



Zoom Webinar March 21, 2024

Karl-Heinz Peil  
Agnes Tillmann-Steinbuß

Bund für  
Umwelt und  
Naturschutz  
Deutschland



More information in German:

<https://umwelt-militaer.org/?s=PFAS>

Booklet in English (2020):

[http://info.umwelt-militaer.org/pdf/2021/2021-01\\_PFAS\\_engl\\_Web.pdf](http://info.umwelt-militaer.org/pdf/2021/2021-01_PFAS_engl_Web.pdf)

### PFAS: A Time Bomb Underground

The military as the main responsible party for a global environmental disaster  
Karl-Heinz Peil



Published by:  
Campaign Stopp Air Base Ramstein



with support from  
the European LEFT



# Information from Authorities in Germany

## **German Authorities:**

Public requests: Various requests concerning PFAS from members of parliament (German Bundestag and Parliaments of Federal states)

Experience: Key statements in government responses include those referring to (ongoing) investigations, the harmlessness of pollutant concentrations according to previous findings and the reference to time horizons for a "final risk assessment".

Experience has shown that most of the information is rather vague.

## **Private requests:**

- Dependent from special laws in Federal states of Germany and readiness of authority to cooperate
- Data mostly not available only on paper

## **Information from US Authorities based on FOIA:**

Contact point for inquiries available - with quick response, but

- you have to know the exact name of the document, which must be available in digital form;
- extra fees if special research is required to identify the documents.



# Who caused the PFAS Damage and is responsible for it?

Example from previous  
Air Base Frankfurt Rhine-Main:

## **Request to the German government:**

For what reasons has the BImA [Authority responsible for SOFA – Status of Forces Agreement] so far not made any recourse claims against the US government as the clear PFAS polluter on the site of today's Frankfurt Rhine-Main Airport, although the contamination with PFAS and other chemicals became known shortly after the handover by the US military at the end of 2005?

## **The answer:**

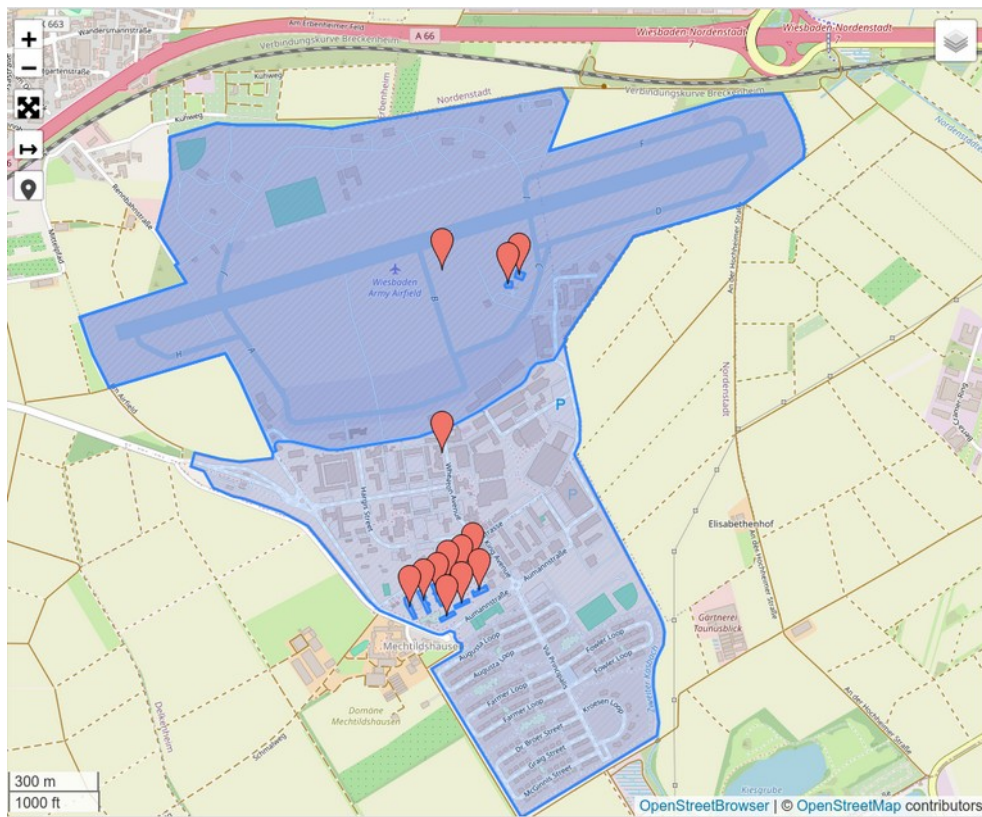
The areas of the former US used Rhine-Main Air Base in Frankfurt / Main are owned by Fraport AG [Operator of the civil Airport] and were leased at the time for military purposes by the US armed forces.

