PFAS sampling in Curry and Roosevelt Counties

Interim Report, October 2021

Background

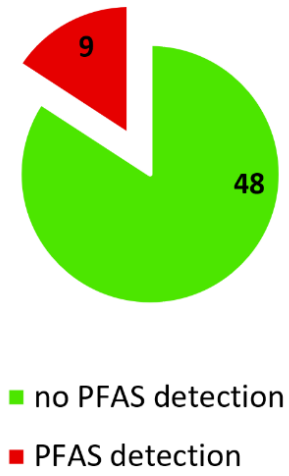
During the 2020 Legislative Session, the New Mexico Environment Department (NMED) was appropriated $100,000 "for a well testing program for signs of contaminated drinking and agricultural water resources in Curry and Roosevelt counties." With this funding, NMED developed and implemented a per- and polyfluoroalkyl substances (PFAS) sampling program in the designated counties. This sampling program was conducted by the NMED Drinking Water Bureau in partnership with the U.S. Geological Survey (USGS). Additionally, NMED entered into a Memorandum of Understanding with Clean Water Partnership-Cannon (CWPC) to develop a formal working partnership between CWPC and NMED to help implement the PFAS well sampling program in Curry and Roosevelt Counties.

Participant recruitment

In April 2021, NMED created an information flyer to recruit potential private well owners for free PFAS well sampling in Curry and Roosevelt Counties. This flyer was distributed by NMED Communications Staff to several media outlets, as well as through the New Mexico Department of Agriculture's networks. Several media outlets published the flyer on their sites, as did Curry County. This outreach resulted in several private well owners volunteering 47 different wells for this sampling program. In addition to the NMED recruitment efforts, the CWPC provided NMED with a signature list of 19 individuals or businesses that had expressed interest in this well sampling program. NMED contacted all prospective participants on the CWPC list, 10 of whom agreed to take part in the sampling program.

Sample collection and analysis

The sampling program in Curry and Roosevelt counties tested for 28 different PFAS compounds. PFAS sampling at private wells started on April 12, 2021. DWB's experienced PFAS sampler completed sampling of 34 wells on May 5, 2021. In addition, USGS collected PFAS samples from 23 wells, two of which were sampled twice – once by DWB and once by USGS. USGS also collected complete geochemical suite samples, including stable isotopes, at four sites. These additional samples will help NMED and USGS to better understand water recharge and origin in the local aquifer. The sampling activities for this project concluded on June 9, 2021. All samples were sent by NMED and USGS to laboratories using accredited analytical methods for the 28 PFAS compounds. After laboratory analysis, a committee of NMED PFAS data specialists reviewed all analytical results.



Sampling results

Out of 57 total results, nine private wells had detections of PFAS (Map 1 and Table 1). The maximum total PFAS concentration detected at any single well during this sampling effort was 7.4 parts per trillion (ppt) or nanograms per liter (ng/L).

EPA has established a Lifetime Health Advisory level of 70 ppt for PFOA and PFOS. Neither of those contaminants were detected in any of the samples collected during this study.

In addition to the evaluation with EPA's Lifetime Health Advisory Level, these PFAS samples returned concentrations that are well below the most stringent standards of states that have established state specific PFAS standards. Those state specific standards are shown in Table 2. The comparison of these results to other state standards are as follows:

- On average, the results for PFBS in the Curry-Roosevelt samples were 280 times lower than the most stringent standards that have been established by Michigan.
- On average, the results for PFBA were about 4,100 times lower than the most stringent health-based standard in Minnesota.
- On average, the results for PFHxA were about 350,000 times lower than the most stringent standards that have been established by Michigan.
- PFHpA was detected in only one sample at a level that is about 20 times lower the most stringent standard established by Massachusetts.

The other PFAS contaminant detected in the Curry-Roosevelt samples, PFPeA, does not have established drinking water health advisory levels nor state-specific drinking water standards in those states that have established PFAS standards.

Following the sampling and subsequent analysis by the certified laboratories, NMED notified well owners via email or hard copy mail about their results. If PFAS were detected, NMED provided the private well owner with a PFASS information sheet to help the well owner understand the quality of their water. The results for the complete geochemical suite are expected to be finalized by the certified lab by late October 2021.

*For more information about **this report**, please contact:*

Drinking Water Bureau
New Mexico Environment Department
505-660-3391, PFAS program
NMENV-DWB-PFAS@state.nm.us
https://www.env.nm.gov/pfas/

*For more information about **PFAS and health effects**, please contact:*

Epidemiology and Response Division
New Mexico Department of Health
doh-eheb@state.nm.us
https://nmtracking.org/environment/PFCS.html

Map 1. Samples with no PFAS detected (green dots) and samples with PFAS detected (red dots).

