BIOLOGICAL ASSESSMENT

on the

PROPOSED ACTIVITIES ON FORT DRUM MILITARY INSTALLATION, FORT DRUM, NEW YORK (2024-2026)

FOR THE INDIANA BAT (*Myotis sodalis*), NORTHERN LONG-EARED BAT (*Myotis septentrionalis*), and TRICOLORED BAT (*Perimyotis subflavus*)

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2024-2026 FORT DRUM
BIOLOGICAL ASSESSMENT FOR THE
INDIANA, NORTHERN LONG-EARED, AND TRICOLORED BATS

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Executive Summary

Fort Drum is a 108,733-acre (ac) US Army installation in northern New York, is the largest military installation in the northeastern United States, serves as home to the 10th Mountain Division-Light Infantry, and is one of the primary training facilities for National Guard and Army Reserve units throughout the region. Military training has occurred on Fort Drum lands since 1908.

There are two federally-listed endangered species known to occur on Fort Drum, the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*). There is also one proposed endangered species, the tricolored bat (*Perimyotis subflavus*). As of this writing, a final listing determination had not been completed for this species. Regardless, this Biological Assessment (BA) identifies and analyzes potential impacts to all three of these species from activities that are proposed to occur on Fort Drum from January 1, 2024 – December 31, 2026. It is expected to cover approximately 85%+ of activities that may occur on Fort Drum within that three year period. All other activities not included in this BA will be addressed via individual consultation with the USFWS. This BA was prepared pursuant to Section 7 of the Endangered Species Act (16 USC 1536 (c)).

Indiana bats were first confirmed on Fort Drum in 2006. The nearest known Indiana bat hibernaculum, Glen Park, is approximately 6.5 mi (10.5 km) from Fort Drum's Cantonment Area. Approximately 100 Indiana bats now hibernate there annually. Historically, mist-netting, radio-tracking, and acoustic efforts identified one maternity colony focused within the Cantonment Area of Fort Drum; however, the continued persistence of this colony is unknown. Although suspected acoustic detections of the species are still being documented, no Indiana bats have been captured on Fort Drum since 2014. The declining population counts from Glen Park and the paucity of recent positive data from the installation suggests that any remaining population left at Fort Drum is extremely small.

Northern long-eared bats were first confirmed on Fort Drum in 1999. Historically over 400 northern long-eared bats were captured in mistnets throughout the installation; however, the vast majority of these captures occurred between 1999-2010. Despite extensive mist net surveys between 2011-2017, there has been only one additional capture (in 2011). Although suspected acoustic detections of the species continue to be collected sporadically and in extremely low numbers throughout the installation, evidence suggests that northern long-eared bats are either locally extirpated, or at numbers low enough to be functionally so. It is unknown where northern long-eared bats may still be hibernating; however, there are (or were) dozens of potential hibernacula within migrating range of Fort Drum.

Tricolored bats were first confirmed on Fort Drum in 2007, when four individual bats were captured during mist net surveys. Subsequently, only two additional tricolored bats have been captured (one in 2009 and one in 2010). No tricolored bats were captured during extensive mist nets surveys between 2011-2017. Suspected acoustic detections have been collected throughout the installation; however, there have been relatively few detections on average annually. It appears that this species may still be present on Fort Drum, but also in extremely low numbers. It is unknown where tricolored bats are (or were) hibernating around Fort Drum.

Impacts from white-nose syndrome (WNS) continue to cause population declines to all three of these bat species on Fort Drum, in New York, and across their range. Although suspected acoustic calls of probable Indiana, northern long-eared, and tricolored bats are still being

detected on the installation, only 2 Indiana bats have been captured since 2011 and no northern long-eared or tricolored bats have been captured since 2011 and 2010, respectively. Where it was once relatively easy to capture these species through traditional mistnet efforts, it is now a difficult task. Given this development, the likelihood of finding new maternity colonies on Fort Drum of either of these three species over the next three years is unlikely.

Section 1 provides consultation history, relevant information on Fort Drum (see previous Fort Drum BAs, BOs, and consultations regarding Indiana or northern long-eared bat for additional information), and the status of the Indiana, northern long-eared, and tricolored bat on Fort Drum.

Section 2 describes and assesses the potential effects of the following activities on the Indiana northern long-eared, and tricolored bat: construction; military training; forest management; mechanical vegetation management; land conversion; use of pesticides; wildlife management/vertebrate pest control; and outdoor recreation. Conservation measures are also outlined to reduce or eliminate adverse impacts of the proposed activities.

Section 3 describes and assesses the potential effects of proposed conservation activities on the Indiana, northern long-eared, and tricolored bat, including: the establishment of a 2,201 ac Bat Conservation Area (BCA) to protect known historical Indiana, northern long-eared, and tricolored bat roosting and foraging areas from permanent development and habitat loss; research and monitoring efforts to provide information for future management actions; outreach efforts; and the Army Compatible Use Buffer (ACUB) program.

Section 4 describes potential cumulative effects, and Section 5 provides an overall conclusion. Previous Fort Drum BAs and BOs are referenced throughout this document and be found in the Appendices. The 2009-2011, 2012-2014, 2015-2017, 2018-2020, and 2021-2023 Fort Drum BAs can be found in Appendix A, B, C, D, and E, respectively. The 2009-2011, 2012-2014, 2015-2017, 2018-2020 and 2021-2023 BOs or consultations can be found in Appendix F, G, H, I, and J, respectively. Much information will be referenced from these documents to reduce extraneous verbiage within this BA. All conservation measures and beneficial actions mentioned throughout the document are included in Appendix X.

After considering the effects of the proposed action (including implementation of conservation measures), Fort Drum has determined that there should be no activities within the next three years that are likely to adversely affect Indiana or northern long-eared bats on Fort Drum or within ACUB properties. We have also determined that no activities, except for small scale, in-season construction activities and the use of smoke and obscurants, are likely to adversely affect tricolored bats on Fort Drum.

1.0 Background

This section provides abbreviated background information on Fort Drum and Indiana, northern long-eared, and tricolored bat life history as it relates to this Biological Assessment (BA). More detailed information can be found in Appendices A-J.

1.1 Purpose

The purpose of this BA is to identify and analyze potential impacts to the federally-listed endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*), as well as, the tricolored bat (*Perimyotis subflavus*-which is currently proposed by USFWS as endangered) that may arise from activities that are likely to occur on Fort Drum Military Installation from January 1, 2024 – December 31, 2026. This BA will provide Fort Drum flexibility temporally, spatially, and functionally in planning and implementation of activities without delays resulting from sudden changes in plans, priorities, and/or funding. This BA addresses activities for the next three years reducing the requirement to initiate Section 7 consultations for most individual projects or activities. However, individual Section 7 consultations will still occur for activities not specifically identified in this BA or for other unforeseen activities.

This document was prepared in accordance with Section 7 of the Endangered Species Act (16 USC 1536 (c)). The Indiana bat and the northern long-eared bat are the two known federally-listed species and the tricolored bat is a known proposed federally listed species that occur on Fort Drum or within the action area. The action area is defined in Section 1.4. There is no designated critical habitat for the Indiana bat within the action area. No critical habitat has been designated for the northern long-eared bat, and none has been proposed for tricolored bat.

The US Army Garrison Fort Drum is the lead federal agency for all ESA consultation on Fort Drum. All federal agencies and tenant organizations that operate on Fort Drum were considered in the effects analysis of activities and are subject to the conservation measures prescribed in this BA. These federal agencies include the US Army; US Army Corps. of Engineers (Engineering – New York District); US Army Corps of Engineers (Clean Water Act Section 404 Permits); US Air Force (Range 48); and all other military and law enforcement agencies training at Fort Drum. Fort Drum Mountain Community Homes (FDMCH), the Development Authority of the North County (DANC), National Grid, Verizon, ReEnergy, AT&T and ACTUS Lend Lease are currently the private tenant organizations that actively lease Fort Drum property or have other partnership arrangements that could have potential impacts to the Indiana, northern long-eared, or tricolored bat.

1.2 Consultation History

The following are highlights of the consultation history between Fort Drum Military Installation (Fort Drum) and the U.S. Fish & Wildlife Service-New York Field Office in Cortland, New York (USFWS) since the development and submittal of the last (2021-2023) BA.

On **October 13, 2020**, the USFWS received Fort Drum's October 13, 2020 request for initiation of formal consultation for 2021-2023 activities on Fort Drum.

On **December 10, 2020**, the USFWS sent the Army a letter completing consultation for the 2021-2023 activities on Fort Drum. As part of that consultation, the USWFS concurred that several categories of activities were not likely to adversely affect the Indiana or northern long-eared bat, and that the USFWS's programmatic Biological Opinion adequately addressed any potential adverse effects to the northern long-eared bat, therefore no individual Biological Opinion was needed.

On **February 19, 2021**, the Army submitted the 2020 annual report of activities in accordance with the 2021-2023 consultation requirements.

On **April 15, 2021**, the USFWS sent the Army a letter acknowledging receipt of the 2020 annual report.

On **June 4, 2021**, the Army sent the USFWS a proposal for a Bat Conservation Area Mitigation Plan for the Indiana Bat.

On **June 21, 2021**, the USFWS sent the Army a letter acknowledging and agreeing with the Bat Conservation Area Mitigation Plan for the Indiana Bat.

On **February 15, 2022**, the Army submitted a partial 2021 annual report of activities in accordance with consultation requirements.

On **March 21, 2022,** the Army submitted a revised, full 2021 annual report of activities in accordance with consultation requirements.

On **October 18, 2022**, the USFWS sent the Army a letter acknowledging receipt of the 2021 annual report.

On **February 13, 2023**, the Army submitted the 2022 annual report of activities in accordance with consultation requirements.

On **March 27, 2023,** the Army reinitiated consultation on the Northern long-eared bat in accordance with the Interim Consultation Framework for the species and submitted a Biological Assessment Form for In-Season Small Scale Construction Projects and the Use of Smoke and Obscurants on Fort Drum.

On **June 1, 2023**, the USFWS sent the Army a Biological Opinion completing consultation for the In-Season Small Scale Construction Projects in accordance with the Interim Consultation Framework for the Northern long-eared bat.

On **June 28, 2023**, the USFWS sent the Army a Biological Opinion completing consultation for the Use of Smoke and Obscurants on Fort Drum in accordance with the Interim Consultation Framework for the Northern long-eared bat.

On **May 17 and July 20, 2023,** Fort Drum and USFWS met to discuss the 2024-2026 BA.

1.3 Fort Drum Military Installation

Much of the information in this document is incorporated by reference. As such, please see the 2009-2011 BA (Fort Drum 2009 or Appendix A); the 2012-2014 BA (Fort Drum 2011 or Appendix B); the 2015-2017 BA (Fort Drum 2014 or Appendix C); the 2018-2020 BA (Fort Drum 2017 or Appendix D); the 2021-2023 BA (Fort Drum 2020 or Appendix E) the 2009-2011 BO (USFWS 2009 or Appendix F); the 2012-2014 BO (USFWS 2012 or Appendix G); the 2015-2017 BO (USFWS 2015 or Appendix H); the completed 2018-2020 consultation from the USFWS (USFWS 2017 or Appendix I); the completed 2021-2023 consultation from the USFWS (USFWS 2020 or Appendix J) the species status assessment for the northern long-eared bat (USFWS 2022a or Appendix K); the USFWS Interim Consultation Framework for the northern long-eared bat (USFWS 2023 or Appendix L); the Species Status Assessment for the tricolored bat (USFWS 2021 or Appendix M); the proposed rule for the tricolored bat (USFWS 2022b or Appendix N); Fort Drum Integrated Natural Resources Management Plan (Fort Drum 2021 or Appendix O); ESI 2008a (Appendix P); ESI 2008b (Appendix Q); Copperhead 2009 (Appendix R); ESI 2010 (Appendix S); ESI 2011 (Appendix T); JECS 2012 (Appendix U); Copperhead 2016 (Appendix V) and USFS 2011 (Appendix W). Each one of these documents will be referenced throughout or can be referred to for additional information.

1.3.1 Regional Description of Fort Drum

Please see Appendix A, Section 1.3.1 for the Regional Description of Fort Drum. Nothing has significantly changed since 2009.

1.3.2 Military Mission & History

Please see Appendix A, Section 1.3.2 for Fort Drum's Military Mission and History. Nothing has significantly changed since 2009.

1.3.3 General Description of Fort Drum

Please see Appendix A, Section 1.3.3 for the General Description of Fort Drum. See Figure 1.1 for a map of Fort Drum showing the Cantonment Area/Wheeler-Sack Army Airfield (WSAAF), Training Area, Bat Conservation Area, and Main Impact Area. Nothing has significantly changed since 2009.

1.3.4 General Habitat Information on Fort Drum

Please see Appendices A-D, Section 1.3.4 for the General Habitat Information on Fort Drum.