Some areas of the air base - including fire training areas - were used jointly by Fraport AG and the US armed forces, meaning that **it is not always possible to clearly allocate any soil contamination identified.**

The agreement that the federal government concluded with the US armed forces, Fraport AG and other parties to return the areas of the Rhine-Main Air Base to Fraport AG contained, among other things, provisions on bearing the costs of necessary remediation measures on the released areas.

**The armed forces have made the payments** owed by them under the agreement for the removal of contaminated sites in accordance with the contract.

# US Site Wiesbaden



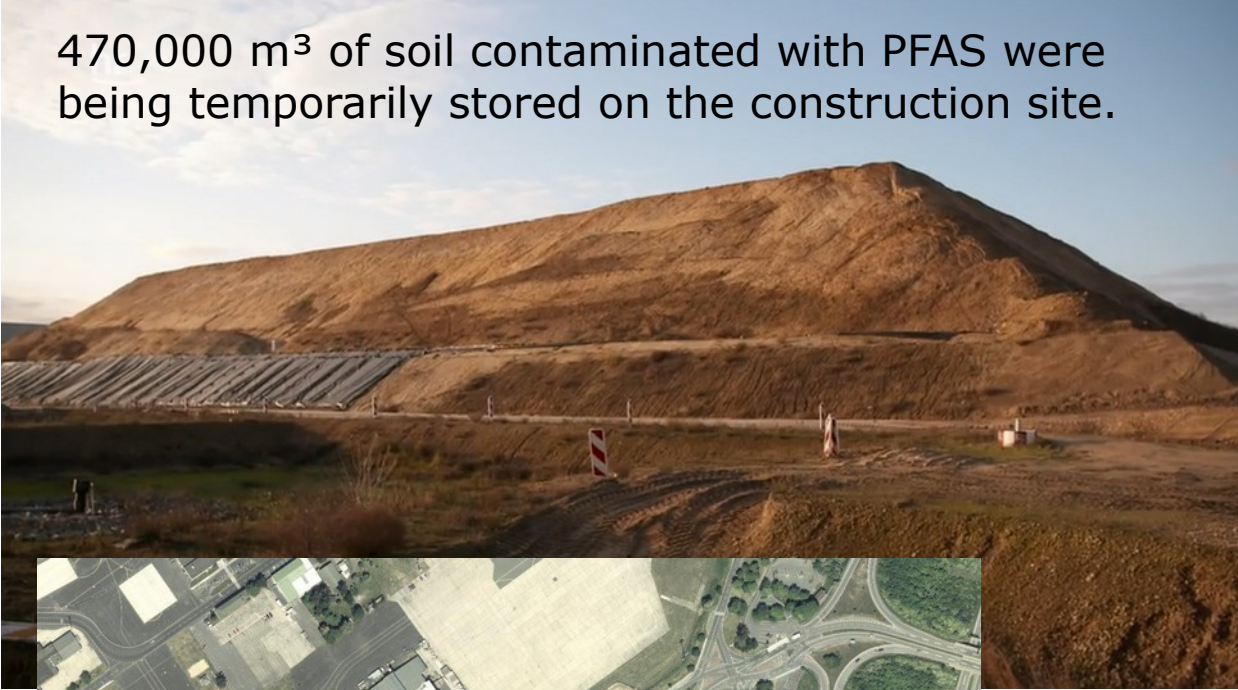
- PFAS were first detected in soil and groundwater in 2009
- They likely originate from extinguishing foam used at the air base in the 1970s – but former, neighbouring paint factory is also being prosecuted as a contributory cause
- a well on adjacent agricultural land had to be closed by order of the authorities – values in some cases hundreds of times higher than the so-called background contamination
- In two adjacent streams, too, values have been found to be up to fifty times higher in isolated cases for several years
- In February 2020, previously-known PFAS contamination at the US site in Wiesbaden was a major topic in regional media

