Summer 2024

Data Gap Study will gather information to

- Measure PFOA and PFOS in water
- Establish size of treatment area
- Provide water for bench scale tests

Bench Tests will

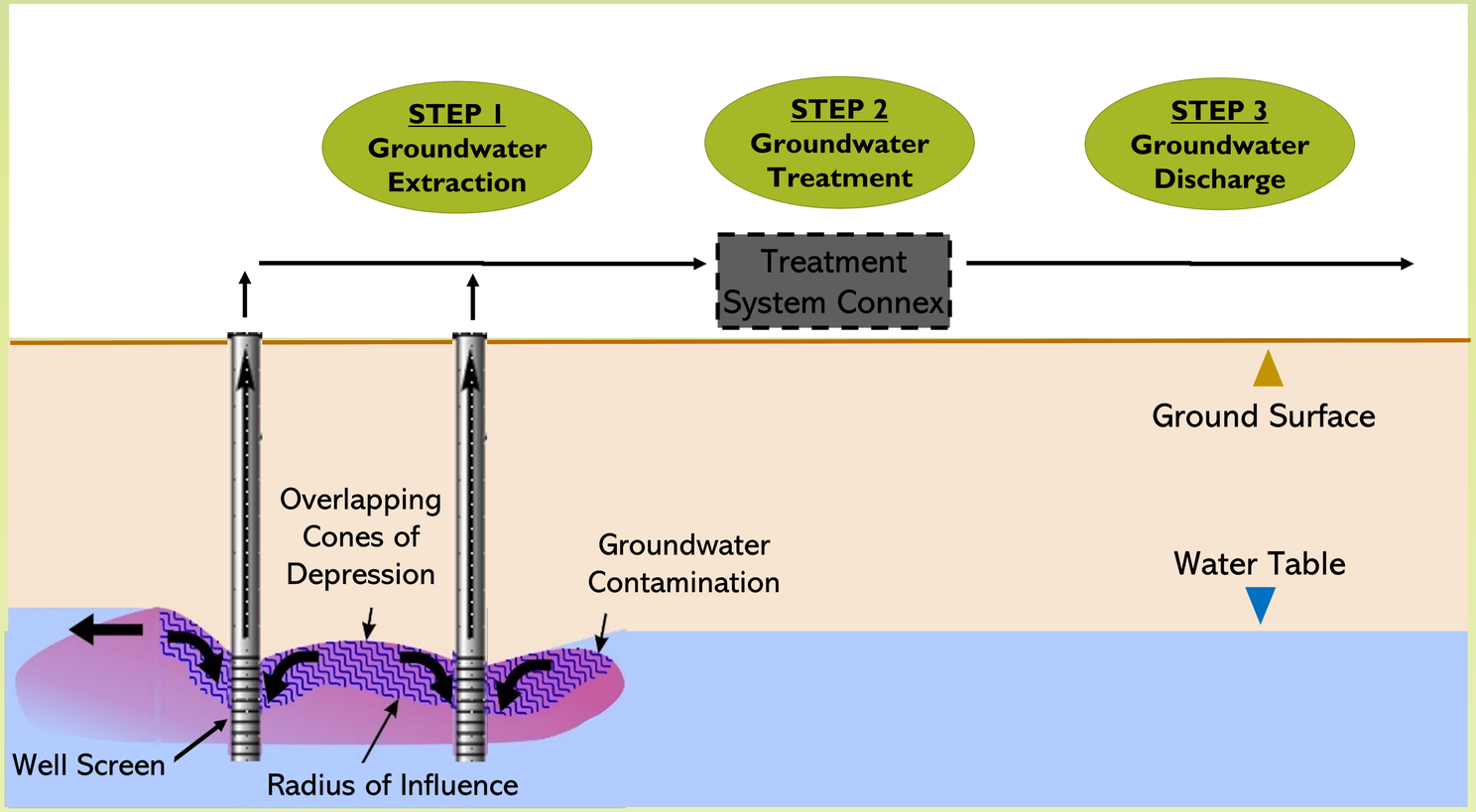
- Evaluate several types of media to reduce PFOA and PFOS
- Optimize treatment protocol for site-specific conditions.

Summer 2025

Pilot Testing will

- Construct an onsite treatment system
- Operate the system for 12 months and evaluate effectiveness.

Project Goal:
Reduce groundwater concentrations of PFOA and PFOS to below EPA Health Advisory Levels.



