

GRETCHEN WHITMER GOVERNOR STATE OF MICHIGAN

DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY



GAYLORD DISTRICT OFFICE

LIESL EICHLER CLARK DIRECTOR

December 21, 2022

VIA EMAIL RETURN RECEIPT REQUESTED

Bonnie Packer Acting PFAS Program Manager Cleanup and Restoration Branch Army National Guard

Dear Bonnie Packer:

SUBJECT: Compliance Communication Regarding the Review of MIARNG/ARNG Draft Final per- and Polyfluoroalkyl Substances (PFAS) Report for the Site Inspection (SI) at the Camp Grayling Joint Maneuver Training Center (JMTC) North and South Post/Howes Lake, Crawford County, Michigan.

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) has reviewed the Draft Final PFAS Report for the SI at Camp Grayling JMTC North and South Post/Howes Lake for which the Army National Guard (ARNG) is liable. EGLE considers the information submitted in the report to be insufficient to make a determination that further evaluation is not warranted under The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at Areas of Interest (AOIs) within North and South Post/Howes Lake. Additionally, there are areas off post that warrant SI level investigation due to new information received.

The 2018 Preliminary Assessment (PA) was completed at a time when much less was understood by ARNG, contractors, EGLE, and interviewees about Camp Grayling site specifics and PFAS contamination. The PA has been shown to be inadequate at Cantonment on Lake Margrethe, MATES, and Grayling Army Airfield. Additional release areas were found at all three locations that were not identified in the PA. A supplemental PA with additional interviews and a review of off post locations where Military Specification (Mil-Spec) aqueous film forming foam (AFFF) has likely been released in unknown quantities is necessary. Additional sources of PFAS outside of Mil-Spec AFFF also need to be included as part of the Supplemental PA.

The PA and SI for the North and South Post/Howes Lake has been rudimentary and contains large data gaps identified in our comments. These are similar to the comments that we have made at other Camp Grayling AOIs. ARNG is working with contractors that employ some of the world's leading PFAS experts and the quality of work presented should be reflective of this. If a review from EGLE's Gaylord District staff can identify numerous data gaps, it can be presumed that ARNG's contractor could also identify numerous data gaps. Staff has spent an inordinate amount of time reviewing, researching, and responding to inadequacies of work performed/proposed, most of which should have been included in the original submittals.

It is becoming increasingly clear that a culture of Mil-Spec AFFF use was developed in the greater Camp Grayling Area. EGLE's AFFF pick-up program and EGLE interviews with fire-fighting contacts willing to speak regarding AFFF use have identified that Mil-Spec AFFF was shared with local fire departments and the Michigan Department of Natural Resources to help fight wildfires emanating from Camp Grayling ranges. Many contacts are unwilling to speak or be named for fear of reprimand. The Supplemental PA and SI needs to expand investigation to off post locations where Mil-Spec AFFF may have been transported and released and where Mil-Spec AFFF-containing vehicles are located periodically (i.e., maintenance locations, firefighting source waters, and fire-fighting staging positions). This becomes increasingly important information as regulatory values for PFAS continue to trend downward at federal and state levels.

This letter should not be considered a complete listing of deficiencies in the Draft Final PFAS Report for the SI at Camp Grayling JMTC North and South Post/Howes Lake. It is intended as a cover letter to summarize trends in the comments for our Draft Final PFAS Report for the SI at Camp Grayling JMTC North and South Post/Howes Lake review and reviews for the greater Camp Grayling area.

If the Army National Guard wishes to meet or has questions regarding this letter, please contact the Project Manager, Christiaan Bon, at 989-370-9624 or via email at BonC@michigan.gov; or you may contact me at the telephone number listed below.

Sincerely,

2/1272

Randall L. Rothe, District Supervisor Remediation and Redevelopment Division Gaylord District Office 989-217-0083 <u>RotheR@michigan.gov</u>

Enclosure

cc: Mike Price, DMVA Jonathan Edgerly, DMVA Abigail Hendershott, MPART Mike Jury, MPART Mary Miller, EGLE Christiaan Bon, EGLE Lisa Kruse, EGLE