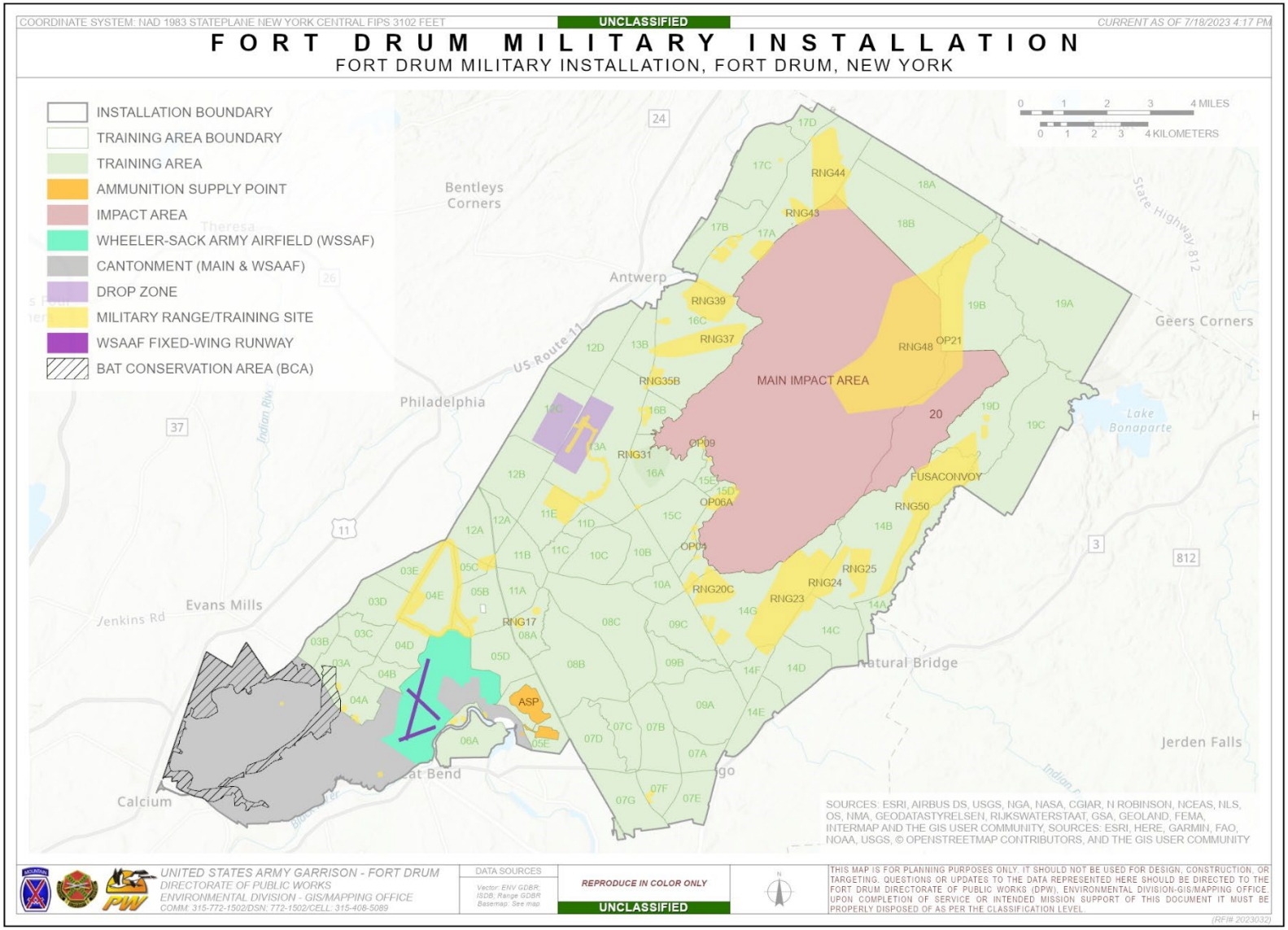

Figure 1.1. Fort Drum Military Installation.

1.4 Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). Hence, this analysis is not limited to the "footprint" of the action nor is it limited by the Federal agency's authority; it is a biological determination of the reach of the proposed action on listed species.

For this BA, the “action area” is the area where all effects of implementing and sustaining the mission of Fort Drum may impact the Indiana, northern long-eared, and tricolored bats. This area includes all of Fort Drum (with some exceptions related to the Main Impact Area as identified below) and private lands as part of the Army Compatible Use Buffer (ACUB) program (i.e., those areas Fort Drum has third party interest in; Figure 1.2). The action area does not include off-post training missions. These will be reviewed and discussed with the USFWS on a case-by-case basis if adverse effects are anticipated.

The Main Impact Area is an approximately 20,200 ac portion of Fort Drum’s Training Area where no human access is allowed (outside of specific training mission requirements). The Main Impact Area potentially has suitable habitat for both species of bats. However, as all evidence has suggested that Indiana bats are found primarily in the approximately 11,500 ac Cantonment Area, and the TAs south of US Military Highway, it is not expected that this species would be found utilizing the Main Impact Area. Conversely, given that northern long-eared and tricolored bats have historically been captured throughout the installation (except the Main Impact Area), the possibility exists that those species could be utilizing this area to some degree. Unfortunately, as stated above, there is typically no access into the area and no way to adequately or appropriately assess any potential impacts to bats. No surveys have been conducted to date within the Main Impact Area, nor could they be in the foreseeable future. While Fort Drum has a general idea of where ordnance is impacting within this area, the amount, duration, and locations vary temporally and spatially, depending on which ranges and ammunition is being utilized. Subsequently, since we have no way to know utilization areas of the northern long-eared or tricolored bats within this location, and we cannot predict exact locations of ordnance/ammunition impacts, there is no way to know where these impacts may intersect and affect bats. Additionally, given that this area has been utilized for decades, with ongoing fires, noise, explosions, impacts, etc, if bats are exploiting the area to any degree, we would assume that this would continue to occur. If they are avoiding the area, we would assume that would continue to occur as well. Given these considerations, we have excluded the Main Impact Area from analysis for this BA.

At this time, it is unknown where northern long-eared or tricolored bats that utilize Fort Drum may be hibernating. There are dozens of historical potential hibernation sites around Fort Drum that northern long-eared or tricolored bats could be coming from. Therefore it is difficult to determine the extent of use surrounding Fort Drum, or even the direction of travel Fort Drum northern long-eared and tricolored bats may take coming to and from hibernacula.

Figure 1.2 shows the known Indiana, northern long-eared and tricolored bat use within and adjacent to the action area. If there are enough bats left in the local hibernation sites, these areas will most likely continue to be used by all three species after emergence from hibernation, during the reproductive season, and during fall swarming. Fall swarming activity is expected to occur within 10 miles (and up to 20 miles) from hibernation sites during the late summer and fall months. There are no known hibernacula on Fort Drum, therefore no winter use is expected to occur on the installation.

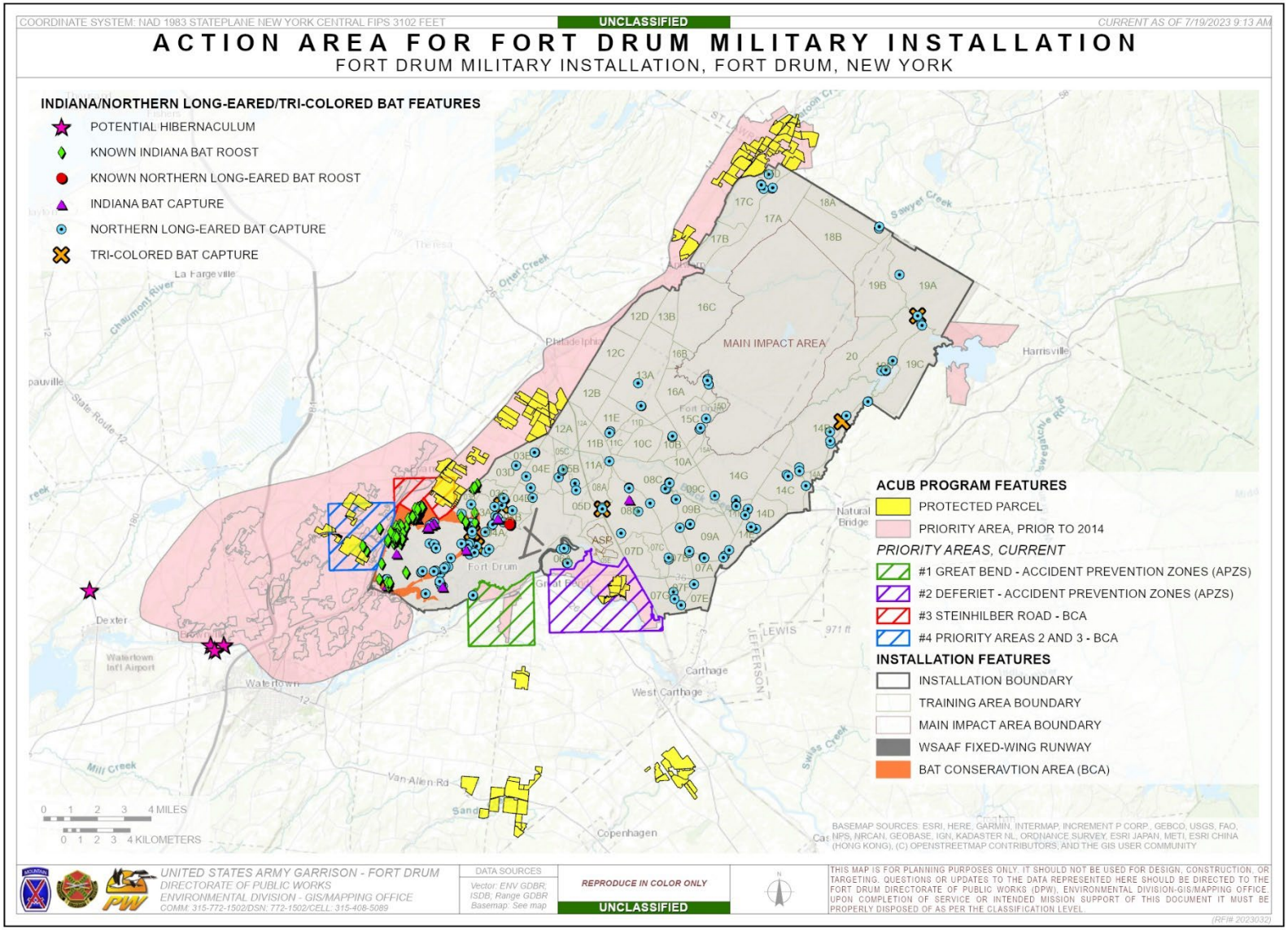

Figure 1.2 Known Indiana and northern long-eared bat use within and adjacent to the Action Area at Fort Drum Military Installation.

The Indiana bat and northern long-eared bat are closely related species in the genus *Myotis* (Chiroptera: Vespertilionidae). Information on these species has been extensively described in previous documents and can be found in Appendices A-C, P-W. Acoustic occupancy and relative activity information has been collected on these species on Fort Drum in recent years continuing to affirm their presence; however, these acoustic detections continue to decrease in abundance and now stand at extremely low average detections per site/night. Additionally, no physical captures of Indiana or northern long-eared bat have been documented for these species since 2014, and 2011, respectively. Furthermore, the NY State Department of Environmental Conservation documented only approximately 100 total Indiana bats in 2022 at Glen Park (the local hibernation site for this species), and very few locations across the entire state where northern long-eared bats are still being picked up on the landscape via acoustics.

The tricolored bat is a small insectivorous bat in the genus *Perimyotis* (Chiroptera: Vespertilionidae). Information on tricolored bat distribution and status in NY and on Fort Drum will be provided below. Additional information on the species can be found in Appendices M and N.

1.5 Indiana Bat

1.5.1 General Description

For additional information on life history and ecology, see the Indiana Bat Draft Revised Recovery Plan (USFWS 2007) and the 2019 Five Year Status Review of the species (https://ecos.fws.gov/docs/five_year_review/doc6293.pdf).

1.5.2 Distribution and Status

For additional information on the range wide distribution and status of the Indiana bat, please see the Indiana Bat Draft Revised Recovery Plan and latest population estimate (https://www.fws.gov/midwest/endangered/mammals/inba/pdf/2019_IBat_Pop_Estimate_6_27_2019a.pdf)

According to hibernacula surveys conducted by the NYSDEC, there were approximately 52,000 Indiana bats that overwintered in New York using 12 hibernacula prior to WNS (NYSDEC, unpublished data). During the winter of 2018-2019, approximately 13,412 individuals were found in seven hibernaculum sites, with approximately 84% of the population found in Barton Mine (NYSDEC, unpublished data). In Jefferson County, New York, there is a known Indiana bat hibernaculum at Glen Park that is classified as a Priority II hibernacula, as well as a few small adjacent hibernacula with periodic use by Indiana bats. These sites are located approximately 6.5 mi (10.5 km) from Fort Drum, and while they historically provided wintering habitat for over 2,000 Indiana bats, only approximately 100 bats now reside in the cave system.

1.5.2.1 Fort Drum

Information regarding the temporal and spatial use of Fort Drum has been extensively documented for Indiana bats. Please refer to Appendices A-C for this information. Little new information has been collected for this species on Fort Drum. The last capture and tracking of this species was in 2014 and previously described in the 2015-2017 BA (Appendix C). Despite fairly extensive mist net efforts in 2015 (Copperhead 2016; Appendix R) and smaller efforts by Fort Drum staff during 2015-2017, no new captures of this species have occurred. Probable

acoustic detections of the species are still being collected annually at 1 or 2 of Fort Drum's 6 long-term monitoring stations (sites set up near Indiana bat historical high use or capture areas); however, few probable calls are documented. In 2017 there were approximately 1.33 Indiana bat calls/night/site; in 2018, approximately 0.50 calls/night/site; in 2019, approximately 0.04 calls/night/site; in 2020, approximately 0.32 calls/night/site; and in 2021, approximately 0.33 calls/night/site. No data were collected in 2022, and data collection and analysis is still ongoing for 2023 as of this writing. Given the calls/night/site data, the probability that there are more than a small number of individual Indiana bats present on Fort Drum is likely very low.