Home to the US Army HQ in Europe  
Usage of the site: relevance of a heliport  
similar to Ansbach-Katterbach



# Conversion Area Airport Frankfurt | History

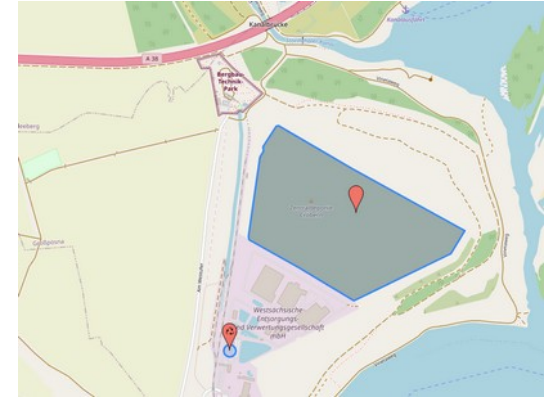
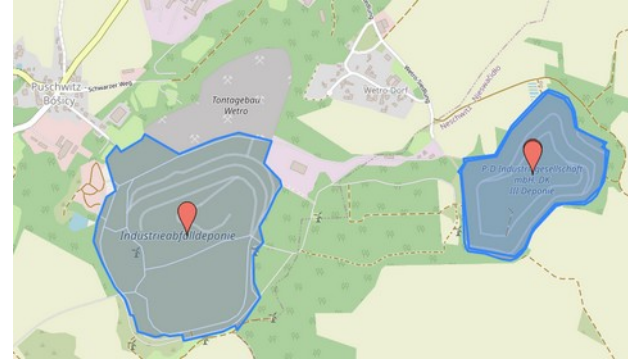
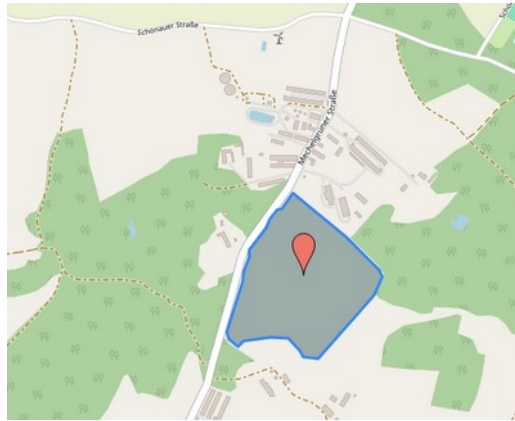
470,000 m<sup>3</sup> of soil contaminated with PFAS were being temporarily stored on the construction site.



Picture:  
Air Base  
year 2000

- US Air Base Rhein-Main until 2005
- since 2008: Planning process to expand Frankfurt Rhine-Main with Terminal 3 (today still under construction)
- 2014: first pump & treat work at former fire-fighting training site
- 2020: Authority approval for temporarily storage of contaminated soil on the construction site
- "final disposal" at various sites distributed over Germany is likely to prove to be a negative example of "waste tourism."

# Conversion Area Airport Frankfurt – „Waste tourism“



The "final disposal" at various sites distributed over Germany - is likely to prove to be a negative example of "waste tourism".