Responses to Comments for the Draft Final Site Inspection Report, Camp Grayling JMTC, North and South Posts/Howes Lake, MI							
Response Code: A = Agree with comment D = Disagree with comment C = Comment requires clarification Operation Comment Comment Response Description							
Commenter	Page(s)	Section	Line(s)	TECHNICAL COMMENTS	Code	Response	
EGLE	pdf p. p. 17	2.2.2	453-459	Were the MATES drinking water wells sampled? If so, when and what were their respective analytical results? All relevant data needs to be included in an SI level presence/absence investigation.			
EGLE	pdf p. 17	2.2.2	-	Are there any other drinking water wells present within, near or service the AOI's? If there are, please describe the well location, depth, etc. and their respective PFAS analytical results. Other Well Head Protection Areas near AOIs also needs to be included.			
EGLE	pdf p. 1935	2.3	-	Prescribed burns as a mean of fire suppression and control, is a common practice at DoD ranges. Was AFFF, wetter water or wet water ever used to manage prescribed burns? PA interviews and EGLE interviews with local frelighters indicate that they were. Please expand this discussion and conduct additional interviews as necessary.			
EGLE	pdf p. p. 18-19 pdf p. p. 19	2.2.5	- 539-542	A paragraph should be added here to discuss any proposed expansion of CG JMTC if those areas are near the AOI's within this SI. Please update the listing based on the USFWS 2022 species designations. For example, the northern long-ear bat is endangered and the monarch			
EGLE	pdf p. p. 10	Figure 2-1	-	butterfly is a candidate species wherever it is found. Add MATES/Range 30 and Demolition Range to this figure since other PFAS investigations that are current operating areas at Camp Grayling are decicted.			
EGLE	pdf p. p. p. 22	Figure 2-2	-	uspruce. Mark locations of AOIs on topographic map. Mark locations of AOIs on man. Place mans on 11X17 lavout to better see the elements denicted. Well Head Protection areas designated by FGI F.			
EGLE	pdf p. p. p. 23	Figure 2-3	-	Drinking Water and Environmental Health, Source Water Protection need to be added to these figures if the on-post WHPA wells are highlighted. For example, there is a WHPA near Howes Lake and Lewiston Grade Road.			
EGLE	pdf p. p. p. 24	Figure 2-4	-	Mark locations of AQIs or map, Place maps on 11X17 layout to better see the elements depicted. Well Head Protection areas designated by EGLE. Dinking Water and Environmental Headles. Source Water Protection needs to be added to these figures if the on post WHPA wells are highlighted. For example there is a WHPA near Howes Lake and Lewiston Grade Road.			
				The AOIs are very spread out throughout both on the north and south post and it's difficult to orient. This is also the first zoomed in figures of the AOIs. Call out location boxes are needed on these figures. Another item would to call out major roads since their is a lack detail or are not high enough resolution to read road names. Aerial imagery is preferred.			
EGLE	pdf p. 25-26	Fig 2-5, 2-6	-	Figure 2-5: No groundwater elevation contours within range. This is a large data gap. EGLE does not agree with inferred contours near East Branch Au Sable and no contours are depicted for the northern portion of the range. USGS watershed figure should be overlain with range contours for this figure and others to present another ince of evidence.			
				Figure 2-6: Contours at northeast side of map present possible preferential pathway not discussed or evaluated. This area can significantly effect placement of downgradient sampling locations. Data gap is not discussed.			
EGLE	pdf p. p. p. 28 pdf p. p. p. 29		-	Mark locations of AOIs on map. Mark locations of AOIs on map.			
EGLE	-	3 Summary of Areas of interest	-	This section should include all available data for North and South Post. This includes dimining water that was sampled by DMVA at locations at North/South Post. It should also include surface water and monitoring well sampling that has been conducted by DMVA. Additionally, if groundwater flow directions are known from historic gauging of wells, maps should be shown to establish these flow directions.			
EGLE	pdf p. 31	3.1.1	596-597,602- 6060	Prescribed burns as a mean of fire suppression and control, is a common practice at DoD ranges. Was AFFF, wetter water or wet water ever used to manage prescribed burns? Please describe in more detail including the location of the two groundwater samples and four surface water samples taken in 2018.			
EGLE	pdf p. 32 pdf p. 39	3.2.4 4.2	652-654	What type of training was/is conducted at Range 15 in the context of using hazardous substances? Include other information/sampling data that was used that was collected outside of the PA and this SI.			
EGLE	pdf p. 44-45	5.4	-	Why were no surface water samples taken at Howes Lake? AOI 19 abuts up to Howes Lake and with little to no detail about training, wet water operations and there is a probability that AFFF may have been sprayed into howes Lake. Section 7.2.8 states that Pescuase there is uncertainity regrating the location of training, surface and sediment at Howes Lake may be affected?. A similar statement is made in Section 3.3.1, that there is uncertainity regrating the location of training at Howes Lake. No surface and esciment samples were taken a Howes Lake and is large data gap concerning GIS, ecclogical, and incidental exposure (through water recreation).			
EGLE	pdf p. 52	Figure 5-2		Surface water flow direction shown where there is no surface water flow. Nearly all precipitation infittates the ground at Camp Grayling. AFFF would infittrate soil at the source, then travel downgradient in groundwater. This is why sampling surface soil downgradient of sources doesn't make any sense. Please discuss the lack of usability of much of the soil data taken downgradient of potential release areas.			