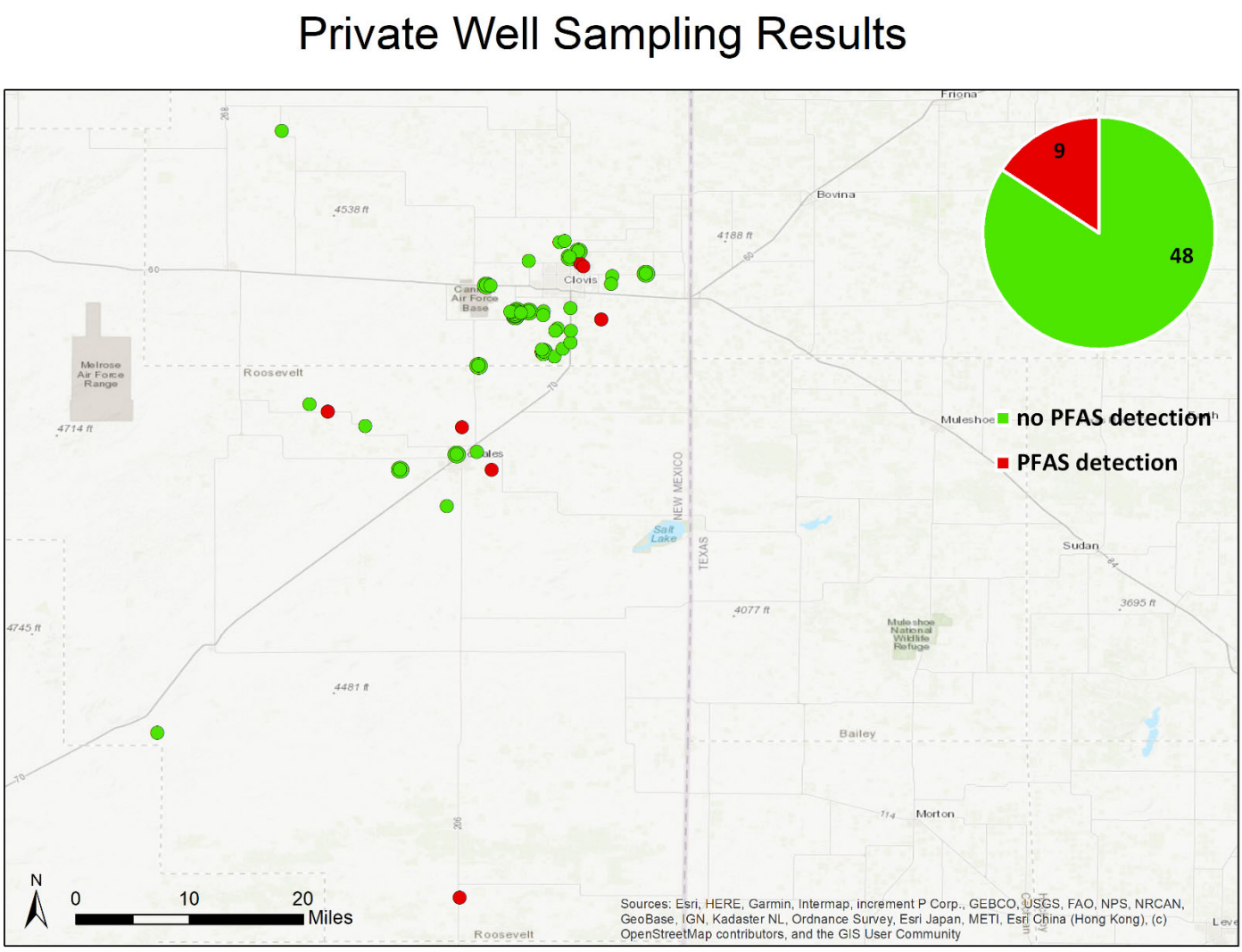


Table 1. Curry-Roosevelt samples with PFAS detections.