Sites can be seen in Openstreetbrowser. Example:  
<https://www.openstreetbrowser.org/#map=14/51.2408/12.4421&basemap=osm-mapnik&categories=waste>

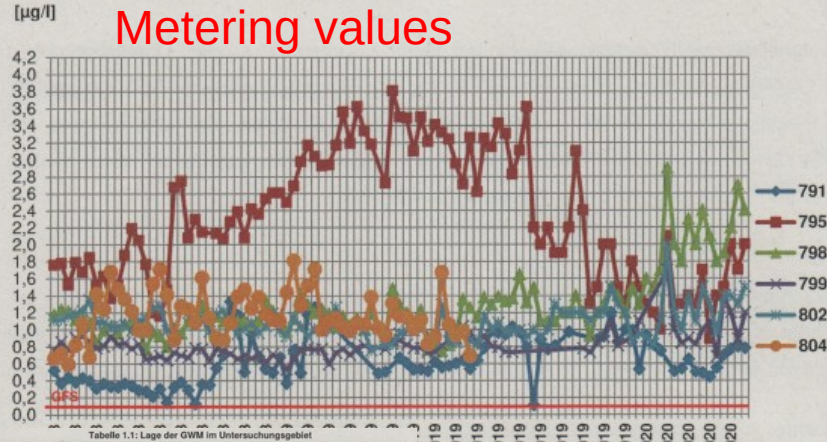


# Conversion Areas Airport Frankfurt - Monitoring

## Monitoring of ground water / Metering values

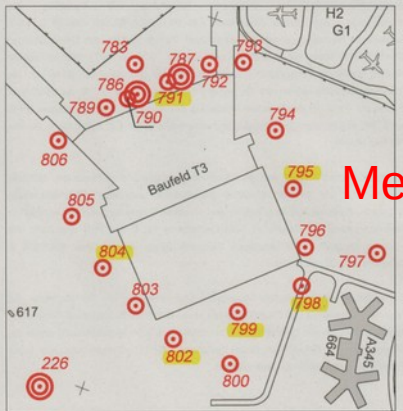
Auftraggeber:  
Projekt:  
AG Bearbeiter:  
Probeneingang:

CDM Smith Consult GmbH  
243395 - FRAPORT T3 Bodenmanagement  
Herr Marx  
08.01.2020



GWM	Rechtswert [m]	Hochwert [m]	POK [m NN]	Ausbauflie [m]
791	3469970.44	5543904.34	99.24*	-5.93*
795	3470167.57	5543830.86	105.63	-16.08
798	3470220.06	5543717.93	105.26	-15.74
799	3470154.12	5543659.24	104.63*	-15.96*
802	3470088.69	5543598.53	105.01*	-15.27
804	3469972.71	5543653.13	105.64	-15.86