EGLE	pdf p. 55	6.1 Screening Levels	976-998	The soli screening levels are not representative of Camp. Grayling solis. Please use GAAF as an example of leaching potential of two concentration source areas. We have found PFOS oil occoentrations tess han 10 gpb PFOS is surface asplicit leach to groundwater enceding groundwater screening levels. This shows that the current SL approach used for solis is not aligned with site-specifics. EPA Regional Screening Levels, and Michigan MCLs. Mod source areas surface soils at GAAF were between 1 pb and 10 pbb (some less than 1 ppb; Source: Rapid Site Characterization). EGLE Toxicology Unit can provide site-specific soil criteria upon request. Additionally, soil composition data was collected and it was not used in conjunction in the evaluation. In 6.1, it's unclear how the SLs should be utilized as it states it's only for direct contact and not to be used for anything deeper than 15 below ground level. What value is used for soil for protection of Drinking Water? A total of 4 samples are above EPA's interim PAL AO119-02-GW, AO1190/2GW-0, AO119-02-GW			
EGLE	pdf p. 56,98	6.3, 7.1.1	1015-1020, 1357-1358	Soil samples need to be collected to address the soil exposure pathway especially since the location of where wet water or other operations that may have used hazardous substances that contain PFAS are unknown and this data gap needs to be addressed. Ranges can be cleared by EOD from Wright Patters on AF force Base in order for sampling to occur, even surface and substrates soil samples with a hand auger can provide insight on the presence of absence of PFAS contamination. Having no soil data within an AOI is not appropriate of an SI.			
EGLE	Section 6 Site Inspection Results	AOI 7, AOI 9, AOI 12, AOI 13	throughout	AOI exceeded EGLE Generic soil GSI criteria of 0.24 ppb PFOS (PFOA is 10,000 ppb). It was discussed that EGLE criteria would be used as a screening level until a decision on EGLE criteria in ARAR decision. Soil needs to be delineated to EGLE's criteria due to the potential for groundwater discharge to suffice water bodies. PFAS were found at all of these locations with minimal exploration. Further investigation is warranted at all of these locations with no way of knowing if investigation occurred proximal to source areas. For ranges with no samples, it is easy to determine that samples were not taken proximal to source areas.			
EGLE	pdf p. p. p. 57	6.4.1 AOI 7	1048	These are soil levels are indicative of a source. Please do not cite soil screening levels - lesser soil concentrations have been found at GAAF source areas with significant groundwater impact seen extending greater than a mile. Most source area surface soils at GAAF were between 1 pbt and 10 ppt (some less than tpp)c, source. Tegici Site Characterization). Please dotemine a screening level based on soils characteristic of the site or site why the screening level is representative of the site. It is very likely hannes, small idential extended of the temporary wells were not screened in impacted groundwater due to reasons seen at other Camp Grayling sites: dring plumes, etc. The screened intervals seem to intersect only the very top of the aquifer. This is not sufficient to determine that no further assessment is needed. Further investigation is warranted. Delineation is needed since 3 soil borings aren't sufficient to characterize an area. PFOAPFOS are present and ailes dring humes, etc. The screened intervals seem to intersect only the very top of the aquifer. This is not sufficient to determine that no further assessment is needed. Further investigation is warranted. Delineation is needed since 3 soil borings aren't sufficient to characterize an area. PFOAPFOS are present and aileg to be present at higher concentrations given the distance between these borings. Borings aren't sufficient to determine that no further assessment, staged and the advance dust suppression, staging, and parking would have occurred. They are located at the downgradient edges of the AOI, so it is remarkable that the levels found in soil area seen without a targeted boring at area. Additionally, if no PFAS is found in suffice soils and is found in depen soils, it is possible that the source is found exist and active are doive the water table. The ratio of PFOAFFOS is afferent MATES on CAAF. More datalis should be given on the water' signature. The only other place we have seen higher PFOA is afferent MATES on CAAF. Mo			
EGLE	ndf n 70.70	Table 6-5		Interviews, or conduct a more thorough look into the product used. State screened intervals. Are screened intervals sufficient to intercept PFAS plumes emanating from the range? Diving plumes have been determined and on the context flow and examined and interval flow and the context of the design rest and the design rest.			
-	pdf p. 72-78	Table 6-5 Figures 6-1	-	documented at GAAF with plumes following downward and upward flow contours. Please discuss in the document. Figure unclear. The figure should be split into two with close-ups of defined AOIs. Call out figures would be much more useful for analysis than the			
EGLE	pdf p. 81 - 96	through 6-16		circles. Two drinking water wells are located directly north of the active bombing range of Range 40 within the support facilities. Please include them in the			
EGLE	pdf p. 100 pdf p. 100	7.2.1	1148-1453 1473-1478	drinking water evaluation and include results if DMVA/ARNG has collected samples. There are two type 1 provisional wellhead protection areas and one type 1 traditional well head protection areas that are bound by AOI 9 and intersect Lewistion Grade Road. A discussion of the WHPA DW pathway needs to be included.			
EGLE	pdf p. 101	7.2.4	1483-1486	Intersect Lewision Grade Road, A discussion or the VHHA DW pathway needs to be included. Were the two drinking water wells mentioned sampled for PFAS?			
EGLE	pdf p. 101	7.2.5	1494-197	The DW pathway is relevant if the drinking water well is still in in place even though it is proposed to be properly abandoned.			