Graphic: Adapted from Federal Remediation Technologies Roundtable

PARAGON JACOBS JOINT VENTURE

Preliminary Assessment (PA) for Non-AFFF Areas

The Non-Aqueous Film Forming Form (AFFF) Preliminary Assessment at Fairchild AFB is currently underway. This PA consists of a comprehensive evaluation of potential per- and polyfluoroalkyl substances (PFAS) releases from all potential sources at Fairchild AFB. The assessment encompassed a thorough review of administrative documents, supplemented by interviews with on-site personnel and subject matter experts. This analysis is crucial for understanding the extent and impact of PFAS presence within the installation environment.

PA Objectives

Identifying Potential Sources: Locate key areas where PFAS, was used and may have been

Risk Analysis: Evaluate the potential threat posed by identified PFAS sources to human health and the environment.

Actionable Insights: Deliver definitive, research-backed assessment for each area where PFAS may be detected in the environment and determine whether further investigation or remedial measures are necessary.

Outcome: Identify areas of concern where PFAS releases may have occurred.

The assessment will cover a range of areas, such as:

- Wastewater Treatment Plants (WWTP)
- Biosolids and landfills
- Oil/water separators (OWS)
- Industrial sites such as bulk petroleum terminals, and metal plating facilities
- Everyday locations such as mess halls, gas pumps, car washes and housing.
- Specialty areas, including medical facilities, marinas, and radar domes.
- Dry cleaners

Conclusion/Deliverables

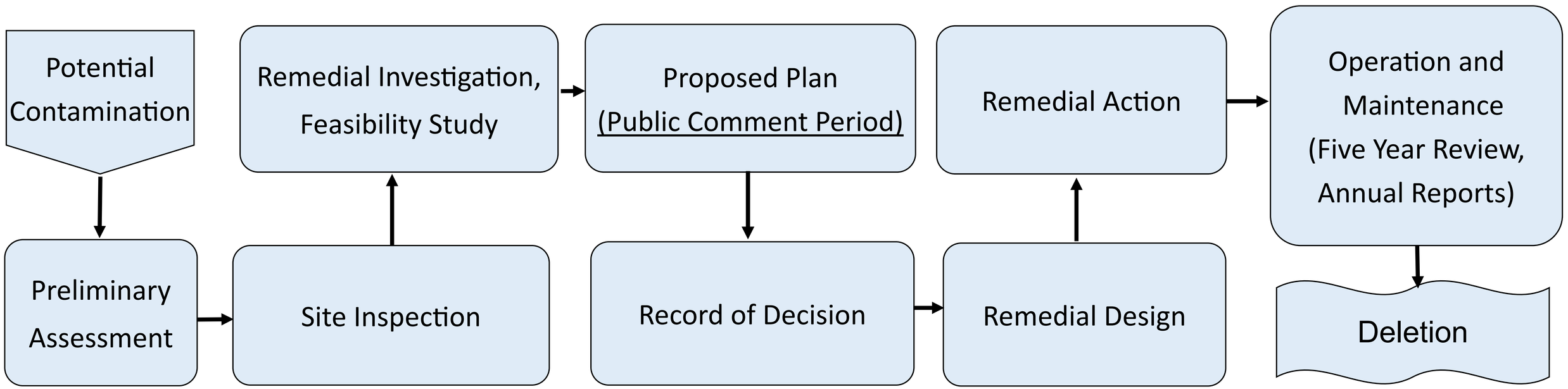
Targeted Assessment Summarizing operational histories and potential PFAS impacts in key areas to guide future actions

Transparent Limitations: Acknowledge constraints in data accuracy and sources to underline the importance of ongoing research.

Informed Decisions: Provides critical insight for future PFAS investigation and management.

Report Expected: Summer 2024

Comprehensive Environmental Response Compensation Liability Act (CERCLA) at Federal Facilities



Public Review and Comment

Proposed Plan- 30 Day Public Comment Period

Community Interviews

- Community Involvement Plan
- Five Year Review

RAB Review-Examples Include:

- Remedial Investigations
- Feasibility Studies
- Remedial Design
- Annual Reports

Federal Facility Agreement

Per Executive Order 12580, Department of Defense is the lead agency when implementing CERCLA removal and remedial actions on DoD facilities, or where off-site release is from a DoD facility. CERCLA § 120 requires EPA to enter an interagency agreement with Federal agencies to ensure protective and timely cleanups under CERCLA at NPL Federal facility sites.