1.5.3 Background Ecology

Information regarding the life history (e.g., hibernation, spring emergence, summer roosting and reproductive behavior, home range and fall swarming) of this species has been previously extensively described. Please refer to Appendices A-C, and P-W. Also please see Jachowski et al. (2016) and (2017) for consolidated information regarding Indiana bat roost-site selection on Fort Drum.

1.6 Northern long-eared Bat

1.6.1 General Description

For additional information on the life history and ecology for the northern long-eared bat, see the species status assessment (USFWS 2022a, Appendix K, or https://ecos.fws.gov/ServCat/DownloadFile/225001)

1.6.2 Distribution and Status

For information on the range wide distribution and status of the northern long-eared bat, see the USFWS final listing rule (https://www.govinfo.gov/content/pkg/FR-2022-11-30/pdf/2022-25998.pdf); the USFWS Interim Consultation Framework for the northern long-eared bat (USFWS 2023, Appendix L, or https://www.fws.gov/sites/default/files/documents/Interim%20Consultation%20Framework_29Jun23.pdf); and the Standing Analysis for the Interim Consultation Framework (https://www.fws.gov/sites/default/files/documents/App%20A%20Standing%20Analysis%20Interim%20Consultation%20Framework_6Mar23.pdf.

There are approximately 89 known northern long-eared hibernation sites in New York. Historically, northern long-eared bats were typically observed during winter counts focused on Indiana bats; however, this is no longer the case. Declines of 99%+ have been documented in the species, and is now thought that of all bats in New York, this bat is at the greatest risk of imminent extinction (NYSDEC, unpublished data). There are few places left in NY where northern long-eared bat are thought to persist.

1.6.2.1 Fort Drum

Information regarding the temporal and spatial use of Fort Drum has been previously documented for northern long-eared bats. Please refer to Appendix C for this information. Little new information has been collected for this species on Fort Drum. The last capture of this species was in 2011 and previously described in the 2015-2017 BA. Despite fairly extensive mist net efforts in 2015 (Copperhead 2016) and smaller efforts by Fort Drum staff during 2015-2017, no new captures of this species have occurred. Probable acoustic detections of the

species are still being collected; however, no new information is being gleaned from this monitoring, other than confirming continued reduced use of the installation since the onset of WNS (also previously extensively described). Long-term monitoring at historical locations where numerous probable northern long-eared bat calls used to be collected now only document few or no probable calls. All information suggests that the population of northern long-eared bats on Fort Drum is an extremely small fraction of what it was.

1.6.3 Background Ecology

Information regarding the life history (e.g., hibernation, spring emergence, summer roosting and reproductive behavior, home range and fall swarming) has been previously described. Please refer to Appendix C.

1.7 Tricolored Bat

1.7.1 General Description

For additional information on the life history and ecology for the tricolored bat, see the Species Status Assessment for the tricolored bat (USFWS 2021, Appendix M, or https://ecos.fws.gov/ServCat/DownloadFile/221212).

1.7.2 Distribution and Status

For additional information on the range wide distribution and status of the tricolored bat, see the USFWS proposed listing rule (USFWS 2022b, Appendix N or https://www.govinfo.gov/content/pkg/FR-2022-09-14/pdf/2022-18852.pdf).

In 2009, the NYSDEC initiated a statewide mobile acoustic monitoring program. During that first survey year 54 individual tricolored bats were heard on the routes. In 2018, only 3 individuals were heard on the routes, and this species made up only 0.05% of the total detections. Within the NYSDEC's 2018 acoustic monitoring report, they indicated that both the mobile acoustic transects and the winter hibernation survey counts suggested that this bat had experienced a rapid and severe decline (75-97%) in the NY population following WNS. Currently, the NYSDEC believes the species still remains widespread; however, in low numbers.

1.7.2.1 Fort Drum

Tricolored bats were first confirmed on Fort Drum in 2007, when four individual bats were captured during mist net surveys (Figure 1.3). Subsequently, only two additional tricolored bats have been captured (one in 2009 and one in 2010; Figure 1.3)). Both adult and juvenile males and females had been historically captured, indicating that maternity use was likely. Suspected acoustic detections have also historically been collected throughout the installation; however, there now are relatively few detections on average annually. Large areas of the Installation were surveyed acoustically in 2015 and 2016 (Figure 1.4), and only 20% of the sites (43/210) indicated probable calls from tricolored bats. During 2017-2021 monitoring at long-term historical locations continued to document tricolored bats; however, the detections decreased drastically over that time period, with tricolored being found at only one of the sites. Just as with Indiana and northern long-eared bats, at sites where previous acoustic detections had been documented, we now collect few to no probable calls. Information from Fort Drum and NYS indicate that if tricolored bats are still present in the area, populations are very low.

1.7.3 Background Ecology

Information regarding the life history (e.g., hibernation, spring emergence, summer roosting and reproductive behavior, home range and fall swarming) can be found in USFWS 2021 and USFWS 2022b.

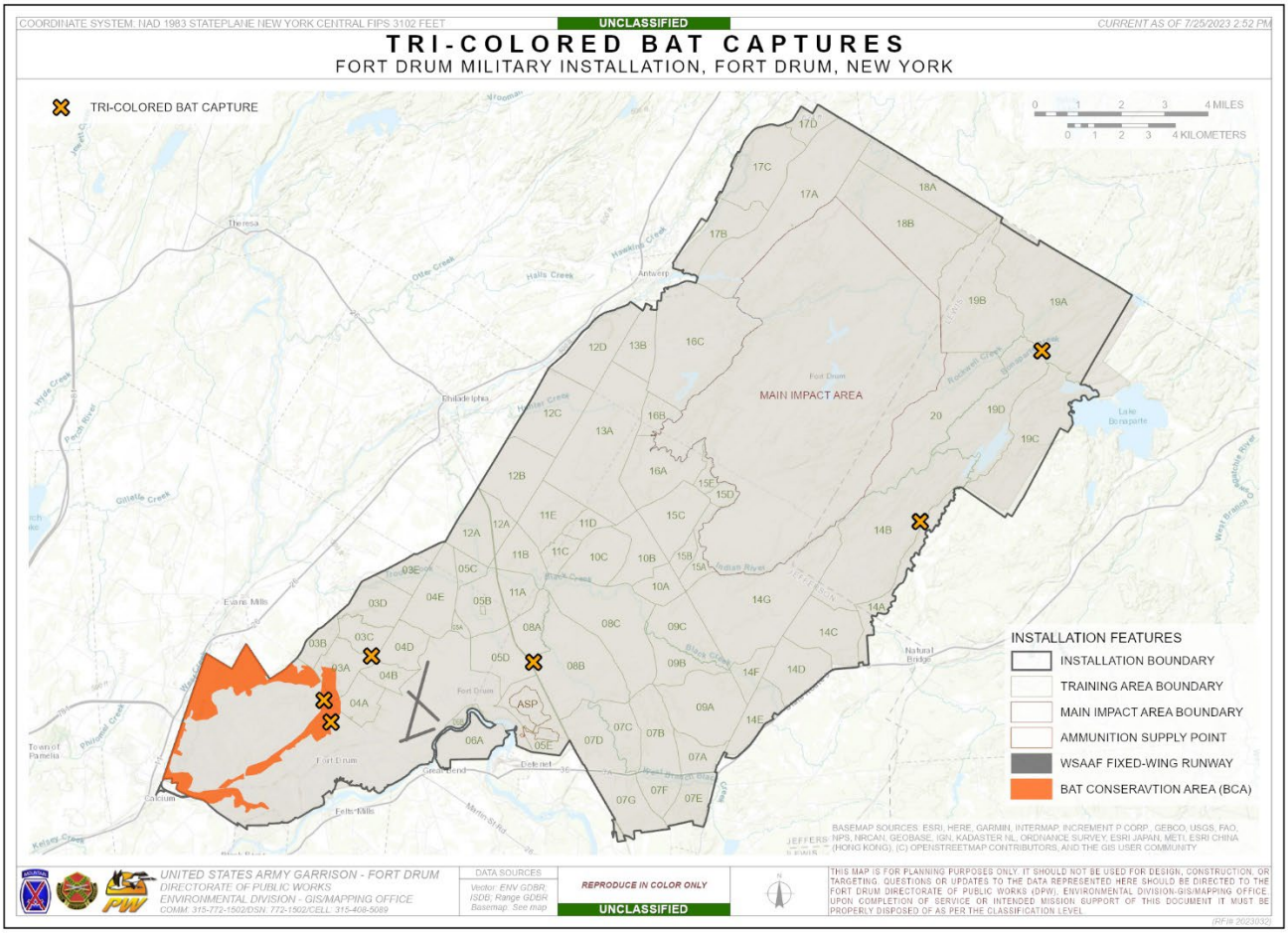

Figure 1.3. Tricolored Bat Captures on Fort Drum Military Installation, Fort Drum, NY.

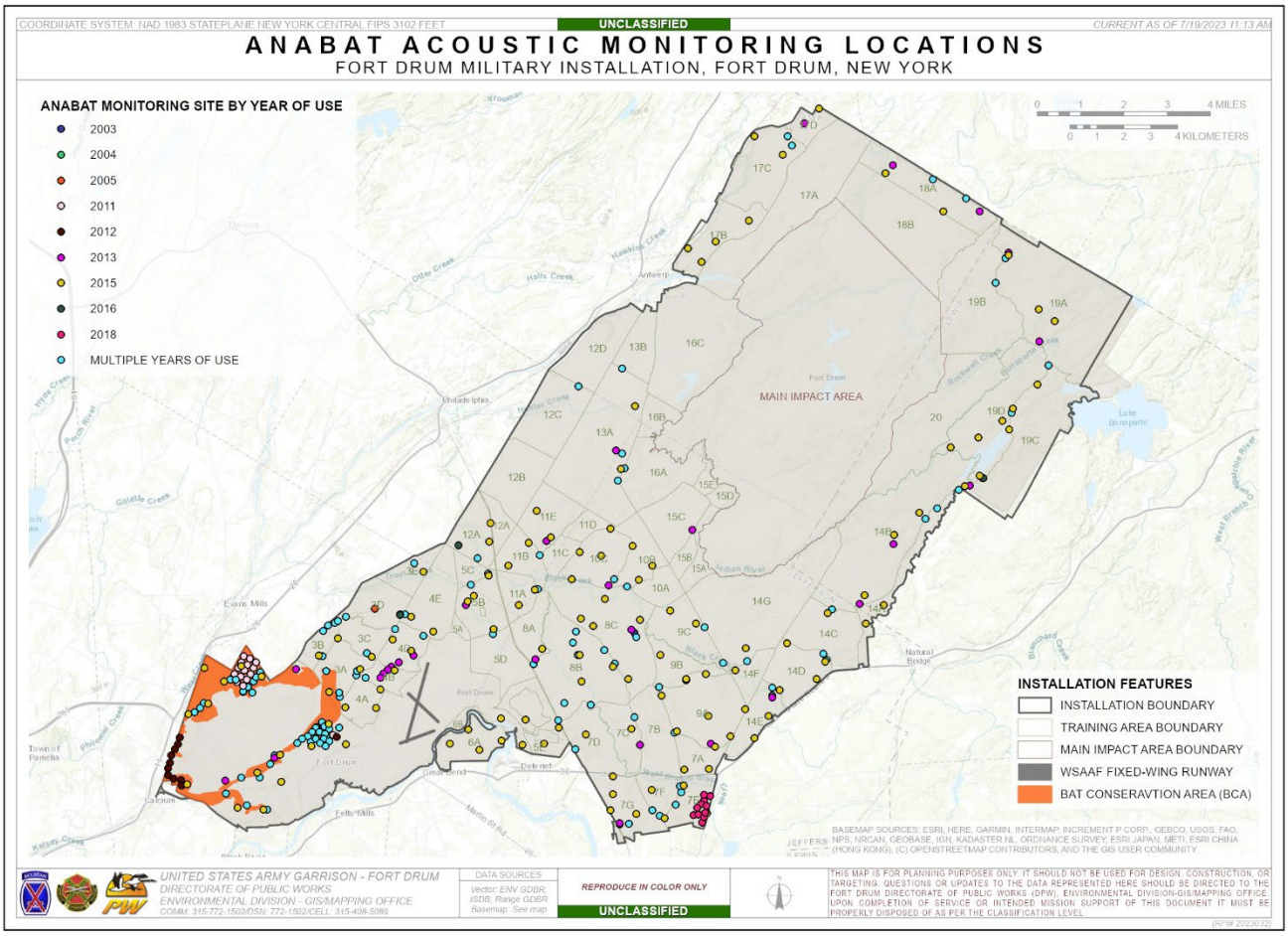

Figure 1.4. ANABAT Acoustic Detector Locations on Fort Drum Military Installation, Fort Drum, NY.

1.8 Threats to Indiana, Northern Long-eared, and Tricolored Bats

The primary threat to all three species is currently WNS. Other documented and suspected reasons for the decline of these species that may compound the threat of WNS include: habitat loss, pesticide use, wind power development, among others. This has not changed since the previous versions of Biological Assessments.