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EGLE	pdf p. 101	7.2.6	1515	A Southern FOB and training site are mentioned. What operations were conducted at the South FOB and training site? Are the similar to Northern FOB operations including dust suppression with wet water? Have the 3 drinking water wells mentioned been sampled for PFAS?	
EGLE	pdf p. 102	7.2.8	1527-1532	Discussion about the type 1 provisional wellhead protection area directly east of Howes Lake and an evaluation of the drinking water pathway is needed.	
EGLE	pdf p. 2024-	Appendix E	AOI09-01,	Missing a vadose zone sample at 2-3 feet. This is a spot check. Please check all and discuss as necessary in report.	
	2025		AO109-02 AO109-02		
EGLE	pdf p.2025 pdf p. 2030	Appendix E Appendix E	AOI09-02 AOI11-01	No depth to water at time of drilling. This is a spot check. Please check all and discuss as necessary in report. No surface or middle soil sample. Is this because it was moist at 1' below ground level? Also no depth to water at time of drilling. This is a spot	
EGLE	pdf p. 2030 pdf p. 2034	Appendix E Appendix E		check. Please check all and discuss as necessary in report. No depth to water at time of drilling. This is a spot check. Please check all and discuss as necessary in report.	
EGLE	pdf p. 2034	Appendix E	A0112-01	No depin of water at and using interest appointed. It tests that and using a metal set of using a process of the process of th	
EGLE	pdf p. 1935	Log of Daily Notice of Field	-	Soil samples arrived at lab above required temperature. Soil samples were analyzed and are not discussed in Section 4.5. Please conduct a more thorough assessment of data quality/usability.	
-		Activity		Monitoring well information (boring logs, etc.) from the existing monitoring well network that borders AOI 6 has not been provided (13 wells).	
EGLE	NA	AOI 6 - Range 40 Complex	NA	Another data gap is the operations with the support faculties of the Range 40 complex. It is known that it is a maintenancirrange target preparation facility and there is a potential for harzardous substances that may contain PFAS were used. GM flex directions may change and be influenced by Guthrie Lake to the west and North Branch AU Sable River to the North which is stated in section 7.1.1. With such a small cluster of wells it is hard to determine the KW flow within the entire AOI to evaluation GSI and DW pathways. GUthrie Lake may need a pore/sediment and surface water sampling. For AOI this size groundwater and soil samples are needed within the AOI for an adequate SI.	
EGLE	throughout	AOI 6 - Range 40 Complex	throughout	DMVA completed surface water sampling in areas surrounding North Post as part of periodic sampling around Range 40. Include data and lab sheets in this 15. A groundwater flow diagram of historic gauging of all wells present Range 40 should be included to show possible migration directions. Results of the DMVA study showed Marsh Lake northeast of Nange 40. There is a submitted to the Nange 40. There is a submitted to the Nange 40. There is a submitted to the southeast for the entire property from a cluster of wells southeast at of the ange. All DFAS documbater flow is a different direction from Range 40. There is a supers close the Nange 40. There is a submitted to the Nange flow to the southeast for the entire property from a cluster of wells southeast of the nange. All DFAS documbater flow is the Nath Branch Au Sabe Raver, East Branch Au Sable Raver, East Branch Au Au Sable Raver, East Branch Au Narker Rave autor and a short internal memo were shared. Discussion of sampling methodology and lab methods are needed. ARNG needs to repeat this study to confirm results and determine change over them. Discharger of total PAS into todes of water from AFFE contamination have been, at minimum, an order of magnitude higher than the surface water at Lake Margerethe during EGLE study. This suggests higher groundwater PFAS levels could be present than those found in bodies of water. Additionally, massive fire scars are present in 1999 aerials (see Figure 5 on next tab) at the center of Range 40. Branege 40 Branes Lake to Briggis Road and on to a fire brane the south case thank down table the Additionally. PFAS can be present than those fou	