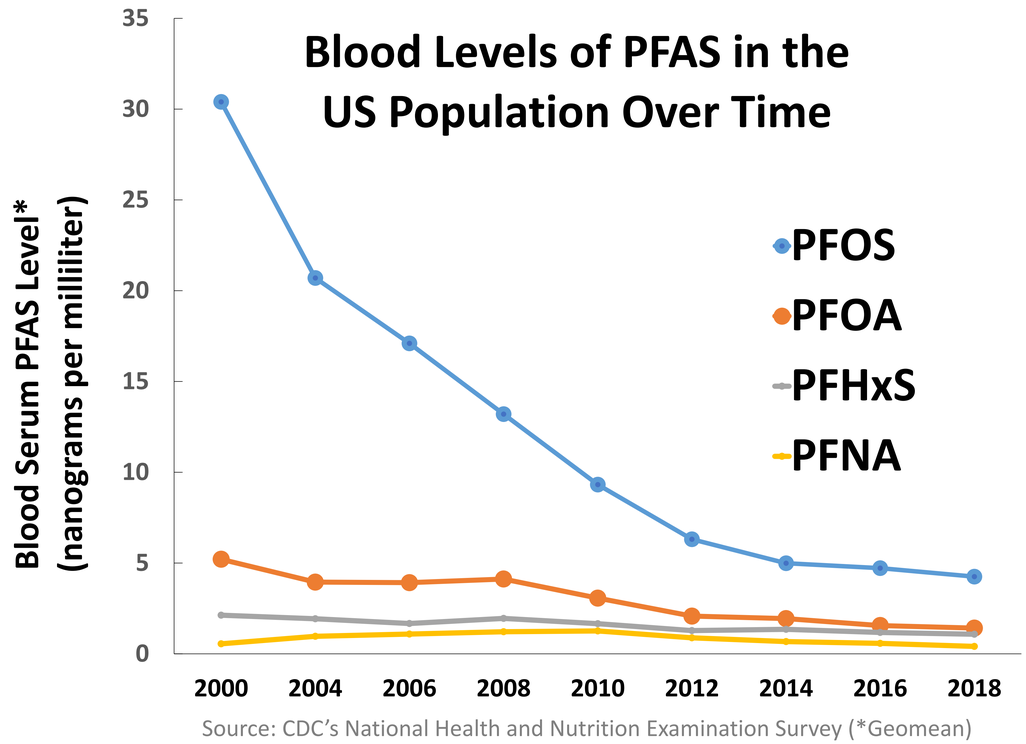
Exposure to PFAS

How Are People Exposed to PFAS?

- **Drinking water containing PFAS**.
  May be a significant source of exposure.
  - Infants may have more exposure than adults.
  - Skin contact while bathing, showering, washing dishes, or washing clothes is **not** a meaningful source of exposure.
- **Eating food contaminated with PFAS**. May occur when water for crops or livestock contains PFAS or food packaging contains PFAS.
- **Using some consumer products**. Likely a lower exposure compared to drinking water containing PFAS.
- Accidentally swallowing contaminated soil or indoor dust.

PFAS in People

- Nearly all people tested in US have some PFAS in their blood.
- Levels of PFOS and PFOA have declined in people as use in products phases out.
- Some PFAS stay in the body a long time.
- PFAS blood levels cannot be used to diagnose or predict a health problem in a person.



Source: CDC's National Health and Nutrition Examination Survey (*Geomean)

PFAS: per and polyfluoroalkyl substances
PFNA: perfluorononanoic acid
PFOS: perfluorooctane sulfonic acid
CDC Centers for Disease Control and Prevention
PFOA: perfluorooctanoic acid
PFHxS: perfluorohexane sulfonic acid

Potential Health Effects and Recommendations

How Might PFAS Exposure Affect People's Health?

Scientists are still learning about how people's exposure to PFAS might affect their health.

Exposure to certain PFAS **may** lead to the following:

- Increased cholesterol levels.
- Decreased immune response to some vaccines.
- Changes in liver enzymes.
- Small decreases in infant birth weight.
- Increased risk of high blood pressure or preeclampsia in pregnant women.
- Increased risk of kidney or testicular cancer.

What Can I Do to Protect My Health?

- Get your water tested if you are in the areas the Air Force is testing.
- Reduce exposure to PFAS in drinking water and through other sources.
- Switch to alternate or treated water for drinking and cooking.
- Continue to breastfeed, the benefits greatly outweigh potential risks.
- Share your PFAS water results and discuss health concerns at your next doctor's visit.
- Boost your health with healthy activities and foods.

