



October 17, 2024

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US Army Environmental Command  
2455 Reynolds Road  
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SENT BY ELECTRONIC MAIL

Subject: DNR Comments on Proposed Plan for Site-Wide Groundwater  
Former Badger Army Ammunition Plant, Baraboo, WI  
DNR BRRTS Activity #02-57-001002, 02-57-562629, and 02-57-526445

Dear Laura Powell:

The Wisconsin Department of Natural Resources (DNR) has received and reviewed the document entitled “Final Proposed Plan for Site-Wide Groundwater Former Badger Army Ammunition Plant Baraboo, Wisconsin” (Proposed Plan), dated July 2024, prepared for U.S. Army Environmental Command (Army) by SpecPro Professional Services, LLC (SpecPro).

**Background:**

The Proposed Plan has been revised using more recent groundwater data, as requested by DNR. All figures have been updated using groundwater data from 2023 and an updated risk assessment was conducted using groundwater data from 2019 to 2023. Tables regarding Contaminants of Potential Concern (COPCs) and Contaminants of Concern (COCs) were revised based on the updated risk assessment.

The Army’s preferred remedial alternative for the Central Plume, Deterrent Burning Ground (DBG) Plume, and Propellant Burning Ground (PBG) Plume is anaerobic bioremediation. This alternative includes in-situ bioremediation utilizing emulsified vegetable oil pumped into vertical injection wells, monitored natural attenuation (MNA), groundwater sampling of monitoring and residential wells, groundwater land use controls, and an alternate water supply provision. This alternative will target remediating impacted groundwater by dinitrotoluene (DNT) above the ch. NR 140, Wis. Adm. Code Enforcement Standard (NR 140 ES). The Army expects MNA to remediate groundwater impacted by volatile organic compounds (VOCs) via natural processes.

No remedial alternatives were evaluated for the Nitrocellulose Production Area (NC) Plume due to a lack of identified risk. The Proposed Plan states the Army will continue to monitor groundwater impacts associated with the NC Plume until it is deemed unnecessary by DNR.

DNR provides the following comments on the Proposed Plan.

**DNR Comments:**

The Proposed Plan uses a cancer risk threshold of  $1 \times 10^{-4}$  within the former Badger Army Ammunition Plant (BAAP) property line (on-site) and a cancer risk threshold of  $1 \times 10^{-6}$  outside the BAAP property line (off-site) as criteria for potential action or additional evaluation. DNR utilizes a  $1 \times 10^{-6}$  cancer risk threshold for establishing risk-based levels for groundwater and continues to request that COCs for all groundwater plumes be revised using

a  $1 \times 10^{-6}$  cancer risk threshold on-site and off-site. Any additional COCs identified should then be reviewed for potential action or additional evaluation. DNR has previously made this request on June 2, 2023 and October 19 2023 in response to earlier versions of the Proposed Plan. Based on DNR's review of the updated risk assessment using a  $1 \times 10^{-6}$  cancer risk threshold on-site and off-site, the following revisions should be made to the Proposed Plan:

- PBG Plume: The following compounds should be added as COCs in Table 3.2: 1,2-dichloroethane, bromodichloromethane, and naphthalene. Additionally, benzene should be marked as a cancer risk in Table 3.2.
- DBG Plume: The following compound should be added as a COC in Table 4.2: 2,6-DNT.
- Central Plume: The following compound should be added as a COC in Table 5.2: 2,6-DNT.
- NC Plume: Section 6.4 should be revised to state the risk assessment has determined contaminated groundwater in the NC Plume poses an unacceptable risk to groundwater usage by humans, and the following compounds should be marked as a cancer risk in Table 6.2: 2,6-DNT and total DNT. Additionally, remedial alternatives should be evaluated for the NC plume as groundwater concentrations of DNT exceed the NR 140 ES.

DNR appreciates your efforts to investigate and remediate this site. If you have any questions, please contact me at (608) 206-5809 or [luke.lampo@wisconsin.gov](mailto:luke.lampo@wisconsin.gov).

Sincerely,



Luke Lampo  
Hydrogeologist  
Remediation and Redevelopment Program

cc: Quang Nguyen, Army  
Joel Janssen, SpecPro  
Issac Ross, DNR