EGLE	throughout	AOI 7 - Former Northern FOB	throughout	In aerial imagery, there is no indication of a large operation at former North FOB at the location presented except for a two-track read about 1/3- mile in length with two ofthinods that end 100 feet into woods. EGLE RRD visited the site in Dee 2022 and found the two-track difficult to navigate with a 4wt. It seems number that we water was used on sandy valia heary eIFFAS is found. It seems nuch more likely that the adjoining Watedly Bridge Road would have had dust suppression due to its current dustiness in summer, homes present, vicinity to CAB 612, and the ability to be used by more types of transport whiches. PROAFPOS result is not mark higher near Watedly Bridge Road. EGLE FRO has an aerial from 1081 that shows no indication of a base or deployment area, only a two-track with an erast hall is largely vegatated. In the 1081 aerial, the current North FOB is alreadly present, contains rooks how traiters, and valid situations. AFFF was in use at Camp GrayIng during this time. By 2000 the area is largely improved with buildings. It is possible there was a long transition period between the two FOBs where both were in use with similar practices. It is difficult to determine where the samples were actually. Samples do not appear to target two track where wet water would have been used for dust suppression. Aerial imagery needed for this purpose for all figures. Lewiston Grade Road extends towards Range 40 and has areas for bivources and FARPs, such as near Duck Lake. Will these be assess due to	
EGLE	throughout	AOI 9 - Lewiston Grade Road	throughout	possibility of dust suppression and parking of fire suppression vehicles near encampments?	
EGLE	throughout	AOI 10 - Range 8	throughout	Between 2005 and 2011 the shocking ranges were moved more west to its current position on the other side of the road. AFFF may have been used as a fire break further west.	
EGLE	throughout	AOI 12 - Light Demolition Ranges	throughout	Clarify where AO112-05.04.03, and 12 samples were taken. Were the samples taken within the clear cut area within the circle where range 20 is? Aerial backgrounds for figures are more useful.	
EGLE	throughout	AOI 13 - Range 15	throughout	AO113 - samples were taken from edges of range. It is quite remarkable soil concentrations were found in pob range outside of range and well away from the range. Other soils from within the AOI could be much higher. Pob were have been shown to contribute or goundwater contamination exceeding DoD screening levels for groundwater at other Camp Grayling altes. It is likely that temp wells stradding to or dwater table missed groundwater impact for reasons stated eartier. 3 samples from a range that is size are insufficient for preservabateneois investigation. Additional sampling needed. Fire scar from 2015 (Figure 6 on next tab) shows fire was contained within the area of interest. If AFFF was used on this fire, it was most likely used within the range to control fires in the past. Highest soil concentrations would be expected within the range, as well as groundwater concentrations.	
EGLE	throughout	AOI 19 - Howes Lake	throughout	We need to know if the surface water or the groundwater near the lake are impacted. It is used recreationally. There is also a wellhead protection zone in the direction of higher concentrations. Detections were highest in borings located closer to the lake. Groundwater flow direction is inferred.	
EGLE	throughout	Current North FOB	throughout	Current North FCB at SW corner of Co Road 612 and Briggs Road, has not been assessed. If well-water' was reported to have been used at the former location, it was likely that protections did not change at the new location (greent on an admil maps in 1981). It could be that the reports are incorrect and/or give details for the current location. Additionally, this seems a likely location to stage frengthing vehicles. Please assess Current North FCB as large quantities of othen have been observed on adjoining jones Lake. Additionally, locatis have reported large bonfires in the vicinity of this location during the summer. We have had reports of bonfires put out with AFFF at Cantomment. Additionally, EGLE has not found informationdiscussion on Forward Arming and Retueling Prints (FARPs) in the PA or SI. Have these points been looked at as locations of fire truck parking and AFFF release? Areas along Co Rd 612 have the ability to bue das FARPs and encampents. Please conduct additional interviews and looks into records to find FARP locations. It is possible that the former North FOB and current FOB may have been used as FARP locations. There areas along Co Rd 612 have already identified new source areas at Cantomment. In areas along County Road 612 are used heavily for staging/camping and should be looked at further. Current interviews and records are not sufficient for the achildry in this area. Additional interviews with former fire fighters and staff have already identified new source areas at Cantomment to Lake Margreton. The interview in the PA were conducted when PFAS extent was unknown and the importance of interviews extent forms may be more will be the true willing to speak today and past interviewees may elaborate on training and product types.	