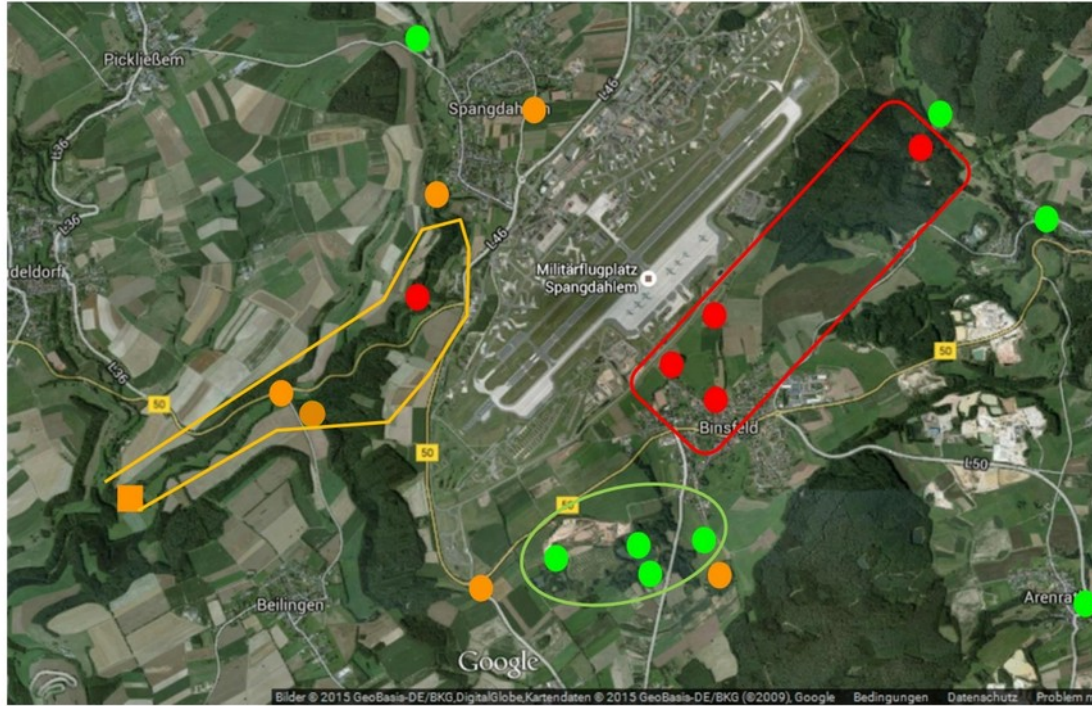
\*neu eingemessen



## Measuring points

Analytiknummer:				20010136.4	
Probenart:				Boden	
Probenbezeichnung:				T3_R14_Z2	
				12/19_04_PFC	
				20.12.2019	
Parameter	Einheit	Verfahren	BG		
<b>Feststoffuntersuchung</b>					
<b>PF1</b>					
Perfluorbutansulfonat (PFBS)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorhexansäure (PFHXA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorhexansulfonat (PFHXS)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorheptansäure (PFHPA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorheptansulfonat (PFHPS)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluoroctansäure (PFOA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluoroctansulfonsäure (PFOS)	µg/kg	DIN EN ISO 38407-F42	10	78	
Perfluorononansäure (PFNA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluordecansäure (PFDA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorbutansäure (PFBA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorpentansäure (PFPeA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluorheptansulfonsäure (PFHpS)	µg/kg	DIN EN ISO 38407-F42	10	<10	
1H,1H,2H,2H-Perfluoroctansulfonsäure (H4PFOS)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Perfluoroctansulfonamid (PFOSA)	µg/kg	DIN EN ISO 38407-F42	10	<10	
Summe (PFT)	µg/kg	DIN EN ISO 38407-F42		78	

# US Air Base Spangdahlem

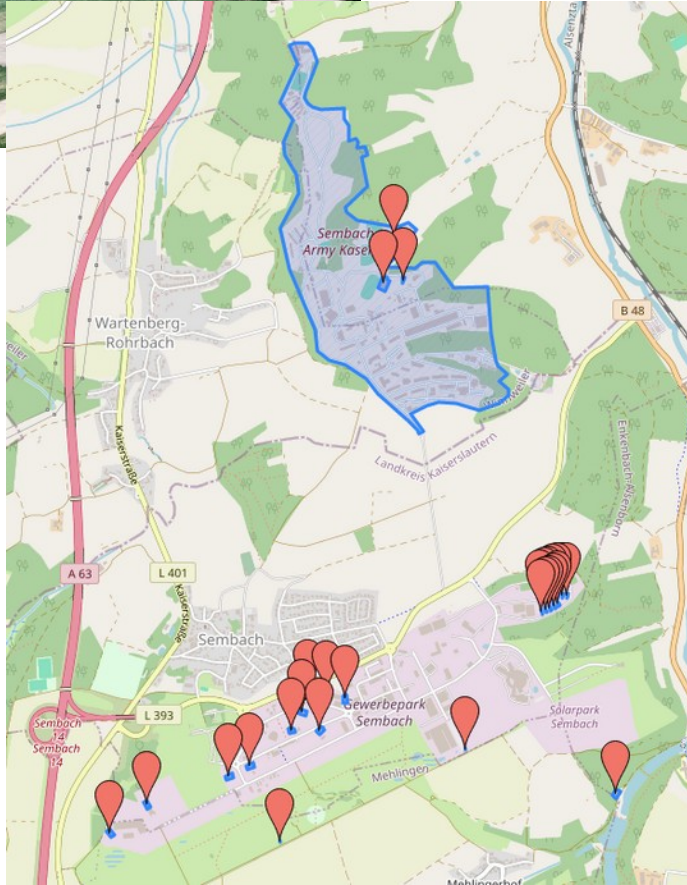


PFT-Werte: grün = gering; orange = mittel; rot = hoch (<http://sgdnord.rlp.de/>) <https://www.google.de/maps/@49.9718418,6.6843993,5490m/data=!3m1!1e3>  
Dr. Friederike Kremb-Wagner (16.10.2015)