For additional information on threats for the Indiana bat, see the 2019 Five Year Status Review of the species (https://ecos.fws.gov/docs/five_year_review/doc6293.pdf). For additional information on threats for the northern long-eared bat, see the final listing rule (https://www.govinfo.gov/content/pkg/FR-2022-11-30/pdf/2022-25998.pdf). For additional information on threats to the tricolored bat, see the proposed rule (https://www.govinfo.gov/content/pkg/FR-2022-09-14/pdf/2022-18852.pdf).

2.0 Proposed Activities

This section assesses activities on Fort Drum that have the potential to affect the Indiana, northern long-eared, and tricolored bat. These activities include: construction; military training; forest management; mechanical vegetation management; land conversion; use of pesticides; wildlife management/vertebrate pest control; outdoor recreation; and the ACUB program.

2.1 Construction

There are approximately 250 (mainly small scale) projects over approximately 850 acres proposed for construction during January 2024- December 2026 on Fort Drum that may result in some loss of roosting or foraging habitat. Approximately 125 projects covering 400 acres may be concentrated in the Cantonment Area and the area surrounding Wheeler-Sack Army Airfield (WSAAF), and the remaining approximately 125 would be in the Training Area covering approximately 450 acres. These numbers and acreage are similar to what were analyzed for 2021-2023, and what other previous BAs have identified. All projects are subject to funding, mission priorities, and other factors, and although 250 are proposed, it is unknown how many will actually be constructed (see proposed and actual tables 2.1 and 2.3 and description in 2.1.1.1 below) or where. As long as the scope is not greater than discussed here, no further coordination is needed beyond annual reporting.

Given the total proposed impact, Fort Drum considers that the Conservation Measures developed and presented in the previous versions of the BAs (2009-2020) for construction are still appropriate.

2.1.1 Construction Activities

2.1.1.1 Cantonment Area/WSAAF Construction

Between 2009-2023, Fort Drum anticipated constructing on approximately 4390 ac (Table 2.1) of land in and around the Cantonment Area and WSAAF. During these 14 years, approximately only 738 ac (17%) were actually cleared for construction as of July 2023. This included the loss of approximately 456 ac (10%) of natural vegetation. The remaining approximately 281 ac were on already disturbed and/or developed land. There may be some additional acreage cleared for construction by the end of the calendar year 2023; however, we do not anticipate that being a large amount. This will be reported through the end of the year reporting requirements.

For January 2024-December 2026, we anticipate construction of approximately 125 new projects on up to 400 ac in the Cantonment Area (Table 2.2).

Table 2.1. Amount of landcover by type (buffered by 25 ac/vegetation type, excluding wetlands) proposed for removal during 2009-2023 construction activities in the Cantonment Area and WSAAF, and actual landcover impacts from construction activities on Fort Drum Military Installation.

Landcover Type	Proposed Acres					Actual Acres			
	2009-2011	2012-2014	2015-2017	2018-2020		2009-2011	2012-2014	2015-2017	2018-2020
Conifer Forest	283	45	25	25		11.75	1.01	4.17	0.00
Deciduous Forest	619	110	50	45		55.19	71.54	20.58	3.94
Disturbed/Developed	658	85	90	65		127.29	83.21	62.09	7.62
Grassland/Rangeland	518	30	35	50		59.06	44.84	15.99	1.58
Mixed Forest	509	75	35	40		0.50	11.62	17.5	12.62
Sand Dunes/Flats	116	25	25	30		11.35	6.92	0.00	0.00
Shrublands	169	30	35	40		66.28	6.61	15.20	0.66
Water/Wetlands*	8	10	5	5		5.00	0.49	0.05	0.00
Total	2880	410	300	300		336.42	226.24	135.58	26.42

Landcover Type	Proposed Acres		Actual Acres	
	2021-2023	Total	2021-2023*	Total*
Conifer Forest	30	408	0.78	17.71
Deciduous Forest	75	899	1.48	152.73
Disturbed/Developed	150	1048	1.13	281.34
Grassland/Rangeland	75	708	2.40	123.87
Mixed Forest	50	709	0.08	42.32
Sand Dunes/Flats	15	211	0.00	18.27
Shrublands	100	374	7.29	96.04
Water/Wetlands*	5	33	0.00	5.54
Total	500	4390	13.16	737.82

*Acreages for Construction projects were not available as of the writing of this document. Totals will be described in the 2023 annual report.

Table 2.2. Amount of landcover by type (buffered by 25 ac/vegetation type, excluding Sand Dunes Water/Wetlands) proposed for removal during 2024-2026 construction activities in the Cantonment Area and WSAAF, on Fort Drum Military Installation.

Landcover Type	Proposed Acres
Conifer Forest	25
Deciduous Forest	75
Disturbed/Developed	100
Grassland/Rangeland	50
Mixed Forest	50
Sand Dunes/Flats	10
Shrublands	85
Water/Wetlands*	5
Total	400

2.1.1.2 Training Area Construction

Between 2009-2023, Fort Drum anticipated constructing on approximately 5495 ac (Table 2.3) of land in the Training Area. During these 14 years, approximately only 438 ac (8%) were actually cleared for construction as of July 2023. This included the loss of approximately 383 ac (7%) of natural vegetation. The remaining approximately 55 ac were on already disturbed and/or developed land. There may be some additional acreage cleared for construction by the end of the calendar year 2023; however, we do not anticipate that being a large amount. This will be reported through the end of the year reporting requirements.

We anticipate construction of approximately 125 new projects on up to 450 ac in the Training Area during January 2024 -December 2026 (Table 2.4).

Table 2.3. Amount of landcover by type (buffered by 25 ac/vegetation type) proposed for removal during 2009-2023 construction activities in the Training Area, and actual landcover impacts from construction activities on Fort Drum Military Installation.

Landcover Type	Proposed Acres					Actual Acres			
	2009-2011	2012-2014	2015-2017	2018-2020		2009-2011	2012-2014	2015-2017	2018-2020
Conifer Forest	172	100	25	75		0.00	0.00	0.97	0.00
Deciduous Forest	1449	75	45	75		26.04	24.53	5.69	4.24
Disturbed/Developed	182	50	65	75		17.12	36.65	0.19	0.67
Grassland/Rangeland	791	30	50	75		94.91	27.69	5.35	2.70
Mixed Forest	595	150	40	75		91.13	2.45	3.46	38.06
Sand Dunes/Flats	0	25	30	20		0.00	0.13	0.00	0.00
Shrublands	432	50	40	50		23.85	9.81	2.31	0.33
Water/Wetlands*	259	35	5	5		3.00	1.25	0.64	0.72
Total	3880	515	300	450		256.05	102.51	18.61	46.72

Landcover Type	Proposed Acres		Actual Acres	
	2021-2023	Total	2021-2023*	Total*
Conifer Forest	10	382	0.75	1.72
Deciduous Forest	65	1709	1.47	61.97
Disturbed/Developed	65	437	0.00	54.63
Grassland/Rangeland	100	1046	8.31	138.96
Mixed Forest	70	930	2.05	137.15
Sand Dunes/Flats	5	80	0.00	0.13
Shrublands	30	602	0.91	37.21
Water/Wetlands*	5	309	0.00	5.61
Total	350	5495	13.49	437.38

*Acreages for Construction projects were not available as of the writing of this document. Totals will be described in the 2023 annual report.

Table 2.4. Amount of landcover by type (buffered by 25 ac/vegetation type, excluding water/wetlands) proposed for removal during 2024-2026 construction activities in the Training Area on Fort Drum Military Installation.

Landcover Type	Proposed Acres
Conifer Forest	10
Deciduous Forest	65
Disturbed/Developed	50
Grassland/Rangeland	125
Mixed Forest	90
Sand Dunes/Flats	5
Shrublands	100
Water/Wetlands*	5
Total	450

2.1.1.3 Active Season Clearing

As discussed in Fort Drum's previous BAs, in order to facilitate small, unanticipated training-related projects, Fort Drum may need to clear trees in the Training Area during the time of year bats may be present on the property.

While Fort Drum will wait until after the vast majority of maternity colony activity has decreased (after August 15), we may need to clear trees prior to when all bats have left the installation for hibernation.

As part of the previous BAs, it was determined the boundary for clearing trees after August 15 would only occur north and east of US Military Highway (Figure 2.1). This area is adjacent to most of the range facilities, and is most likely where small projects covered under this scenario would be sited. Because no Indiana bat activity is anticipated in this area, this component of the proposed action is not likely to adversely affect that species. While this area is outside the area of known maternity colony use by the Indiana bat, it is within the prior known use area of the northern long-eared and tricolored bat. Therefore, the following only applies to those two species.

During 2015-2017; 2018-2020, and 2021-2023 BAs, up to 10 ac per year were anticipated to be cut during the active season; however, only approximately 0.77 ac was actually cleared during this time (and only 0.35 ac of forest habitat). Please see email correspondence from 10/12/2017 and the 2017 Annual BO Report for more information. No other actions were required. Fort Drum may still have this requirement in the next three years. Therefore, we still consider there will be up to 10 ac per year (with no more than 5 ac total in one contiguous location) that would be removed for an immediate construction need during 2024-2026. There may be many combinations of forested habitat removal as part of this requirement (e.g., 2 projects that could remove up to 5 ac each, 5 projects that could remove 2 ac each, etc.). Although projects are subject to change, typical projects tend to be adjacent to existing trails or roads and are roughly 2 ac in size. Additionally, these projects would be anticipated to occur near existing ranges.

Before construction begins, each project will be evaluated for potential northern long-eared and tricolored bat habitat. If the project site has no suitable roosting habitat (i.e., all trees are less than 3 in DBH, there are no dead/dying large diameter trees), roosting is unlikely, and there will be no potential adverse impacts to roosting bats.

Even if suitable roosting habitat is present and the project cannot be delayed until after October 15, Fort Drum now considers the probability that northern long-eared bats would be present during tree removal activities to be unlikely. Population sizes of this species are so small now that the likelihood of adverse impacts is discountable with this (or any other) activity on Fort Drum.

However, if suitable roosting habitat is present and the project cannot be delayed until after October 15, there is the potential that a small number of tricolored bats could be present during tree removal activities. Only a small number (6 total individuals) have been captured during mist netting sampling on Fort Drum; however, this species is a weak flyer that typically forages at canopy level or above (USFWS 2021) which leads to lower probability of captures using mist nets. Historically we have picked up enough probable acoustic detections to indicate that the species was likely present in small numbers sporadically across the installation. And while these detections have declined (in many cases as drastically as Indiana and northern long-eared bats), more information is needed to quantify the extent of the decline. Until that time, we can't rule out the probability that a small number of tricolored bats may be adversely impacted by this activity. All tricolored bats will be volant and most would be anticipated to fly away unharmed. However, some bats may be caught off guard by the tree removal actions and may become trapped at, or be unwilling to leave, their roost and subsequently be crushed and killed.

No land clearing for construction projects will occur between 16 April and 15 August anywhere on Fort Drum, and no construction projects will occur south/west of US Military Highway between August 16 - October 15. If an action is required south/west of US Military Highway, then additional consultation is needed with the USFWS. If Indiana bats are captured north/east of US Military Highway, then additional consultation is needed with the USFWS. Further consultation is also needed if a project exceeds 5 ac per site or if the cumulative acreage exceeds 10 forested ac per year.

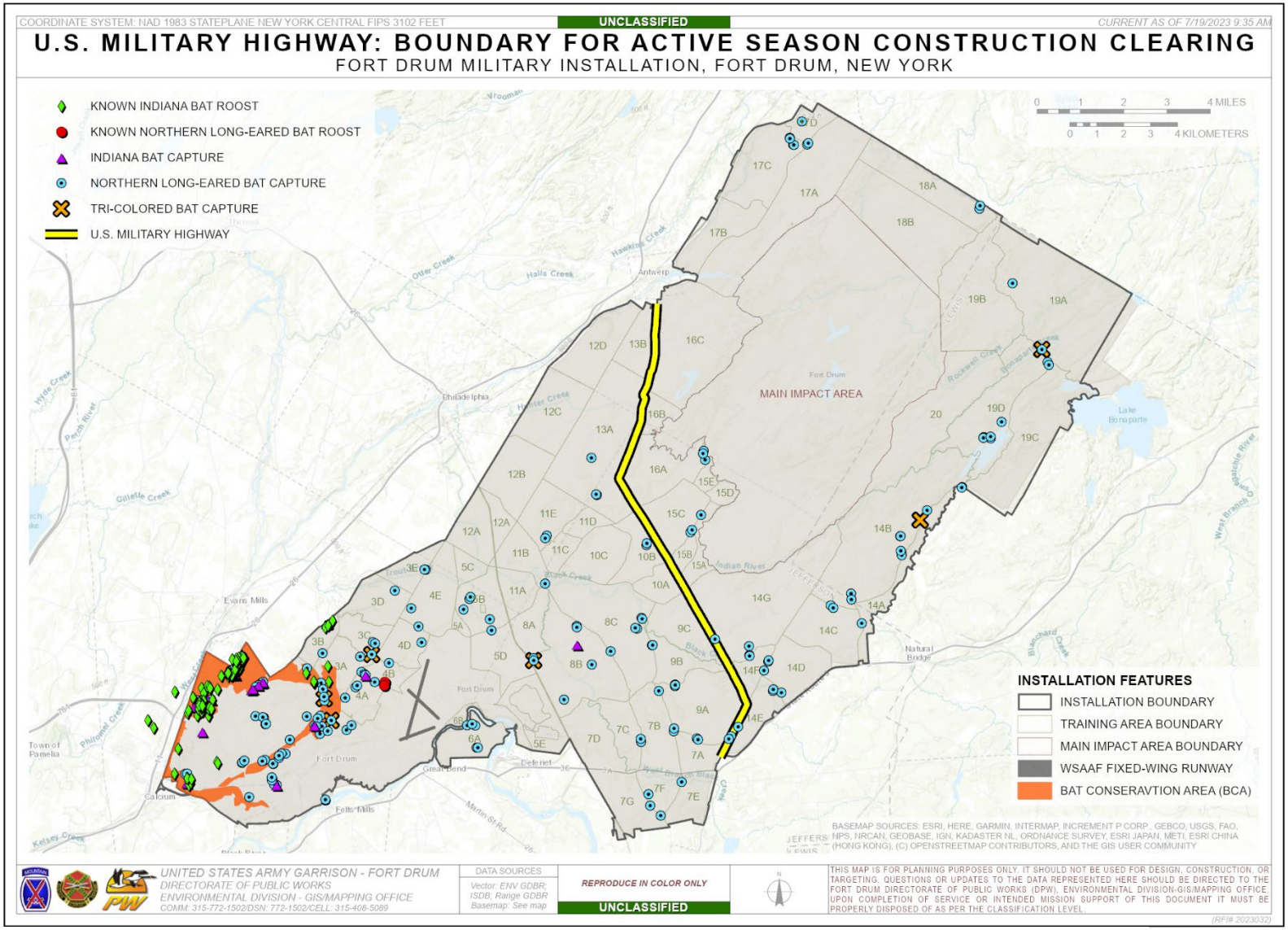

Figure 2.1. Location of US Military Highway boundary for active season clearing for construction projects on Fort Drum Military Installation.