				Excerpt from DNR Forest Management Compartment 72252, Camp Grayling Management Area, 2019:	
				Fire Protection: Fire protection is the responsibility of the Michigan Department of Natural Resources and the Lovell's and Grayling	
				Township Volunteer Fire Departments. Assistance from Camp Grayling (National Guard) can be obtained for this area due to heavy National Guard Training. The nearest water supplies are Jones Lake and Frog Lakes.	
				Contacted former forester in the area. Said Jones Lake has been used for fire suppression water by ARNG, DNR, and local fire crews. Not aware of troes of foam products but does know foam was used.	
				Types of name products but uses know real may used. Contacted DNR Unit Supervisor. Confirmed Jones Lake would be one source of water used for firefighting in area. Said they use Fire Foam 103b.	
				Not certain when switchover occurred to USFS-approved, PFAS-free, foam.	
				Contacted DNR wildland firefighter (wanted to remain anonymous) that has been working in firefighting on state and Camp Grayling land since 1980s. He confirmed that Jones Lake was used, along with Barnes Lake on Range 40 and East Branch Au Sable, for firefighting water source.	
EGLE	throughout	North Post	throughout	States that due to priming of lines, backwash into surface water can occur. Foam could be added at time of filling. Said to look on Range 40 due to AFFF use during prescribed burns. Foam was used extensively inside fence of Range 40. He also recommended looking at Budweiser Hill due to it	
				being used as a bivouse, similar to Former North FOB. Would not surprise him if area along Co. Rd 612 has PFAS contamination due to past activity level (especially 80s-90s). Also recommended looking at airstrip at current North FOB along East Branch Au Sable (at County Road 612). ARNG supplied local fire departments with AFFF due to having patients full. ARNG would chase fires off Range 40 property or any other wildfire that	
				Artics supplied local life objaintents with AFFF due to having paints out. Artics would chase lifes on range 40 property of any other winding that was caused by ARNG exercises/operations. ARNG supplied AFFF at time of whifters to DNR and local fire departments which was imixed into trucks. DNR changed over from wet water in late 90s to Fire Foam 103b. Can't discount ARNG AFFF ending up in 6x6 engines (Kaiser Jeep	
				M530s). These were normally not drained until wintertime. DNR was not allowed inside fence lines once built.	
				A former DNR contact noted heavy use of Budweiser Hill south of the Jones Lake in the 80s. Interview with EGLE representative confirms helicopters would land at this location. It is my understanding that fire trucks would be needed at the location if helicopters so the possibility of IAFEF intersenties match.	
				Art-r measaruse exists. Please note: comment continued on line below due to space available in text box.	
				Please assess Jones Lake and location where water would be collected at Jones Lake as large quantities of foam have been observed/reported on Jones Lake (see Figures 1-4 on next tab for photos by EGLE in 2021). Samples should include surface water and Campground hand-pump wells. This is a recreational lake.	
				This is a recreational take. Please assess Barnes Lake has a dirt road running to it. Where the road ends at Barnes Lake, along with the lake itself, needs to be assessed for	
				PFAS presence/absence due to likelihood of use for firefighting on Range 40. Possible backwash, priming of lines, nozzle checks, and leaking.	
				Please assess Budweiser Hill due to heavy use and for encampments/staging.	
EGLE	-	North Post continued from line above	-	Please assess East Branch Au Sable due to use as firefighting water source. Possible backwash, priming of lines, nozzle checks, and leaking. Please assess any other bodies of water used as firefighting water source. Possible backwash, priming of lines, nozzle checks, and leaking.	
		ine above		EGLE should not have to obtain appropriate interviews. It is the ARNG's responsibility to conduct a thorough investigation under CERCLA and find	
				areas of release to target. Current interviews in PA are insufficient. Supplemental interviews are needed. Site visits with ARNG and state fire crews needed to bettor identify areas that need investigation similar to what occurred at cantonment during RI.	
-				According to the Gaylord Herald Newspaper dated March 21st, 1996, an F-16 Fighting Falcon crashed in an wooded area near Lonesome Lake on the Range 40 complex. In the article, it states that the crash may of happened near KP Lake too. Due to the aircraft type, area of crash and	
EGLE	-	Lonesome Lake	-	timeframe of the crash, PFAS containing AFFF may of been used at the crash site. Other DoD sites have shown significant PFAS contaminations where AFFF was used. Please expand on the potential use of PFAS containing AFFF use at aircraft crashes. How many documented aircraft	
