CSWAB

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SENT BY ELECTRONIC MAIL

Dear Mr. Lynch:

Thank you for the opportunity to submit public comment on the Draft Final Preliminary Assessment/Site Investigation of Per and Polyfluoroalkyl Substances (PFAS) for Badger Army Ammunition Plant (Badger).

PFAS are a group of man-made chemicals that are highly persistent in the environment and in the human body – meaning they don't break down and can accumulate over time. Research has shown probable links between PFAS exposure and cancer, thyroid disease, high cholesterol, ulcerative colitis, and pregnancy-induced hypertension.

The pending decisions at Badger are significant both for our community and as precedents for the management and cleanup of PFAS at federal facilities throughout the State of Wisconsin. These sites Fort McCoy (Sparta), Air Reserve Station (Former 440th, Milwaukee), Volk Field (Camp Douglas), Wisconsin Air National Guard – 115th Fighter Wing (Madison) and more.

1. **The scope of the draft PFAS PA/SI for Badger is too narrow and should be expanded.**

   According to the draft PFAS Preliminary Assessment/Site Investigation (PA/SI), common compounds containing PFAS include "Teflon® coated cookware, firefighting foams, paints, hydraulic fluids, electronics, textiles, and paper coatings." (Section 1.1) However the PA/SI does not encompass these known historical activities and sources at Badger. Following are several of many examples:

   The Deterrent Burning Grounds had unlined pits that were used as a demolition debris landfill and for the open burning of deterrent, structural timbers, asphalt shingles, cardboard, papers, and office waste. As the Army is aware, PFAS are not destroyed by burning and would have been present in residues. With as many as 1,000 workers during active production years, the quantity of such wastes produced at Badger would have been significant.

   As part of Badger's Infrastructure Remedial Environmental Study of the East Rocket Production Area, inspectors found oil leaking out of the large hydraulic presses and into the sewers. Approximately 9,500 gallons of oil were subsequently removed from 51 buildings. Badger had many machines that contained "large volumes of oils or that are hydraulically powered and have large reservoirs and supply systems." (IRES, 1996)

   Soils in the Settling Ponds – the outfall for industrial and sanitary wastewater – were tested for PFAS but not the adjacent Spoils Disposal Areas. Sediments in the settling ponds were removed via dredging during the 1970s and placed in the Spoils Disposal Areas. Dredging was performed over a period of several years beginning around 1973 and continuing into the late 70s.

   During active production years, sludge produced by Badger's Wastewater Treatment Plant (WWTP) was stored in the Imhoff tank for a period of months. It was disposed of by removal to on-site sludge drying beds, which removed water from the sludge by gravity to an underdrain system that returns the liquid to the WWTP influent. Dried sludge was then applied to approved fields for "beneficial reuse" on Badger grounds. (Appendix G, Wastewater Treatment Plant for BAAP, undated)

2. Remedial goals and calculations of risk should fully comply with Wisconsin's environmental regulations, standards, guidance and health advisories.

Section 1.1 of the PA/SI states that the DoD guidance provides risk screening levels for only three PFAS compounds (PFOS, PFOA, and PFBS) in groundwater (tap water) or soil, calculated using the USEPA's regional screening level (RSL) calculator for residential and industrial/commercial worker receptor scenarios; however, other routes of exposure must be evaluated and encompass all detected contaminants.

Like all responsible parties in Wisconsin, the Army must comply with all state environmental regulations, standards and health advisories for ALL PFAS compounds detected at Badger and all routes of exposure. This responsibility and obligation includes compliance with Wisconsin Administrative Code NR720 which requires that soil remediation goals are protective of groundwater, terrestrial ecosystems, aquatic receptors and systems, and protective of human health through direct and indirect routes of exposure including ingestion, inhalation, dermal exposure and the human food chain.

Section 5 of PA/SI stipulates that the potential for human exposure to PFAS through non-drinking water pathways such as soil/airborne dust, sediment, and aquatic biota were not evaluated even though such pathways could be significant given that PFAS accumulate in people and the environment.

The Wisconsin Department of Health Services has issued its recommendations for groundwater quality standards for PFOA and PFOS. The health-based threshold of 20 parts per trillion is for the summed total concentration of both chemicals in groundwater – the source of drinking water for more than two-thirds of Wisconsin residents. Altogether, 36 PFAS compounds have been found in or are considered to have a reasonable probability of entering the groundwater resources of the state. State health officials are working on health-based standards for all 36 compounds in groundwater. (WDNR, 10 April 2019)

"The (WDNR's) second request is related to the statement that the PA/SI will be for PFOA and PFOS. To the extent practicable, we would like the PA/SI to evaluate all 36 PFAS compounds (emphasis added) that the DNR requested drinking water standards and has established laboratory data quality objectives for (see list at the end of the following document: https://dnr.wi.gov/news/input/documents/guidance/draft/EA-19-0001-D.pdf). I know that the 2018 sampling effort did not include all of these but it did include 18 compounds."