- largest PFAS contamination in the surroundings of a US airfield in Germany
- PFOS fire foams used until 2010
- 2010: examination of soil by order of US military
- 2011: water management authorities start with monitoring PFAS
- 2015: closing of a drinking water well, authorities give a warning for fish for various bodies of water
- 2020: authorities demand a risk analysis and measures for remediation

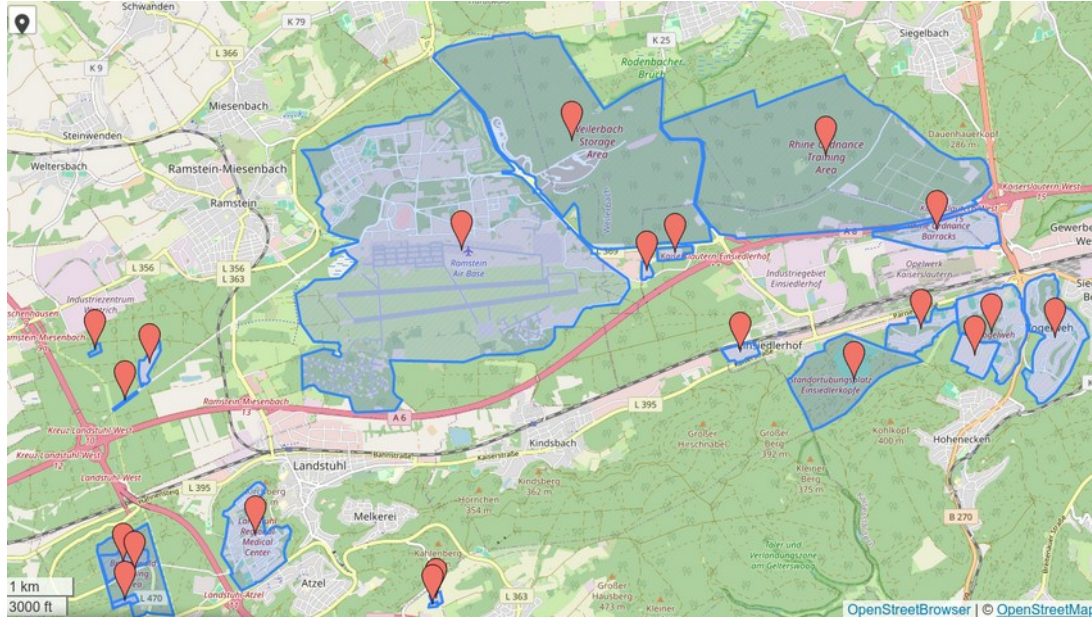


# Former Sembach Airfield



- former Airfield Sembach was closed 1995  
- conversion to a business park in progress
- initial ground investigations detected mineral oil contamination only
- contaminated soil was dredged, spread on the old runway and cleaned up by biological treatment
- PFAS contamination was detected later and supposedly successful remediation turned out to be a serious mistake
- controversial consequence: large-scale sealing of all designated commercial areas  
- so rainwater does not penetrate PFAS-contaminated soil
- several drinking water wells already had to close