				crashes haven been associated with training at Camp Grayling? Has the ARNG used Lonesome lake for water usage, staging, training, etc. historically? It appears that fire trucks are parked at the location in past aerials.	
-				Very little is known or reported in the PA/SI regarding fire fighting practices, especially wildfires, in the area. It is not discussed in the report.	
				Details must be provided on the following by conducting a PA level investigation: - Provide SDS on 'vet water' or 'wetter water', that have been referenced in interviews and reports must be provided. It is likely still in inventory. It was used in finefighting, batch mixed into fire trucks responding to wildhand and range fires, and used for dust suppression.	
				 Present SDSs on current and past AFFF used for wildland and range firefighting. Present and discuss details on how fire response occurs. This includes details on who responds where (ARNG vs. local departments vs DNR). 	
		Wildfire		Who is responsible for shuttling water? What are water sources and how is water pumped from water sources? Who is responsible for range fires? How are HEMITT vehicles utilized? How were M530s (known to leak AFFF) utilized in the past?	
EGLE	throughout	Firefighting	throughout	 Provide details of HEMT1 vehicles: how they support base activities, what type of AFFF is used in these vehicles, are they currently used for wildfire training and where, and how tank contents/lines for trucks are managed? Specified DoD equipment used for offroad firefighting likely has excellent record keeping and training of servicemen in these vehicles is likely. These vehicles have been sen at CSI Emergency Aparatus, 	
				Grayling. Are the trucks drained and rinsed prior to maintained?	
				The above are critical pieces of information for understanding how widespread AFFF use is. A culture of AFFF and foam use has developed in the Camp Grayling area.MI Spec foam has been provided by neighboring fire stations, many of which reported that they have it to assist the ARNG at	
-				Camp Grayling. Use by the military has made many fire departments train and comfortable with AFFF use.	
EGLE	throughout	Unknown Staging	throughout	An area on westem South Post not identified in the PA or SI appears to have staging activity with HEMTT Trucks parked on concrete slabs (Figure 7 on next tab). Are these vehicles used for fire fighting support at this location? What activities (ex. helicopter landing) occur at this location that may require AFF use? This area are needs PA level assessment. Residences are located downgradient the west on Portage Creek Road.	
EGLE	throughout	Area	throughout	may require AFFF use? This area are needs FA revenalseessment. Residences are rocated downigrationit the west on Fonage creek Road.	
				EGLE contacted a DNR fire fighter from the DNR Grayling Field Office. They stated that AFFF was shared between ARNG and the DNR. AFFF would be batch mixed into DNR trucks for fire response at ranges and emptied at the end of the season to prevent equipment freezing. SI-level	
		0		assessment needed.	
EGLE	throughout	Camp Grayling Offsite AFFF Release	throughout	MDNR Grayling Field Office 1955 Hartwick Pines Rd., Grayling MI 49738 (1993) 348-8371	
				What is unknown is the location of the emptying of MDNR firetrucks for the season in addition to the location for firetruck storage and maintenance.	
				ARNG has contracted fine truck work at CSI Emergency Apparatus in Graying since mid-2000s (source: MATES watkover, 2022) when PFAS regulations began to change. SI-level assessment needed. Are trucks brought to the contractor with AFFF in fire trucks? Have implications of working on fire trucks that have been used in legacy foam operation been explained to them? Have proper management of waste liquids been	
		Camp Grayling		explained to them?	
EGLE	throughout	Offsite AFFF Release	throughout	2332 Dupont St, Grayling, MI 49738 (989) 348-2877	
				EGLE and NGB have observed military vehicles (HEMTT firetrucks among other fire fighting vehicles) at this location periodically and during drive of Grayling investigation sites. There are two buildings located 1500' apart in the Grayling Industrial Park. The likelihood of ARNG AFFF release	
+				exists.SI level assessment needed by ARNG. AFFF products are composed of many PFAS. EGLE has a recommended minimum analyte list for 31 PFAS that is recommend to be used at any	
EGLE	throughout	ALL	throughout	PFAS Site, including at Camp Grayling, for the analysis of all media with the exception of drinking water. For the Drinking water analysis it is recommend the analysis of 18 PFAS using Method 537.1.	
				https://www.michigan.gov/documents/pfasresponse/EGLE_Minimum_Laboratory_Analyte_List_for_PFAS_667668_7.pdf	
EGLE	pdf p. p.17	2.2.2	447-449	EDITORIAL COMMENTS Take out the reference to MATES in this sentence as that is discussed in the next paragraph. Adding it here may cause confusion.	
EGLE	pdf p. 2013	Appendix D	-	TPP 3 meeting minutes are missing.	
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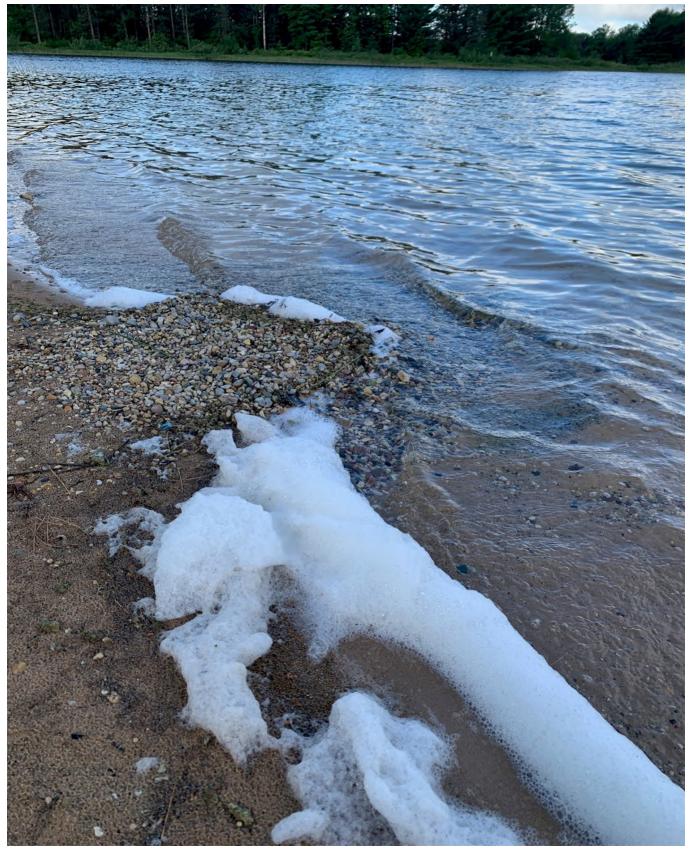