PFAS: per and polyfluoroalkyl substances

State Action Levels for PFAS in Drinking Water

State drinking water standards

The Washington State Board of Health set State Action Levels (SALs) for five PFAS in October 2021. These standards:

- Require most public water systems to test for PFAS and take certain actions, like monitoring and public notice, if they find PFAS.
- Recommend when to take action to reduce PFAS in drinking water
- SALs are health protection levels for long-term drinking water. They also apply to shorter periods for sensitive groups.

State Action Levels (SALs)

PFOA	10
PFOS	15
PFNA	9
PFHxS	65
PFBS	345

SAL units are in parts per trillion (ppt)

Acronyms

PFAS	per and polyfluoroalkyl substances	PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid	PFHxS	perfluorohexane sulfonic acid
PFOS	perfluoroctane sulfonic acid	PFBS	perfluorobutane sulfonic acid

How to minimize exposure when PFAS exceed a SAL in your tap water

- Use an alternate or treated water source for drinking and cooking if you are pregnant, breastfeeding or mixing infant formula.
- Install a home filter to remove PFAS from your water.
- Consider filtering garden and livestock water.
- Connect to a nearby public water system or well that doesn't have PFAS.
- Contact Spokane Regional Health District to explore other options for private wells.

Washington State Department of HEALTH

Evolving Health Guidance Values

Changes reflect expanding scientific understanding of adverse health effects of PFAS.

PFAS	**2023 EPA** Practical Quantitation Limit (ppt)	**2016 EPA** Lifetime Health Advisory Level (ppt)	**2021 Washington** State Action Level (ppt)	**2022 Updated EPA** Lifetime Health Advisory Level (ppt)	**2023 Proposed EPA** Maximum Contaminant Level (ppt)
PFOA	4.0	**70***	**10**	**0.004** *(interim)*	**4**
PFOS	4.0	**70***	**15**	**0.020** *(interim)*	**4**
PFHxS	3.0	–	**65**	–	Hazard Index**
PFNA	4.0	–	**9**	–	Hazard Index**
PFBS	4.0	–	**345**	**2,000**	Hazard Index**
GenX	5.0	–	**–**	**10**	Hazard Index**

ppt – parts per trillion

* 70 ppt for PFOA and PFOS combined. Level at which the Air Force provides alternate water.

** Evaluate as a mixture. $\text{Hazard Index} = \left(\frac{[\text{PFHxS water}]}{9.0\ \text{ppt}}\right) + \left(\frac{[\text{PFNA water}]}{10\ \text{ppt}}\right) + \left(\frac{[\text{PFBS water}]}{2{,}000\ \text{ppt}}\right) + \left(\frac{[\text{GenX water}]}{10\ \text{ppt}}\right)$

What is the difference between guidance and regulation?

Lifetime Health Advisory Level

- EPA non-enforceable and non-regulatory limit (guidance)
- Identifies level in drinking water where health effects **not** expected based on science at the time
- Protects all people, sensitive populations, and life stages, from lifetime of exposure
- Considers other sources

State Action Level

- Requires public water systems to test (enforceable).
- Recommends reducing PFAS below action levels (guidance)
- Identifies levels in drinking water where health effects **not** expected
- Set to protect all people and sensitive populations from lifetime of exposure, including other sources
- Considers ability to detect and remove PFAS

National Primary Drinking Water Regulation

- When finalized, requires water systems to measure and reduce levels below the maximum contaminant level (enforceable).
- Considers sensitive populations, lifetime of exposure.
- Considers ability to measure and treat to remove, as well as the cost and benefits
- Final MCLs expected by end of 2023.

PFAS: per and polyfluoroalkyl substances

PFNA: perfluorononanoic acid

PFOS: perfluorooctane sulfonic acid

PFBS: perfluorobutane sulfonic acid

PFOA: perfluorooctanoic acid

GenX: hexafluoropropylene oxide dimer acid

PFHxS: perfluorohexane sulfonic acid

ppt: parts per trillion (nanograms per liter)

Fairchild Air Force Base (AFB) ERP Community Survey

Fairchild AFB believes the active, meaningful involvement of community members is critical to the success of the environmental restoration program. This survey is an opportunity for you to tell us how well we are doing at listening to your concerns about ongoing environmental restoration and cleanup efforts at the installation. Please take a few moments to answer the questions as your views are crucial to the program and will help us to be more responsible to the community's needs and interests.