2.1.1.4 Demolition

We anticipate up to approximately 50 buildings on the installation may be demolished between 2024- 2026. The majority of buildings scheduled for demolition were built in the 1940s and are in the Cantonment Area. Demolition will occur any time of the year as long as no bats are documented in the structure. The LeRay Mansion and Building 2803 are the only buildings on Fort Drum known to have (had) permanent, resident bats—a maternity colony of little brown bats and big brown bats (*Eptesicus fuscus*), respectively. If bats of any species are discovered prior to, or during the course of demolition, then all work must cease and Fort Drum's Fish and Wildlife Management Program must be immediately contacted. If bats are identified as Indiana, northern long-eared or tricolored bats, then additional steps will be taken to try and minimize impacts to the species, and additional consultation with the USFWS is required. If the structure is safe to leave as is, then it will be left until after the bats have stopped using the structure for the year. If the structure is unsafe and poses a risk to human health and safety, Fort Drum will attempt to exclude the bats immediately. If this is not possible, or bats are found to be using a structure during the maternity season when pups are not volant, the Fort Drum Fish and Wildlife Management Program will contact USFWS to discuss the most appropriate course of action.

2.1.1.5 Wetland Mitigation

Fort Drum has established a wetland mitigation bank to offset permanent impacts to wetlands (where appropriate). This mitigation bank was developed in accordance with US Army Corps of Engineers Mitigation Guidelines (33 CFR Parts 325 and 332; 40 CFR Part 230) and currently contains three sites (North Corner, Antwerp, and Range 37 Borrow Pit; Figure 2.2). Other than some minor vegetation management (e.g., invasive species control) and some beaver control actions, there was no maintenance or management required at these sites during 2021-2023. There is no other management (outside that listed above) anticipated at these sites during 2024-2026.

Fort Drum's mitigation bank was not utilized/debited for wetland impacts during 2021-2023. There are no current plans for new wetland construction during 2024-2026; however, small onsite wetland creation could occur to offset impacts, and/or the wetland bank will continue to be utilized when appropriate.

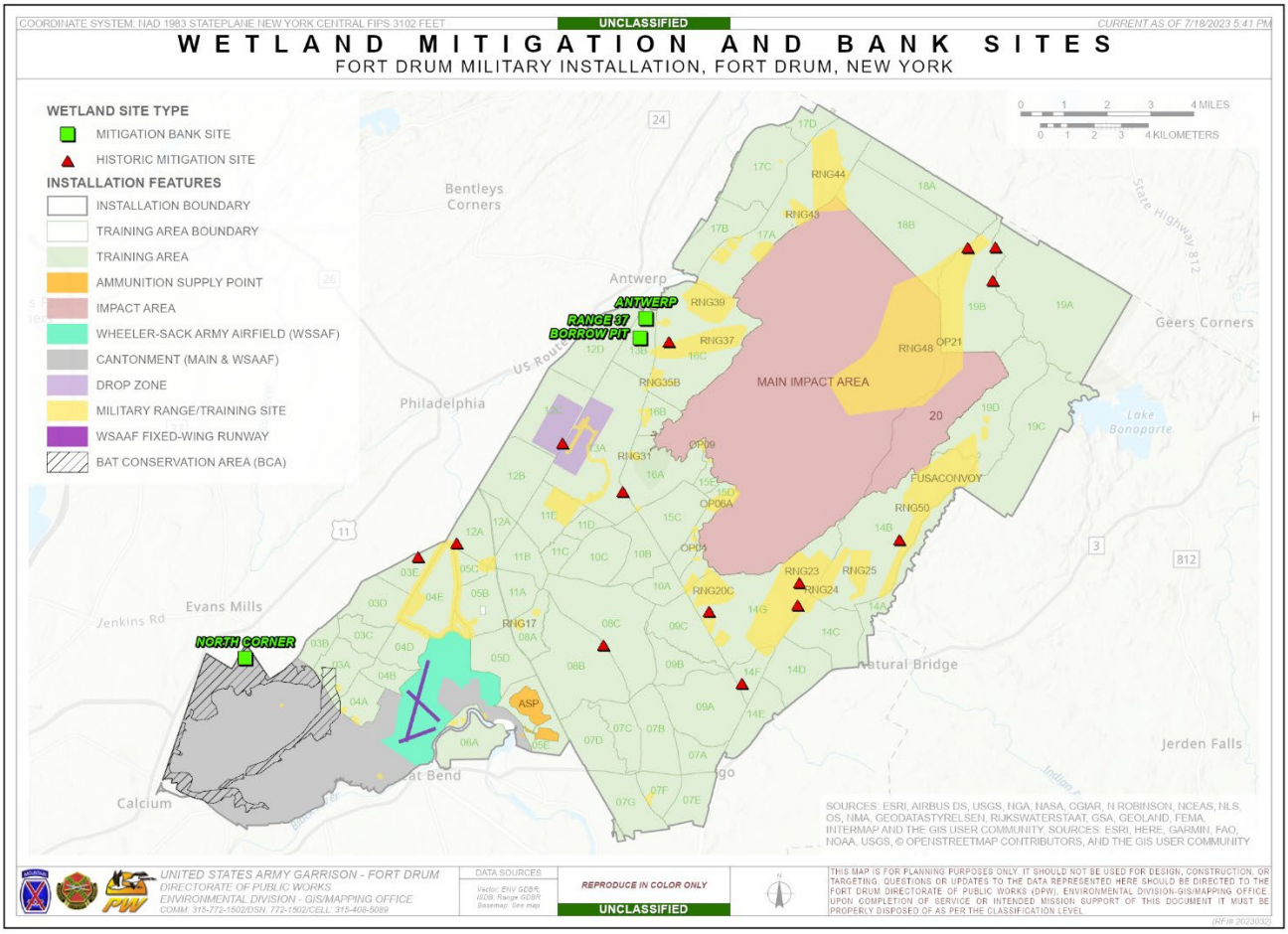

Figure 2.2. Constructed wetland mitigation sites and wetland bank sites on Fort Drum Military Installation.

2.1.2 Conservation Measures for Construction Activities

1. Bat Conservation Area. A 2,200+ ac Bat Conservation Area (BCA) was established in 2008 to protect known Indiana bat roosting and foraging areas from permanent development within the Cantonment Area. The BCA attempts to provide connectivity of existing habitat in the Cantonment Area along the West Creek and Pleasant Creek corridors and the relatively undeveloped northern portion of the Cantonment Area where most of the known primary and maternity roosts are known. The BCA accounts for more than 20% of the total land area in the Cantonment Area. See *Section 3.1* for more information about the BCA. The BCA will also provide protection for northern long-eared and tricolored bats within the Cantonment Area.

2. Roost Tree Protection. All female roosts, including roosts identified in the future, will be protected from construction for the lifespan of the roost tree. Additionally, a buffer will be placed around all female roosts to protect the roost from disturbance and to maintain a semblance of a natural environment for each protected bat species. The size and shape of a buffer will be determined on a case by case basis by Fort Drum's Fish and Wildlife Management Program in consultation with the USFWS. Factors that will be considered will include surrounding landscape, habitat connectivity, distance to other roosts, distance to known foraging areas, and any other issue important to target species.

3. Time of Year Restriction for Tree Felling. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting Indiana, northern long-eared and now tricolored bats during non-hibernation seasons. For the majority of construction activities, felling of trees must take place between October 16 - April 15 while most bats are at the hibernaculum. This will greatly reduce the risk of accidentally harming bats that may potentially be present in trees scheduled to be removed. Specifically, maternity colonies and their associated non-volant young will be protected from disturbance.

4. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any construction activities for a given project. Flagging will be removed upon completion of the project.

5. Via Environmental Protection Plans, Scope of Works, Contracts, etc., all personnel responsible for construction activities will be informed about the need to follow design plans, stay within flagging, minimize impacts to wildlife and other environmental concerns.

6. Outdoor Lighting Minimization. For all future projects, Fort Drum will evaluate the use of outdoor lighting and seek to minimize light pollution by angling lights downward or via other light minimization measures following Appendix Y. High light levels may deter bats from areas as their nocturnal behavior may have evolved in response to predation risks (Speakman 1995, Sparks et al. 2005). By angling the light away from potential foraging and roosting areas, the area will be darker thus providing bats more protection from predators.

7. Demolition. If the building has pre-existing known bat colonies, then Fort Drum's Fish and Wildlife Management must be contacted before demolition is to occur. If during the course of demolition, bats of any species are discovered, then all work must cease and Fort Drum's Fish and Wildlife Management Program must be immediately contacted. If bats are identified as Indiana, northern long-eared or tricolored bats, then additional steps will be taken to try and minimize impacts to the species and additional consultation with the USFWS is required. If the structure is safe to leave as is, then it will be left until after October 15, or until bats have stopped using the structure. If the structure is unsafe and poses a risk to human health and safety, Fort Drum will attempt to exclude the bats immediately. If this is not possible, or bats are found to be using the structure during the maternity season when pups are not volant, the Fort Drum Fish and Wildlife Management Program will contact USFWS to discuss the most appropriate next course of action.

8. Water Quality. All construction activities with ground disturbance greater than one acre or that meets another requirement of the New York State Department of Environmental Conservation, are required to follow standards in New York State Pollutant Discharge Elimination System: Storm water General Permit for Storm water Discharges (Permit No. GP-0-08-001 Issued Pursuant to Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law). All construction projects over an acre are required to prepare a sediment and erosion control plan or a storm water pollution prevention plan (SWPPP), which details all erosion and sediment control practices and, when necessary, post-construction storm water management practices. Practices mentioned within the SWPPP will be in accordance with the New York State Stormwater Management Design Manual ("Design Manual") dated August 2003, or the most current version or its successor. Erosion and sediment controls vary, depending on individual impacts from each project. Some temporary examples of erosion and sediment controls include silt fences, check dams, and sediment traps. Permanent controls may include retention ponds, detention ponds, and grass lined swales. With water quality control measures in place, it is expected that declines in water quality will be minimal and thus will continue to provide adequate habitat for Indiana bat prey and drinking water for Indiana bats. In fact, water quality may actually improve during the construction of future projects due to new stormwater practices that mitigate for old water quality issues when no conservation measures were required or implemented.

9. Record-keeping and Reporting. For annual reporting purposes, all entities responsible for construction activities on Fort Drum will submit electronic shapefiles of clearing limits to Fort Drum's Fish and Wildlife Management Program. This information will be used to describe vegetative cover types and habitat loss on Fort Drum and reported annually to the USFWS.

2.1.3 Effects to Indiana and Northern Long-eared Bats

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of construction that was previously analyzed in the previous BAs and that will occur on Fort Drum over the next 3 years. During 2009-2023, Fort Drum had anticipated that construction could occur on up to 9885 ac of which approximately 8100 ac could impact natural habitat. Construction actually occurred on only approximately 1175 ac of which 821 ac occurred within natural vegetated habitat. There may be some additional construction after the completion of this document and prior to the end of the calendar year, and that will be identified through the end of year reporting requirements.

Between 2024-2026 we anticipate up to 450 acres of construction, with approximately 395 acres within natural habitat.

While construction type and/or location may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under the previous BAs. Furthermore, projects are spread out across the Cantonment and Training Areas. Therefore, the effects analysis discussed in the previous BAs continues to reflect our general understanding of potential impacts to Indiana and northern long-eared bats.

Indiana bats - The conservation measures (including timing restrictions) avoid the likely potential for lethal impacts or injury to Indiana bats. In addition, there is no harm anticipated from tree removal proposed to occur in winter given the extent of the protected roosting and foraging habitat within the BCA. There are no impacts anticipated from the minimal active season tree

removal proposed outside of the BCA as Indiana bats are not likely to occur in those area (discountable). Finally, documented declines (from netting and acoustic results) on Fort Drum and the continual decline in Indiana bats at Glen Park (~100 individuals remaining) further reduce any likelihood of Indiana bats being affected by construction activities.