Figure 1: Jones Lake east shoreline foam. 2021-06-14



Figure 2: Jones Lake foam blowing onto campground beach. 2021-06-14

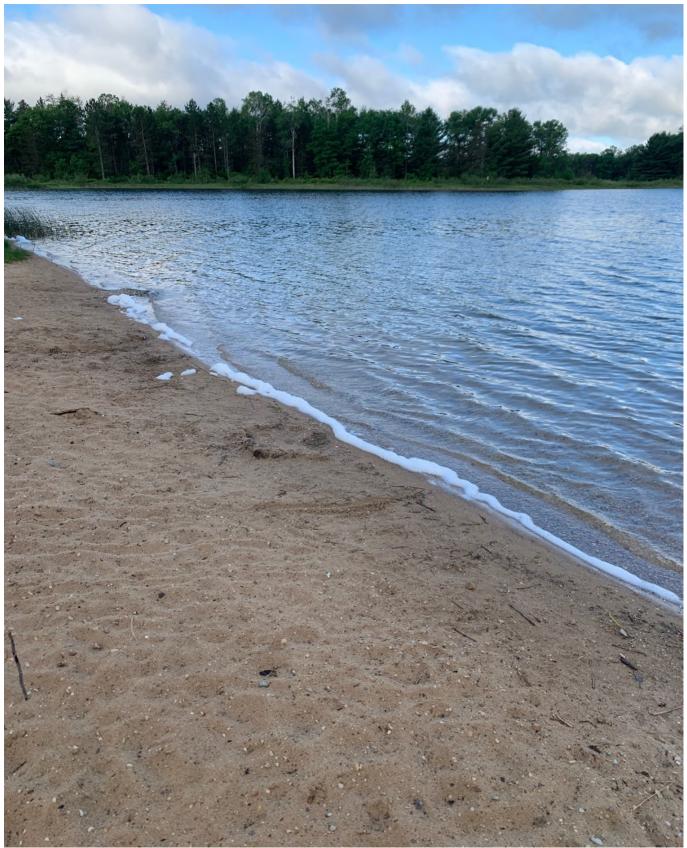


Figure 3: Jones Lake Foam on east shoreline. 2021-06-14



Figure 4: Jones Lake Boat Launch Foam. 2021-06-14

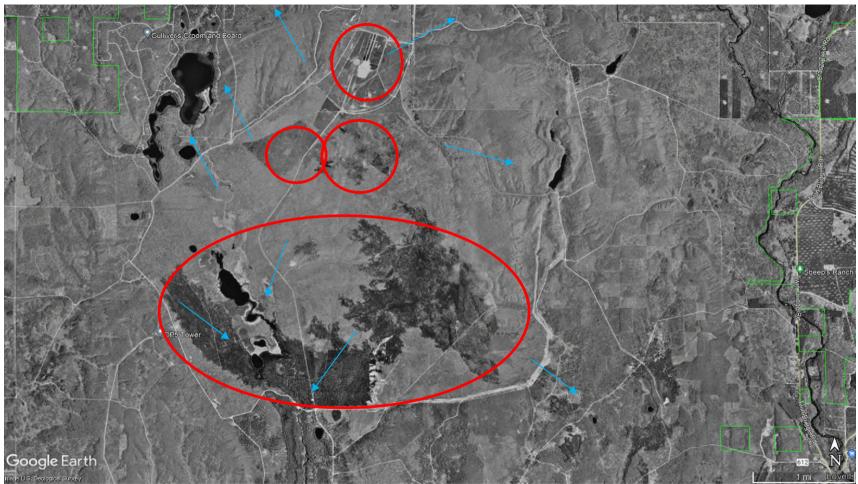


Figure 5: Range 40 1999 Fire Scar. None of samples were taken within the large fire scar or fire scaring at the northern portion of the range. Fires were contained to the range with clear fire breaks. Expected shallow groundwater flow directions (radial) shown due to influence of North/East Branch Au Sable headwaters.

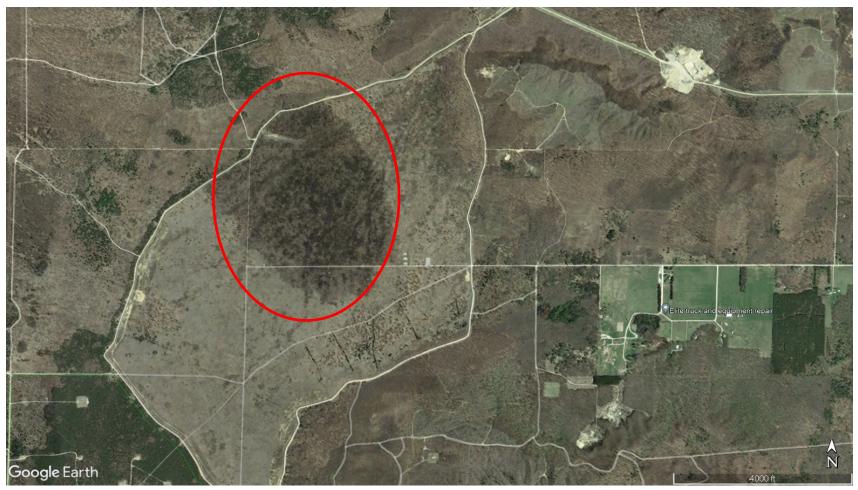


Figure 6: Range 15 2016 Fire Scar. No samples were taken within the fire scar. Fire was contained to the AOI.



Figure 7: Unknown Staging Area not identified in PA or SI. HEMTT firetrucks appear to be parked on concrete slabs at southeastern side (red circle).