WDNR correspondence to Army Environmental Command, Subject: PFAS-Related Requests, 7 November 2019
Public Records posted on WDNR BRRTS online database

In Wisconsin, state-issued health advisory levels may be used and enforced as remediation goals. (WDNR Manual Code 4822.1) The Wisconsin DNR also has authority to require that a responsible party develop a site-specific clean-up standard for all contaminated environmental media in accordance with Wis. Admin. Code § NR 722.09 if no numeric clean-up standard otherwise exists. This includes discharges and environmental pollution impacting the air, lands and waters of the state.

Guidance documents issued by the Department of Defense concerning PFAS investigations and cleanup do not supersede nor exempt federal entities from compliance with state environmental law. The Federal Facilities Compliance Act – Public Law 102-386, signed October 6, 1992 (106 Stat. 1505) amended the Solid Waste Disposal Act and specifies that all federal agencies are subject to all substantive and procedural requirements of federal, state, and local solid and hazardous waste laws in the same manner as any private party.

3. Private and public drinking water wells located near and downgradient from the Former Fire-Training Area at Badger should be immediately and routinely tested by the Army.

According to the PA/SI, the Former Fire-Training Area at Badger is sidegradient of a potable water supply well located on the site property that serves the community of Bluffview. Therefore, the groundwater exposure pathway for off-site receptors consuming water from this well is incomplete. However, groundwater originating at the Fire-Training Area moves off-site through the south to southeastern boundary. Therefore, the groundwater exposure pathway for off-site receptors south to southeast of the site boundary is "potentially complete". (PA/SI, Attachment 1)

4. **Private and public drinking water wells located downgradient from landfills and waste pits at Badger should be immediately and routinely tested by the Army.**

   The PA/SI does not provide comprehensive field data showing that PFAS are not leaking from old landfills and waste pits at Badger and have not impacted groundwater. The lack of data extends to the newest demolition & construction landfill (License 3646) at Badger in the Town of Merrimac which received contaminated soils from the former fire training area at Badger.

   Off-site testing of private and public drinking water wells is necessary to establish that this route of exposure is incomplete. However, the PA/SI also affirms that "groundwater flows from these areas eventually migrate off-post. Therefore, the groundwater exposure pathway for off-post receptors consuming water from off-post is potentially complete." (PA/SI, Attachment 1)

5. **Groundwater both at and around Badger should be protected and restored as a source of drinking water now and in the future as consistent with Wisconsin groundwater and environmental protection law.**

   The PA/SI states: "Site workers at BAAP do not receive their drinking water from groundwater at BAAP. One office building uses groundwater for sanitary purposes only; however, it is located upgradient of the Former Fire-Training Area. Therefore, the groundwater exposure pathway (via drinking water ingestion and dermal contact) for on-site workers is incomplete. There are no residences at BAAP, and on-site recreational users are not likely to contact groundwater; therefore, the groundwater exposure pathways for on-site residents and recreational users are also incomplete."

   These assumptions not only ignore the Army's responsibility to protect and restore groundwater as a source of drinking water but also conflict with land transfer agreements, published long-term land use plans, ongoing and future ecological restoration activities, recreational activities, agricultural research, grazing and more.

   Moreover, Wisconsin's Comprehensive Groundwater Protection Act (Chapter 160) is based on the premise that all groundwater aquifers in Wisconsin must be protected equally to assure that it can be used for people to drink today and in the future.

6. **WDNR should confirm that the Army's analysis of the vapor intrusion pathway is consistent with its most recent policy, guidance and numerical thresholds.**

7. **The degree and extent of potential PFAS contamination at Badger should be completed and approved by the Wisconsin DNR before a final decision on the remedy for groundwater in and around the former munitions plant is made as natural attenuation is NOT effective for treating PFAS.**

   The Army has proposed Natural Attenuation as a remedy for groundwater contamination at and near Badger – maintaining that natural attenuation processes such as dispersion, adsorption, dilution and volatization are having a stabilizing effect on the volatile organic compounds in groundwater and that certain forms of the explosive DNT are affected by biological degradation. However, PFAS are persistent bioaccumulative compounds that do NOT degrade and are highly mobile in the environment, creating massive groundwater contaminant plumes that readily migrate miles from source areas. Natural attenuation is NOT an effective remedy for PFAS.

Thank you for your consideration of our comments.

Sincerely,

Laura Olah, Executive Director
Member, Badger Restoration Advisory Board