Northern long-eared bats - The conservation measures (including timing restrictions) avoid the likely potential for lethal impacts or injury to northern long-eared bats. In addition, there is no harm anticipated from tree removal proposed to occur in winter given the extent of the protected roosting and foraging habitat within the BCA and remaining available habitat outside of the BCA. There are no impacts anticipated from the minimal active season tree removal proposed outside of the BCA as northern long-eared bats are not likely to occur in those areas (discountable). Finally, documented declines (from netting and acoustic results) on Fort Drum and the continual decline in northern long-eared bats throughout New York further reduce any likelihood of northern long-eared bats being affected by construction activities.

Please see Appendices A-C, Section 2.1 as well as annual reports provided to the USFWS for a more detailed description and background of these activities as well as maps of the previous locations for construction activities.

2.1.4 Effects to Tricolored Bats

Fort Drum does not anticipate that there will be any different impacts to tricolored bats than to Indiana or northern-long eared bats (with the exception of the small scale in-season construction identified above). All these bat species utilize live and/or dead trees and vegetation in a similar manner for summer roosting. Although Indiana and northern long-eared bats primarily utilize cavities, cracks, crevices, and bark in trees greater than 3” dbh and tricolored bats primarily utilize live and dead leaf clusters of live or recently dead deciduous hardwood trees (greater than 3” dbh), pine needles, and eastern red cedar for roosting, the conservation measures in place regarding trees and vegetation currently protect any tree removal over 3” dbh between 16 April-15 October. Therefore, as with the other two bat species, any small number of tricolored remaining on Fort Drum’s landscape will be protected from the majority of tree removal and adverse impacts. There is ample remaining habitat left on the landscape, and habitat is not limiting for this species.

2.1.5 Conclusion

All covered construction activities in 2024-2026 may affect, but are not likely to adversely affect either Indiana, northern long-eared, or tricolored bats (except for small scale, in-season construction for this species).

Although there will be a cumulative, permanent loss of some potential foraging and roosting habitat within the Cantonment and Training Area, conservation measures are in place that will minimize potential adverse impacts to these species. The BCA will continue to protect 2200 acres that encompasses the known maternity colony of Indiana bats, with all associated known primary maternity roosts, approximately 93% of all known roosts, and the majority of known foraging habitat on Fort Drum. As northern long-eared and tricolored bats have also historically been captured within the Cantonment Area, the BCA will provide protection for those species as well. Additionally, a tree cutting restriction between April 16–October 15 will protect the majority of Indiana, northern long-eared, and tricolored bats on the property outside of the BCA.

Normal construction activities in the Training Area are likely to have minimal effects on the known maternity colony of Indiana bats. Indiana bats have used the same general areas on Fort Drum since 2006, and it is expected that they will continue to utilize these areas as long as suitable roosting and foraging areas remain available. Given the declines of Indiana bats due to WNS, it is unlikely that the remaining population would abandon a historic roosting and foraging area to exploit new areas. Given the extremely low numbers of hibernating Indiana bats now in Glen Park, the probability that Fort Drum has more than a small number of bats utilizing the property is extremely low. With only approximately 100 total Indiana bats left in the cave, there are likely only approximately 50 or so females present, with even a slightly smaller percentage of reproductively active females on any given year. Glen Park used to populate numerous maternity colonies in the greater Jefferson County area. If it continues to feed out to even 5 maternity colonies, based on previous maternity colony sizes, there would likely only be 5-15 individual females at each of the remaining colonies, including Fort Drum.

Normal construction activities in the Training Area are also likely to have minimal effects on northern long-eared bats. Given the limited loss of suitable habitat, the vast amount of natural habitat available and the amount expected to remain in the Training Areas, and the WNS induced reductions of northern long-eared bats on Fort Drum, there should be ample roosting and foraging area available for the remaining population of northern long-eared bats.

Previously, Fort Drum anticipated that although normal construction activities should pose minimal impacts, active season clearing for immediate need range small scale construction projects may lead to unavoidable impacts to northern long-eared bats. We no longer believe that is likely. Given the overall WNS induced declines, the population size identified in the USFWS Standing Analysis for the species, the fact that we have not physically captured a northern long-eared bat since 2011, and the continued reduction in probable acoustic detections of the species, we suggest that the numbers of individual northern long-eared bats that is likely present on Fort Drum is minimal.

While we no longer believe these small scale in-season construction projects are likely to result in adverse impacts to northern long-eared bats, they still could for the proposed endangered tricolored bats. These activities may clear up to 10 acres/year during the time of year bats are present on Fort Drum. Little is known about tricolored bat roosting (or overall use) on Fort Drum, and there is potential for these bats to be found in the range construction project areas. No tree clearing will occur before 16 August to avoid impacts to non-volant pups, and all bats should be able to leave the project footprint once disturbance starts. However, the potential exists that a small number of individual tricolored bats may not be able to escape the work area during active tree clearing activities at the project location and will subsequently be crushed and killed.

2.2 Military Training

Fort Drum has been used as a military training site since 1908, and military training continues to be the primary purpose of the installation. Training is somewhat dictated by weather and climate; however, training occurs on Fort Drum year-round at all times of the day and night. The majority of training is conducted in the Training Area. The Training Area comprises approximately 97,737 ac —over 90% of the entire installation—and can be roughly divided into three components: maneuver area, ranges, and the Main Impact Area. Additional training activities also occur in the Local Training Areas (LTAs) within the Cantonment Area.

2.2.1 Military Training Activities

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of military training that was previously analyzed in the previous BAs and that will occur on Fort Drum over the next 3 years. While training type and/or intensity may vary annually as differing numbers of soldiers utilize the facilities, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under the previous BA for sustainment operations, engineering operations, air operations, water operations, field training operations, live munitions training, demolition, and smoke/obscurants. Please see Appendices A-C, Section 2.2 for a more detailed description and background of these activities as well as maps of the Training Area, LTAs, and range facilities. Here we discuss the only kind of military training anticipated to cause adverse affects to tricolored bat. No effects of any other military training are anticipated to occur to Indiana or northern long-eared bat.

Smoke/Obscurants

Smoke/obscurants are used to conceal military movements and help protect troops and equipment. They can be used throughout the Training Area as part of another military operation, or as part of an independent training scenario. Although they would be primarily used during the day, smoke/obscurants may be deployed at night.

For the purposes of this BA smoke/obscurants are classified into three categories: (1) smoke operations-operations that utilize fog oil to produce large amounts and sustained smoke; (2) colored smoke, smoke grenades, and smoke pots (aka pyrotechnics) -items that typically utilize terephthalic acid (TPA) to produce smoke; and (3) smoke munitions-those items that typically utilize white phosphorous (WP) for signaling, screening and incendiary purposes.

Category 1

Although Category 1 smoke operations have not been utilized on Fort Drum in the past 10+ years, this type of training could occur on approximately 30,000 ac of the Training Area. Smoke training would be rotated regularly among multiple areas to minimize impacts to any one area of the installation. A typical training exercise that uses smoke/obscurants and smoke generators would normally last from 1 to 4 hours. Smoke generators may generate smoke from fixed locations or during mobile operations covering up to several hundred acres or more. Smoke dispersion is variable depending on means of dispersing smoke (i.e., fixed or static) and weather conditions (i.e., wind). Refer to Appendix A for representative examples of fog oil dispersion from static and mobile smoke training areas in Pasquill atmospheric stability category E (3D/International 1997). Graphite smoke is currently not approved for large scale use on the installation, therefore it will be excluded from analysis. If a graphite smoke operation is planned, further consultation with the USFWS will be required.

Potentially up to 200 days of training could be conducted using fog oil smoke each year. In those 200 days, approximately 270 generator-hours (number of hours each generator would operate annually x number of generators used on installation) would produce fog oil smoke per year. Approximately 22,120 gallons of fog oil per year could be used on Fort Drum to produce fog oil smoke.

Category 2

TPA is used in Category 2 floating or ground smoke pots, and in smoke grenades (aka pyrotechnics). TPA is ignited and burned to produce smoke. The primary combustion products of TPA are carbon monoxide, carbon dioxide, sulfur dioxide, benzene, toluene, and formaldehyde. It is used alone, or in combination with fog oil to fill in incomplete fog oil screens. Smoke grenades would typically generate 30 seconds to 2 minutes of smoke and smoke pots would typically generate up to 5 minutes of smoke. Refer to Appendix A-C for past usage of smoke/obscurants for concentrations of TPA at varying distances (Pasquil Category B).

Category 3

Category 3 WP is used for signaling, screening, and incendiary purposes, and is usually dispersed by explosive munitions. WP is used only on the Range facilities and in the Main Impact Area. WP flame produces a hot, dense white smoke composed of particles of phosphorus pentoxide, which are converted by moist air into phosphoric acid. WP ignites when it is exposed to air and may cause burns. Smoke typically lasts up to 15 min.

2.2.2 Conservation Measures for Military Training

1. a) No Category 1 smoke operation will be conducted within 1,000 m of the installation boundary, public roads, Cantonment Area, ammunition supply point or WSAAF in accordance with *Fort Drum Regulation 350-4 Range Regulation* and *Fort Drum Regulation 350-6 Assignment and Operational Use of Local Training Areas (LTAs)*. This restriction currently protects all known Indiana roosts and the majority of the known maternity use area (i.e., roosting and core foraging area) from close proximity smoke exposure.

   b) In the Training Area, Category 1 smoke and obscurants must be used >100 m from any known Indiana, northern long-eared, or tricolored bat maternity roost areas between April 16 – October 15. This will help to protect bat roosts into the future. The 100 m buffer serves to minimize the effects of smoke and obscurants by providing distance between the roost and the densest amount of the smoke/obscurants. Training missions will be aware of maternity areas via the NEPA process and will be directed to avoid these areas.

   c) Category 1 smoke operations must also be rotated among training areas to minimize impacts to any one area.

   d) The use of Category 2 smoke (aka pyrotechnics) may be used in the Training Areas at any time within 1,000 m of the installation boundary, but will not be used within 100 m of any known Indiana, northern long-eared, or tricolored bat roost areas between April 16 - October 15.

   e) Category 2 smoke may not be used within 100 m of any forested areas within the LTAs between April 15 - October 15, (with the exception of use at the mobile MOUTs as identified in f) below). Approval from Range Control and NEPA review is required prior to any use of Category 2 smoke, and these reviews will help ensure that Category 2 smoke use is in accordance with this conservation measure.

f) Category 2 smoke may be periodically used at three mobile MOUTs within the LTAs during April 15- October 15. All mobile MOUTs are currently outside of the BCA, but are in relatively close proximity (approximately 25, 35, 140m, respectively). Only infrequent use of colored smoke is expected to be used in around the mobile MOUTs. The closest known roost tree to the Mobile MOUTs is approximately 270m away. With the exception of the Category 2 colored smoke used at the mobile MOUTS, no other smoke or obscurant may be used in the BCA. Currently, all known Indiana bat maternity roosts are found within the BCA or within a 1,000 m from the installation boundary.

2. In the Training Area and LTAs, the cutting of trees and tree removal is prohibited without approval by Fort Drum's Forest Management Program in accordance with current Environmental Guidelines. If approved, actions will be in accordance with all conservation measures in *Section 2.3 Forest Management*. In general, this is a relatively rare military training action. No female roosts, including roosts identified in the future, will be felled for training for the lifespan of the roost. No tree felling will occur in the BCA for training purposes.

3. In the LTAs, vehicular traffic is restricted to open grassy areas within easy access of the road in accordance with *Fort Drum Regulation 350-6 Assignment and Operational Use of Local Training Areas*. Vehicles are not permitted to cross streams, ditches, wetlands, or dense vegetation in order to reach grassy areas without prior NEPA review, thus minimizing impacts to natural habitats.

4. In the LTAs, POL operations are prohibited in accordance with *Fort Drum Regulation 350-6 Assignment and Operational Use of Local Training Areas.* This helps to minimize the risk of accidental water/ground contamination.

5. Fort Drum will abide by the Fort Drum Integrated Wildland Fire Management Plan (Fort Drum 2023) which includes fire danger ratings, unless under special circumstances that are approved by the commander. Military activities that may spark fires will not be conducted during moderate to high danger ratings in order to prevent unintentional wildfires. Although unintentional fires will still ignite and burn, this conservation measure will help protect Indiana, northern long-eared, and tricolored bats from smoke exposure and from roost destruction. Burn bans are most likely implemented during the summer months when reproductive bats are present on Fort Drum.

2.2.3 Effects to Indiana, Northern Long-eared, and Tricolored Bats

After reviewing the project description and effects analysis for this section in the previous BAs, Fort Drum has determined they are suitable in scope to include any potential impacts to Indiana, northern long-eared, and tricolored bats. We have also determined that the conservation measures are suitable for all species. Subsequently, we have reaffirmed that military training activities may affect, but are not likely to adversely affect Indiana bats, as they should have no different impacts in the next three years as they had in the previous twelve covered under the prior BAs. Additionally, we have determined those activities may also affect, but are not likely to adversely affect northern long-eared bats for the same reasons (e.g., small current population size of the species, type and location of training actions having little to no impact to suitable bat habitat, the bat's ability to avoid particular training activities, and the bat's ability to adapt to training related noise and actions given the length of time Fort Drum has been used for military training) identified through the previous analysis. Also, due to these same analysis and rationale, we suggest military training activities (with the exception of the use of smoke and

obscurants-see below) are also not likely to adversely affect tricolored bats. All three of these species have similar enough life histories and needs that there should be no significant deviation from any adverse impact from one species to the next.