# Air Base Ramstein

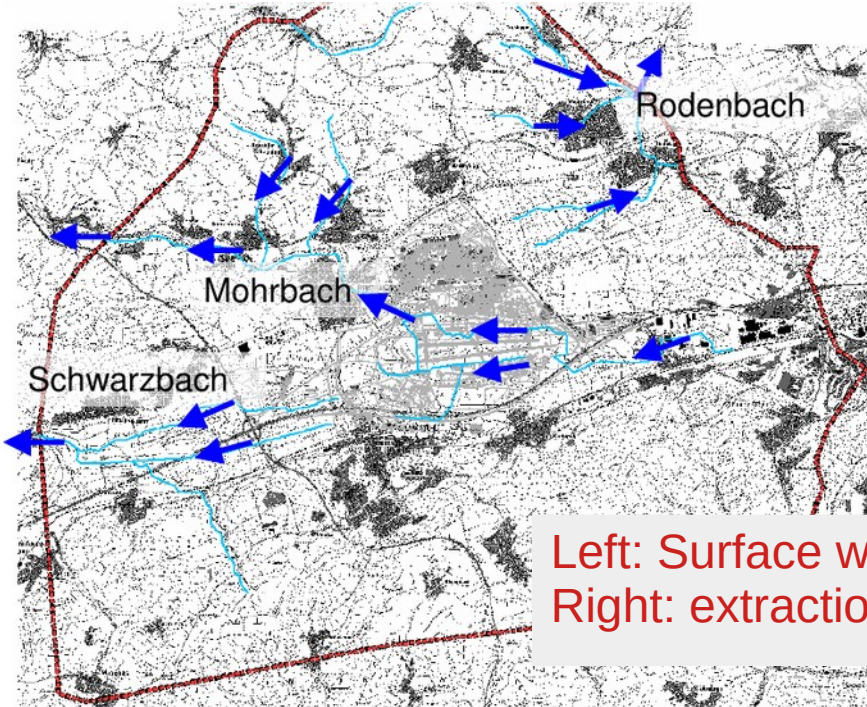


- long term examination of PFAS (Main contractor: arcadis) with groundwater flow modeling
- permanently operated pumping system is used to create a dynamic watershed
- existing total pollutant load, including mineral oils, is reduced by filter systems with activated carbon in the internal water circulation
- PFOA/PFOS remains as a permanent load because of the minimal separation in filter systems

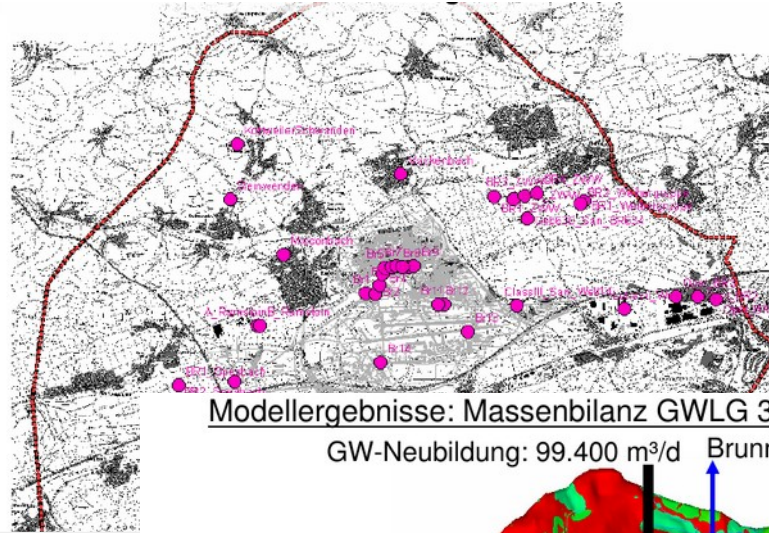
Annual „Drinking water report“ of the Air Base administration in 2016:  
*"PFOS/PFOA were also present in Aircraft Firefighting Foam used extensively by the AF".* PFAS values are well below the (US-)EPA guideline.