Section A: Assessing Overall Installation Community Involvement Efforts

A-1 - How do you rate the installation at each of the following? (Circle one choice for each question)

a.	Providing the information you need.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
b.	Making the information easy to understand.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
c.	Making it easy to get involved.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
d.	Listening to your concerns.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
e.	Responding to your concerns.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
f.	Treating you courteously.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
g.	Using your input.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**
h.	Explaining decisions.	**Very Poor**	**Poor**	**Neutral**	**Good**	**Very Good**

Section B: Assessing Installation Efforts at Keeping the Community Informed

B-1 - How do you learn about cleanup activities being completed on the installation? (Check all that apply)

____ Mailings
____ Newspaper articles
____ Radio or TV news
____ Installation webpage
____ Community members/family/friends
____ Public meetings or information sessions held by the installation
____ Direct conversations with someone from the installation
____ Information about the site is "common knowledge"
____ Know someone who worked at the installation
____ Through one or more community organizations, business associations, or advisory groups
____ Social Medial (Facebook, Twitter, etc.)
____ Other (Please specify): _____

B-2 - How would you prefer to receive information from the installation? (Check up to 3 choices)

____ Mailings -- short (1-2 pages) very focused (issue-specific) sent frequently
____ Mailings-- longer, general information, sent periodically
____ Emails-- brief, very focused (issue-specific) sent frequently
____ Emails-- longer, general information, sent periodically
____ Meetings-- short, very focused, held frequently
____ Meetings-- longer, general information meetings, held periodically
____ Social media (Facebook, Twitter)
____ Direct communication with an installation representative
____ Installation webpage
____ Presentations at local clubs and organizations
____ Other (Please specify): _____

B-3 - How interested are you in obtaining information about the following topics? (Circle one choice for each question)

a.	Installation Restoration Program.	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**
b.	Environmental contamination.	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**
c.	How contamination might affect human health.	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**
d.	How contamination might affect the environment.	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**
e.	Installation cleanup decisions.	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**
f.	Site reuse or redevelopment.	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**
g.	Other (Please specify):_____	**Not Interested**	**Somewhat Interested**	**Interested**	**Very Interested**

B-4 - What ways do you prefer to participate in the installation's environmental restoration program? (Check all that apply)

____ Through opportunities to provide written comments on installation documents.

____ Through public meetings.

____ Through opportunities to meet and talk informally with installation personnel.

____ By attending community club/organization meetings that installation personnel have been invited to.

____ By calling a toll-free telephone number.

____ Through a community group.

____ Through opportunities to talk with independent experts.

____ Through a web site or social media.

____ Not interested in being involved.

____ Other (Please specify): _____

B-5 - Please tell us whether you have ever:

a.	Provided information to the installation about the site and its history.	**Yes**	**No**
b.	Expressed your concerns about the installation.	**Yes**	**No**
c.	Offered suggestions or advice about the installation.	**Yes**	**No**
d.	Given comments to the installation on materials available for public review.	**Yes**	**No**
e.	Requested information from the installation.	**Yes**	**No**
f.	Attended an installation-sponsored meeting or event.	**Yes**	**No**
g.	Visited the site's information repository or online Administrative Record.	**Yes**	**No**

B-6 - In a few words, what is your understanding of cleanup work being conducted at the installation?

_____

_____

B-7 - How concerned are you that the installation may be harmful to each of the following? (Circle one answer per question)

a.	My or my family's health.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**
b.	The environment.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**
c.	Property values.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**
d.	Jobs in the community.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**
e.	Business in the community.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**
f.	Community historical or cultural integrity.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**
g.	Site redevelopment or reuse.	**Not Applicable**	**Not Concerned**	**Somewhat Concerned**	**Concerned**	**Very Concerned**

Section C: Questions about Technical Assistance Resources Provided to the Community

C-1 - Do you know of any assistance the installation has provided to help you and other community members/groups better understand technical and scientific information regarding work being done at the installation?

Yes **No**

C-2 - If technical assistance has not been provided to your community, which of the following activities could help you and other community members/groups better understand technical and scientific information regarding the installation restoration program? (Check all that apply)

____ Community informational newsletters and/or factsheets.

____ Presentations by experts to explain technical information to the community.

____ Community informational workshops/trainings.

____ Installation-provided facilitator or mediator to help the community.

____ I don't feel that any technical assistance is needed.

____ Other (Please specify): _____

Section D: General Information (REQUIRED Section)

D-1 - Is there anything else you would like to tell us about the installation community involvement efforts or about cleanup activities at this installation?

_____

_____

_____