It should be noted, that in the previous BAs, Fort Drum had determined that the use of smoke/obscurants (specifically Category 2) was likely to adversely affect northern long-eared bats. We no longer believe that is likely. As discussed in Section 1.6, given the overall WNS induced declines, the population size identified in the USFWS Standing Analysis for the species, the fact that we have not physically captured a northern long-eared bat since 2011, and the continued reduction in probable acoustic detections of the species, we suggest that the numbers of individual northern long-eared bats that is likely present on Fort Drum is minimal. Therefore the likelihood of northern long-eared being exposed to the effects of Category 2 smoke is discountable.

While we no longer believe the use of Category 2 smoke and obscurants is likely to result in adverse impacts to northern long-eared bats, it could for the tricolored bat. Little is known about tricolored bat roosting (or overall use) on Fort Drum, and there is potential for these bats to be found in areas where smoke and obscurant use is occurring.

Although no adverse affects are anticipated to bats within the known historical roosting Indiana bat within the Cantonment Area and Training Areas 3 and 4, tricolored bats in unknown roosts outside of those areas may be adversely affected by Category 2 smoke. Since little is known about the locations of roosting areas for these bats, the use of Category 2 smoke could impact this species. Although some Training Areas are utilized for Category 2 smoke training activities more than others (Figures 2.6 and 2.7 in Appendix C), typically smoke amounts vary spatially and temporally across the installation on any given year, making it difficult to predict exposure. Category 2 smoke typically lasts only approximately 2 min in duration, making the likelihood of exposure extremely limited. However, if bats are within an area that this smoke is being used, they may become irritated, leave the area, and potentially become stressed from the activity. Furthermore, if enough Category 2 smoke was deployed at once (e.g., 10 grenades at 2 mins each), the adults may become irritated enough to abandon a roost, potentially leaving non-volant young behind. If the adult female were to permanently abandon the pup, her reproductive effort would be eliminated for that year. Additionally, even if pups are abandoned only temporarily, this reduced parental care could ultimately lead to increased predation risk for the pup, reduced nutritional intake, or increased exposure to unsafe quantities of smoke leading to latent chronic effects. Additionally, if colored smoke or other smoke grenades are deployed within 30 m of the unknown roosts with non-volant young, young bats may inhale unsafe quantities of smoke, which could result in acute effects (3D/International 1997). Pups may suffocate or fall out of the roost and die. Given that this possibility cannot be discounted, Category 2 smoke operations are likely to adversely affect non-volant roosting tricolored bats.

Little is known about foraging locations on Fort Drum for tricolored bats, however, mist-net surveys and acoustic documentation has identified historical tricolored bat use throughout the installation, indicating that suitable foraging habitat was likely present throughout the property. Because of the same rational used for Indiana bats in previous BAs, it is unlikely tricolored bats would encounter enough Category 2 smoke within the Cantonment Area to lead to adverse effects. If tricolored bats are foraging in the Training Area and encounter Category 2 smoke, there is a possibility that they could be exposed to potentially harmful chemicals. However, smoke grenades and colored smoke typically last only a couple of minutes in duration, and bats have the ability to avoid these areas, thus limiting exposure. Moreover, it has been documented that tricolored bats typically forage at canopy level or above (USFWS 2021), thus limiting

exposure to smoke use that is deployed on the ground. Unless large numbers of grenades were deployed continuously for a lengthy period of time and smoke billowed up into the canopy (which is not how this smoke is typically used or reacts), there should be no adverse affects to tricolored bats while foraging. Additionally, Category 2 Smoke is deployed throughout the Training Areas, and amounts typically vary spatially and temporally across the installation on any given year (Figures 2.6, 2.7, and 2.8 from Appenidix C). Thus bats will have many areas on any given year where smoke is not utilized at all. Subsequently, there are large areas of suitable foraging habitat that bats could easily travel into without much additional energy expenditure or risk of predation. As such, Category 2 smoke may affect but should not adversely affect tricolored bats as they forage in the Training Area.

2.2.4 Conclusion

Considering their presence on Fort Drum and the length of time Fort Drum has been an active military installation, it is assumed that Indiana, northern long-eared, and tricolored bats have adapted to military noise, training, and other subsequent military related activities. No type of military training is expected to do lead to adverse effects except the use of smoke/obscurants (specifically Category 2 smoke). The use of this type of smoke is not anticipated to adversely affect Indiana and northern long-eared anywhere on Fort Drum, nor is it anticipated to impact tricolored bats within the Indiana bat core roosting and foraging area. However, tricolored bats using unknown areas in the Training Area for roosting and foraging are likely to experience adverse effects primarily through smoke inhalation (non-volant pups), reduced fitness, added energy expenditure and stress (adults), and death (non-volant pups).

2.3 Forest Management

2.3.1 Forest Management Activities

Please see Appendix A, Section 2.3 for more detailed information about the Forest Management Program on Fort Drum.

In the 2018-2020 and 2021-2023 BAs it was anticipated that approximately up to 2500 ac and 2000 ac of forests would be harvested, respectively; however, actual harvest during those time periods was approximately 1240 ac and 757 ac (Tables 2.5 and 2.6, respectively). Fort Drum does not anticipate any changes over the next 3 years to the amount, type, and/or completion of forest management actions from the 2021-2023 BA.

Forest management on Fort Drum utilizes both even-aged (e.g., clearcutting or shelterwood) and uneven-aged (e.g., thinning or group selection) harvest methods to manage forests to support military training, timber production/health, and wildlife habitat creation/enhancement. Environmental conditions (e.g., wet or rocky soils), training requirements, and stand characteristics dictate harvest methods. It is anticipated that approximately one quarter (up to 500 ac) of the harvesting would be completed for military training, one half (up to 1000 ac) completed for uneven-aged management, and one quarter (up to 500 ac) completed for even-aged management. It is also anticipated that even-aged management (e.g., clearcutting) will typically occur on sites no larger than 50-75 ac in one contiguous location, and no more than 200 ac per year.

Most timber harvesting and TSI is expected to occur within the Training Area, and no treatments are currently scheduled within the Cantonment Area. Other actions (e.g., tree clearing for construction, maintenance activities, invasive species management, or other goals) may require

the removal of trees in the Cantonment Area, however, these are not sustainable forestry actions and are addressed in *Section 2.1 Construction* and *Section 2.4 Vegetation Management*, respectively.

Table 2.5. Approximate acreage of forests that were proposed for harvest between January 2018 -December 2020, and acreages actually harvested on Fort Drum Military Installation-*numbers have been revised from the 2018-2020 BA and annual reports as appropriate.*

Forest Type	Proposed Acres	Actual Acres
Conifer	400	169.20
Deciduous	300	696.40
Mixed	800	374.70
Buffer	1000	0
Total	2500	1240.30

Table 2.6. Approximate acreage of forests that were proposed for harvest between January 2021 -December 2023, and acreages actually harvested on Fort Drum Military Installation-*numbers have been revised from the 2021-2023 BA and annual reports as appropriate and will be updated once final harvest delineations are finalized for 2023.*

Forest Type	Proposed Acres	Actual Acres
Conifer	350	396.87
Deciduous	650	314.67
Mixed	500	45.94
Buffer	500	0
Total	2000	757.48

Table 2.7. Approximate acreage of forests that are proposed for harvest between January 2024 -December 2026 on Fort Drum Military Installation.

Forest Type	Proposed Acres
Conifer	350
Deciduous	650
Mixed	500
Buffer	500
Total	2000

Military Training Support

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of military training support actions that was previously analyzed in the previous iterations of BAs and that will occur on Fort Drum over the next 3 years.

While these support actions may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under the previous BAs. Please see Appendix A, Section 2.2 for a more detailed description and background of these activities. Please also see Appendix A, Section 2.3 for more information regarding forest management for military training support.

Timber Production/Forest Health

This section deals with harvests to promote overall stand and forest health. It differs from the TSI actions described above. Actions carried out to support timber production/forest health in the next three years are expected to be similar to those covered under the previous iterations of BAs. While actions may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under those previous BAs. Please see Appendix A, Section 2.3 for more information regarding forest for timber production/forest health.

Wildlife Habitat Management

Actions carried out to support wildlife habitat management in the next three years are expected to be similar to those covered under the previous iterations of BAs. While amount, type, and/or duration may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under those previous BAs. Please see Appendix A, Section 2.3 for more information regarding forest management for wildlife habitat management.

Water Quality Protection

Fort Drum's Forest Management Program and Wetlands Management Program developed several measures to minimize the risks of impacting water quality from soil disturbance, which also provide a benefit to a variety of wildlife.

1. If possible, new log landings will be constructed at least 200 ft (61 m) from water bodies and wetlands.

2. Spill kits and oil absorbent mats will be present on log landings in case of fuel, lubricant or hydraulic fluid spills or leaks.

3. If necessary, soil will be stabilized by seeding and mulching at the end of the operation.

4. Where possible, skid trail grade will be maintained at less than 15%. Where higher grade is unavoidable, the grade will be broken, drainage structures will be installed, and soil stabilization practices will be used where needed to minimize runoff and erosion.
5. Debarking and other damage to residual trees will be minimized wherever possible.

6. Stream crossings will be used only when absolutely necessary. If necessary, bridges will be deployed to minimize damage to bed and bank of the stream.

7. Streams will be crossed by the most direct route.

8. Ruts will be filled in, and water bars and erosion barriers will be installed to prevent or minimize erosion and sedimentation from roads, skid trails and log landings.

9. Erosion control measures will be inspected within 24 hours after a rain event and checked once per week. Erosion controls will be maintained or removed as needed.

10. No machinery will be operated in streams protected under Article 15 of the New York State Environmental Conservation Law without first obtaining a permit from NYSDEC.

Firewood Cutting

The Forest Management Program has changed the firewood harvesting program as of 1 January 2020. The new firewood harvesting program requires that harvesters purchase a forest product harvesting permit through the iSportsman website that is valid for 1 year. This permit allows firewood cutters to gather an unlimited amount of firewood during that 1 year period. Harvesters must sign in/out using the iSportsman system and can only gather wood in areas that are open for recreation. Firewood can still be collected only from trees that are dead AND completely downed (i.e., laying on the ground) throughout the installation. This is different from the standing firewood sales as identified above. The Main Impact Area, active construction sites, the Cantonment Area, and environmental or archeological sensitive areas marked with "Off-Limits by Order of the Commander" signs or Seibert Stakes are off-limits to firewood collection. Firewood may be removed via tractors, four wheelers, bobcats, or other mechanical means. Historically, soil disturbances and water quality concerns from these activities have been minimal. As this is a new program, it is unclear how many permits will be issued on an annual basis, but a good estimate would be 15-20 permits annually. Once more metrics have been collected on the system, information will be updated accordingly; however there is nothing to suggest that this program will have any differing impacts from the previous one.

2.3.2 Conservation Measures for Forest Management Activities

To minimize the risks of impacting Indiana, northern long-eared, and tricolored bats during forest management activities, while benefiting bat habitat, several conservation measures have been implemented.

1. Bat Conservation Area. Approximately 2,200 ac have been set aside for Indiana bats. This BCA will also provide the same protections to northern long-eared bats. Timber harvests will not occur within the BCA until an appropriate management plan is developed and the plan has been consulted on. If timber harvesting is needed within the BCA, then consultation with the USFWS is needed.

2. Roost Tree Protection. No female roost trees, including roosts identified in the future, will be felled for the lifespan of the roost, unless there is a human health and safety concern. This includes roost trees in and outside of the BCA.

3. Roost Tree Avoidance-Timber Harvest. Clearcutting and overstory roost tree removal will not occur within 0.75 mi (1.2 km) of known maternity roost trees located outside the BCA without further consultation with the USFWS. An exception to this requirement is a small number of small forested patches (ranging from ~5-15 acres) that will be clearcut at or near WSAAF to meet federal regulations for air safety. The majority of these patches contain trees primarily less than 4 in dbh. They will be maintained as forest, but will be clearcut approximately every 5-10 years to keep them at the appropriate height.

Selective thinning will not occur within one tree height of the known roost trees to minimize the risk of accidentally felling a known maternity roost during the non-hibernation season. Tree height is based on the average height of the stand (~80 ft (24 m)) surrounding the roost tree. For selective thinning harvests within 0.75 mi of a known maternity roost, all snags will be retained, and live trees > 16 in DBH that have noticeable cracks, crevices, or exfoliating bark will be favored as residuals. Further consultation will be needed with the USFWS for timber harvests that do not follow this conservation measure.

4. Roost Tree Avoidance- TSI. TSI actions will be performed at least 250 ft (76 m) away from known roost trees (including roosts identified in the future) and 500 ft (152 m) from known primary roosts (including roosts identified in the future). Pesticides used for TSI actions will be applied between sunrise and one hour before sunset. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 500 ft (30-76 m) of known roosts. This measure minimizes the risk of exposure to bats and potential effects from pesticides.

5. Firewood Cutting Restriction. All of the Cantonment Area (which includes the known primary Indiana bat roosting areas) is now off limits to any/all firewood cutting. This restriction will help avoid any associated noise or disturbance in the wooded roosting areas from chainsaws and/or tractors used in the harvest of the wood.