Private Well ID #	County	Sampling Date	Individual PFAS concentrations (ng/L)[ab]	Total PFAS concentration (ng/L)
Task 5021	Curry	2021-04-12	1.41E PFBS	1.41E
Task 5032	Curry	2021-04-12	2.15E PFPeA 1.42E PFHxA	3.53E
Task 5004 (house well)	Roosevelt	2021-04-26	1.13E PFPeA	1.13E
Task 5005 (yard well for 5004)	Roosevelt	2021-04-26	1.2E PFPeA	1.2E
Task 5016	Roosevelt	2021-04-26	2.57E PFPeA	2.57E
Task 5018	Roosevelt	2021-04-26	1.56E PFBA 3.14E PFPeA 1.72E PFBS 1.00E PFHxA	7.42E
Task 5018 Duplicate	Roosevelt	2021-04-26	1.76E PFBA 2.97E PFPeA 1.42E PFBS	6.15E
342556103110401	Curry	2021-05-13	1.5E PFPeA 0.92E PFHxA	2.42E
342139103092501 (re-sample for Task 5032)	Curry	2021-05-19	2.4 PFPeA 1.6E PFHxA	4.0E
333700103164701	Roosevelt	2021-06-09	1.1E PFHpA	1.1E

[a] E = estimate; these values fall between the Reporting Level (RL) and Method Detection Limit (MDL). This means that the minimum concentration of an analyte can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than 0, but that accurate quantitation of the concentration is not necessarily possible at this level. Equivalent to data flagged with "J" qualifiers in analytical laboratory data reports.

[b] See Appendix for individual PFAS compound explanation.

Table 2. PFAS drinking water standards in U.S. states.

State	Regulation Type	Standard(s) (ppt)	Notes
Alaska	AL	70	Applies to total or individual concentrations of PFOA and PFOS
California	NL	5 PFOA 7 PFOS	--
Connecticut	AL	70	Applies to total concentrations of PFOA, PFOS, PFNA, PFHxS, PFHpA
Illinois	HBGL	2 PFOA 14 PFOS 2,100 PFBS 140 PFHxS 560,000 PFHxA	--
Maine	Interim Standard	20	Applies to total or individual concentrations of PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA
Massachusetts	MCL	20	Applies to total or individual concentrations of PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA
Michigan	MCL	8 PFOA 16 PFOS 6 PFNA 51 PFHxS 420 PFBS 400,000 PFHxA 370 GenX	--
Minnesota	HRL (subchronic)	35 PFOA 7,000 PFBA 9,000 PFBS	--
Minnesota	HRL (chronic)	35 PFOA 300 PFOS 7,000 PFBA 7,000 PFBS	--
New Hampshire	MCL	12 PFOA 15 PFOS 18 PFHxS 11 PFNA	--
New Jersey	MCL	14 PFOA 13 PFOS 13 PFNA	--
New York	MCL	10 PFOA 10 PFOS	--

North Carolina	Health Goal	140 GenX	--
Ohio	AL	70 PFOA 70 PFOS 21 PFNA 140,000 PFBS 140 PFHxS 700 GenX	70 ppt applies to total or individual concentrations of PFOA and PFOS
Rhode Island	Interim Standard	20	Applies to total or individual concentrations of PFOA, PFOS, PFNA, PFHxS, PFHpA, PFDA
Vermont	MCL	20	Applies to total concentrations of PFOA, PFOS, PFNA, PFHxS, PFHpA
U.S. Environmental Protection Agency	LHA	70	Applies to total or individual concentrations of PFOA and PFOS

Abbreviations: AL = action level; HBGL = health-based guidance level; HRL = health risk limit; LHA = lifetime health advisory; MCL = maximum contaminant level; NL = notification level; RL = response level; SL = screening level.

NOTE: The types of PFAS drinking water regulations listed above require different actions in different states. For example, MCLs are enforceable limits for which public water systems must comply. Other standards such as action levels and health-based levels are meant to provide guidance in mitigating health risks.

APPENDIX: PFAS Analytes

Analyte	Analyte Abbreviation	CAS Number
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUnDA	2058-94-8
Perfluorododecanoic acid	PFDoDA	307-55-1
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluorotetradecanoic acid	PFTeDA	376-06-7
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluoropentanesulfonic acid	PFPeS	2706-91-4
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorononanesulfonic acid	PFNS	474511-07-4
Perfluorodecanesulfonic acid	PFDS	335-77-3
4:2 Fluorotelomer sulfonate	4:2FTS	757124-72-4
6:2 Fluorotelomer sulfonate	6:2FTS	27619-97-2
8:2 Fluorotelomer sulfonate	8:2FTS	39108-34-4
Perfluorooctane sulfonamide	PFOSA	754-91-6
N-Methyl perfluorooctanesulfonamidoacetic acid	MeFOSAA	2355-31-9
N-Ethyl perfluorooctanesulfonamidoacetic acid	EtFOSAA	2991-50-6
Hexafluoropropylene oxide dimer acid (GenX)	HFPO-DA	13252-13-6
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11CL-PF3OUdS	763051-92-9