# Air Base Ramstein – Groundwater flow modeling



Left: Surface water flow  
Right: extraction wells



Modellergebnisse: Massenbilanz GWLG 3

GW-Neubildung: 99.400 m<sup>3</sup>/d    Brunnenentnahme: 18.400 m<sup>3</sup>/d

Mohrbach:  
31.500 m<sup>3</sup>/d

Rodenbach:  
23.500 m<sup>3</sup>/d

Schwarzbach:  
22.000 m<sup>3</sup>/d

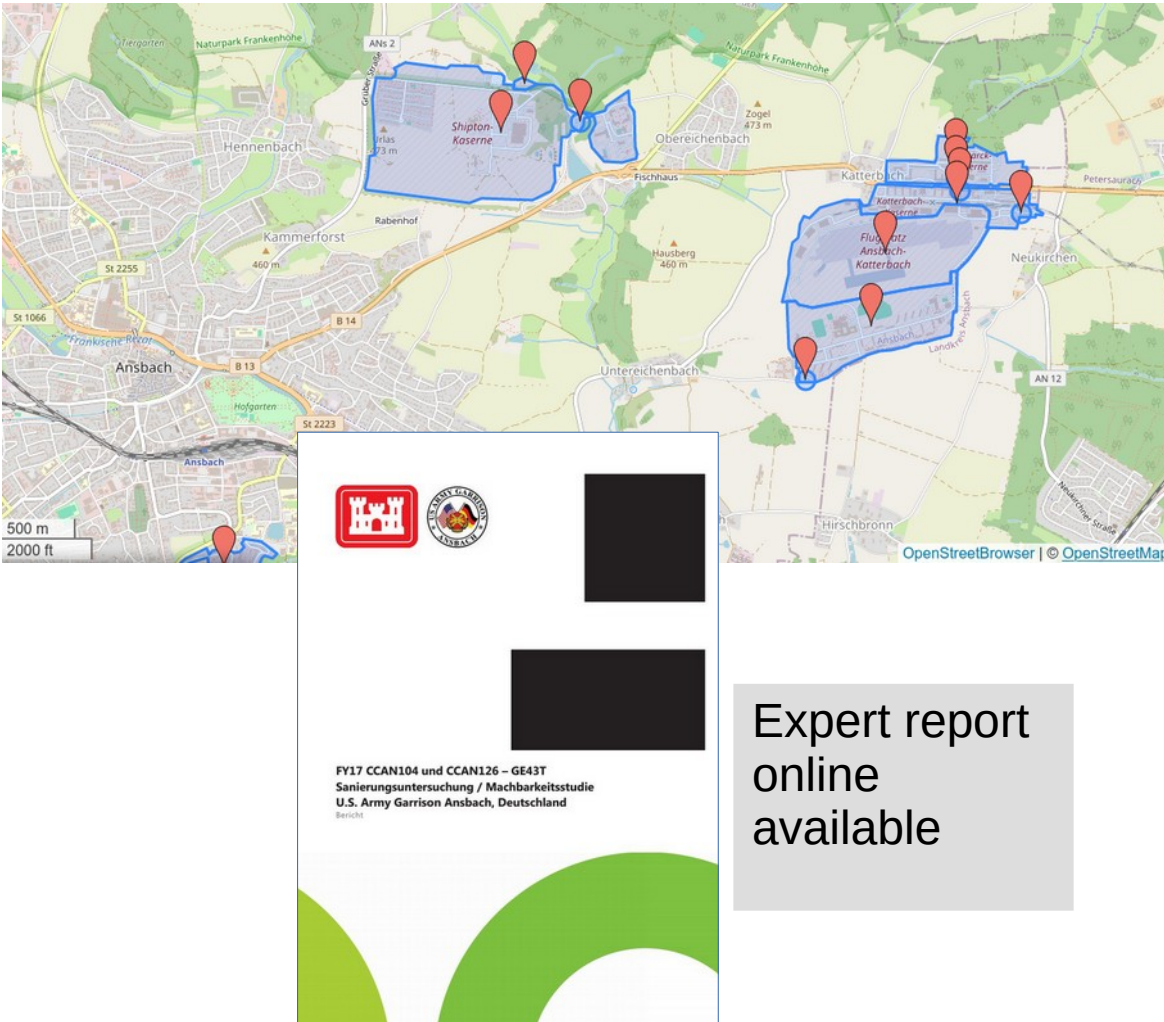
Abströmen durch  
GW-Leiter: 4.000 m<sup>3</sup>/d

Gewässer	77%
Brunnen	19%
Abstrom GW-Leiter	4%





# US Army Ansbach-Katterbach



- 2014: PFAS contamination detected within the US military site - eight private wells in the vicinity of the barracks are being investigated
- 2017-2019: Sampling using five existing and four newly installed groundwater monitoring wells.
- 2020: The citizens' initiative "Etz langt's", which has been protesting against the helicopter noise at this site for many years, filed a criminal complaint about the PFAS contamination – which was rejected by the authorities
- 2021: Dismissal of a homeowner's lawsuit due to ordered well closure