6. Time of Year Restriction. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting bats during non-hibernation seasons. Felling of trees must take place between October 16 - April 15 while most Indiana or northern long-eared bats are at the hibernaculum.

7. Snag Retention. Indiana and northern long-eared bats typically select areas that have high snag densities for establishment of maternity colonies, so snag retention will benefit roosting bats by providing areas to rear young. All snags will be left in silvicultural treatments unless there is a safety concern for the contractor or the military units training in the stands (e.g., maneuver corridors), or unless the treatment is a salvage harvest or clearcut. Snags should be distributed and retained throughout the landscape.

8. No cutting of trees will occur within or along the bed or bank of streams protected under Article 15 of the New York State Environmental Conservation Law unless required to meet specific management goals and only after obtaining a permit from NYSDEC.

9. A minimum of 70 sq ft of residual basal area, all snags, and all live trees > 16 in DBH that have noticeable cracks, crevices, or exfoliating bark will be retained around all perennial streams and open waterbodies (2 ac or greater in size) on Fort Drum. A perennial stream is defined as having flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow. If silvicultural treatments are needed that do not meet this conservation measure and that do not have a “no effect” determination, then individual consultation will be required with the USFWS. This buffer protects water quality and provides foraging habitat for Indiana bats. Indiana bats are known to utilize riparian corridors that have suitable vegetative cover for foraging and for roosting in nearby trees (Jachowski et al. 2014a, Garner & Gardner 1992).

10. For annual reporting purposes, the Forest Management Program will provide shapefiles of harvested and TSI areas, vegetative cover types pre- and post-harvest (within a scaled map), and the harvesting or TSI method used to Fort Drum's Fish and Wildlife Management Program. This information will be used to describe the vegetative cover types and habitat modification on Fort Drum and will be reported annually to the USFWS.

2.3.3 Effects to Indiana, Northern Long-eared, and Tricolored Bats

Unlike tree clearing associated with construction, forest management actions do not result in the permanent loss of bat habitat. In fact, forest management has the potential to provide long-term beneficial effects for Indiana, northern long-eared, and tricolored bats with only the potential for short-term negative impacts in many cases.

After reviewing the project description and effects analysis for this section in the previous BAs, we feel that it is suitable in scope to address any potential impacts to Indiana, northern long-eared, and now tricolored bats. There are no proposed changes to the type and/or duration of forest management that was analyzed in the previous BAs and that will occur on Fort Drum over the next 3 years. While forest management type and/or location may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under the prior BAs. Although multiple forest management actions are scheduled for completion during 2024-2026, those projects will remove limited potential roosting and foraging habitat for Indiana, northern long-eared, or tricolored bats, are conducted outside of the BCA, and extensive areas of habitat will remain. Further, although Indiana and northern long-eared bats primarily utilize cavities, cracks, crevices, and bark in trees greater than 3” dbh and tricolored bats primarily utilize live and dead leaf clusters of live or recently dead deciduous hardwood trees (greater than 3” dbh), pine needles, and eastern red cedar for roosting, the conservation measures in place regarding trees and vegetation currently avoid any tree removal over 3” dbh between 16 April-15 October. Therefore, as with the other two bat species, any small number of tricolored remaining on Fort Drum’s landscape will be protected from the majority of tree removal and adverse impacts. There is ample remaining habitat left on the landscape, and habitat is not limiting for this species. Additionally, no new information has been collected through monitoring efforts for these species over the past 3 years. Probable acoustic detections of each species are still being collected; however, no new information is being gleaned from this monitoring, other than confirming continued reduced use of the installation since the onset of WNS. Long-term monitoring at historical locations where numerous probable bat calls used to be collected now only document few or no probable calls. All information suggests that the population of all three of these species on Fort Drum are an extremely small fraction of what it was. Therefore, we affirm that the conservation measures and effects analysis is appropriate from the previous BAs and suitable to address Indiana, northern long-eared, and tricolored bat. Please see Appendix A, Section 2.3 or the annual reports for more detailed description and background of these activities as well as maps of the previous locations for forest management activities. Fort Drum anticipates insignificant impacts from forest management activities to either species of bats.

2.3.4 Conclusion

Suitable habitat has never been considered a limiting factor for healthy Indiana bat colonies on Fort Drum given that the core maternity colony habitat has been protected within the BCA. No forestry actions will occur within the BCA, therefore, no adverse effects to Indiana bats are anticipated. In addition, suitable habitat has not been considered a limiting factor for northern

long-eared bats, nor is it now considered so for tricolored bats. Given the reduced populations of each these species due to WNS impacts, and ample suitable forested habitat for roosting and foraging remaining, this is even less of a concern for the remaining bats on Fort Drum. Further, forest management on Fort Drum is expected to benefit the remaining Indiana, northern long-eared, and tricolored bats in the long-term by manipulating the structure, species composition, and ages of forests. Although some tree harvesting and TSI may temporarily reduce roosting and foraging habitat in limited, discreet areas, based on the type of silvilcultural treatment, the area is anticipated to become more suitable for foraging or roosting over a longer period of time. Conservation measures such as time of year restrictions, snag retention and recruitment, and avoidance of known bat roosting and foraging locations, as well as the vast size of Fort Drum and available forests, reduces potential impacts to each of these species of bats when performing forest management actions. Given this information and conservation measures that will be employed, potential impacts to Indiana, northern long-eared, and tricolored bats from forest management actions are insignificant or discountable. These actions may affect, but should not adversely affect Indiana, northern long-eared, or tricolored bats, and should have beneficial effects in the long-term.

2.4 Mechanical Vegetation Management

2.4.1 Mechanical Vegetation Activities

This section includes the mechanical management of vegetation that typically involves grasses, shrubs, trees < 3 in DBH (but include larger diameter trees along roads or within powerline ROWs), and hazard trees of any size. Vegetation is typically cleared at or above ground level with the use of large equipment, lawn mowers, stump grinders, tractor mounted brush cutters, and handheld power tools. Management actions may be done in conjunction with herbicide application. Vegetation management actions are typically done for a variety of reasons that may include: management for military training; line of sight clearing; maintenance actions along fences, utility corridors and ROWs, or roads and trails; wildlife habitat management, invasive species management, and hazard tree removal, among others.

Fort Drum does not anticipate any changes over the next 3 years to the amount, type, and/or completion of mechanical vegetation management actions that was previously analyzed in the prior Bas. Additionally, we affirm that the effects analysis is appropriate from the previous Bas to address any potential adverse impacts to not only Indiana and northern long-eared bat, but tricolored bat as well. The life histories and needs of these species are closely enough aligned that there should be no potential affects unaccounted for. Furthermore, we propose that the Conservation Measures identified are suitable to address Indiana, northern long-eared, and tricolored bat. Please see Appendix A-C for more information.

2.4.2 Conservation Measures for Mechanical Vegetation Management Activities

1. Time of Year Restriction for Tree Felling. A time of year restriction for clearing trees (> 3 in DBH) and removing low- to medium-risk hazard trees has been established to protect roosting bats during non-hibernation seasons. Felling of trees must take place between October 16 - April 15 while most Indiana, northern long-eared, and tricolored bats are at hibernation sites. This will greatly reduce the risk of accidentally harming bats that may potentially be present in trees scheduled to be removed. Specifically, maternity colonies and their associated non-volant young will be protected from this disturbance.

2. Roost Tree Protection. No female roost trees, including roosts identified in the future, will be removed unless determined to be high risk hazard trees (see #5 below). Hazard trees that are not considered high risk, will be removed during the winter. Roost trees may not be removed for any other reason (e.g., aesthetically unappealing).

3. Mowing/ vegetation removal by machinery will not occur within 100 ft of known roost trees to avoid disturbing roosting bats and maintaining cover around the roosts. However, individual or clusters of invasive plants close to known roosts (< 3 in DBH) may be removed by hand clipping or cutting or with brush saws between 15 August-15 April. This clarifies the process to remove invasive species from within the roosting areas, yet still minimizes disturbance around the potential roosts during the primary roosting season.

4. No more than 300 ac per year (and no more than 50 ac in a contiguous block) will be mechanically removed within the BCA annually.

5. High Risk Hazard Trees. For hazard trees that are determined to be high or critical classified between April 16 – October 15, Fort Drum's Fish and Wildlife Management Program personnel will be notified in advance, so they may assess the hazard tree. If appropriate, an emergence survey will be conducted and if no bats are observed, then the roost tree will be promptly removed. This will reduce the risk of removing an undiscovered roost tree. If bats are observed, then further consultation with the USFWS is needed.

6. Reporting. Personnel responsible for each vegetation management action must provide a scaled map of the treated area, specify the type of management action that occurred, report the total acreage of impacted habitat, and the vegetative cover types that were managed (i.e., number of hazard trees removed, amount of shrubland habitat cleared) to Fort Drum's Fish and Wildlife Management Program for annual reporting requirements to the USFWS. Mowing of landscaped grass in the Cantonment Area does not need to be documented.

2.4.3 Effects to Indiana, Northern long-eared, and Tricolored Bats

After reviewing the project description and effects analysis for this section and in the previous BAs, Fort Drum has determined they are suitable in scope to include any potential impacts to Indiana, northern long-eared, and now tricolored bats. We have also determined that the conservation measures are suitable for all three species. In many locations, the actual total acreage reported or anticipated to be mechanically managed is liberal. Typically, a given proportion (~75-80%) actually receives management. Additionally, many of the areas (e.g., LZ/DZ, firing points, training area, and roadside maintenance) are in locations or habitat types (open grassland and shrublands with minimal forested acreage) across the installation that we do not anticipate a large amount of bat use for roosting or foraging. These are large expanses of open land cover types with minimal roosting or foraging value and/or cover. Furthermore, these areas have received the same type of management year after year, essentially solidifying an annual systemic disturbance regime in these locations. Therefore, in these locations (outside of forested or other areas of diverse habitat/land cover), we do not anticipate extensive bat use. In areas with targeted invasive species management and known bat use, (i.e., the BCA) there are still large expanses of forested, riparian, or native and/or mixed shrub cover within the bat's home range available for use. These areas are available immediately adjacent or close by to targeted management areas, and we would expect bats to use this native habitat

over the heavily infested buckthorn locations. We anticipate little value for roosting and foraging within these buckthorn/invasive infestations (See Appendix E, 2021-2023 BA for description/analysis of these invasive management areas). Subsequently, we reaffirm that vegetation management activities overall may affect, but are not likely to adversely affect Indiana, northern long-eared, or tricolored bats, as they should have no different impacts in the next three years as they had in the previous twelve years covered under previous BAs.

Please see Appendices A-C, section 2.4 for the detailed effects analysis for Mechanical Vegetation Management.

2.4.4 Conclusion

Vegetation management of grass, shrubs, and trees < 3 in DBH and invasive species has the potential to alter insect diversity and abundance, or roosting habitat and behavior for these bat species. Hazard tree removal could remove potential roosts for these species, and in season removal could cause harm or adverse effects to non-volant young. However, in general, given the size of Fort Drum and the vast amount of natural areas remaining, the land cover types being managed, and the systemic annual removal and management of vegetation through this activity, it is unlikely to have any discernible effects to Indiana, northern long-eared, or tricolored bats. With the time-of-year restriction for clearing of most trees, and the other conservation measures and screening criteria in place to deal with hazard tree removal, and invasive vegetation removal within the BCA, any negative effects should adequately be minimized. Ultimately, removal of invasive species and the promotion of the recolonization of native species should lead to better long-term sustainability of habitat. Therefore, mechanical vegetation management may affect but is unlikely to adversely affect Indiana, northern long-eared, and tricolored bats.

2.5 Land Conversion

2.5.1 Land Conversion Activities

This section addresses those activities that result in a permanent change from one land cover type to another.

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of land conversion activities that were previously identified and analyzed in the 2015-2017, 2018-2020, or 2021-2023 BAs and that will occur on Fort Drum over the next 3 years. While land conversion locations and acreages may vary annually, we do not anticipate any deviation in this activity that would cause any additional or unaddressed impacts not previously covered under the previous BA. Additionally, we do not anticipate any potential affects to the newly proposed tricolored bat that would be different compared to the other two species already addressed. Therefore, we affirm that the effects analysis is appropriate from the previous BA, and the conservation measures are suitable to address Indiana, northern long-eared, and tricolored bat. Please see Appendix C, Section 2.5 for more information.

2.5.2 Conservation Measures for Land Conversion Activities

To minimize the risks of impacting Indiana, northern long-eared, and tricolored bats during land conversion activities, several conservation measures have been implemented.

1. Bat Conservation Area. Approximately 2,200 ac have been set aside for Indiana bats. This BCA will also provide the same protections to northern long-eared and tricolored bats. Land conversion will not occur within the BCA without additional consultation with the USFWS.

2. Roost Tree Protection. No female roost trees, including roosts identified in the future, will be felled for the lifespan of the roost, unless there is a human health and safety concern. This includes roost trees in and outside of the BCA.

3. Roost Tree Avoidance. Land conversion activities will not occur within 0.75 mi (1.2 km) of known maternity roost trees located outside the BCA without further consultation with the USFWS. An exception to this requirement would be the forested areas at WSAAF. In order to meet federal regulations for air safety, some of these areas may be converted from forest to grassland for ease of maintenance. These areas were originally clearcut in 2005 and contain trees primarily less than 4 in dbh. They have now regrown to heights that are once again becoming a safety concern. Some areas will be maintained as forest, but will be clearcut approximately every 5-10 years to keep them at the appropriate height (as described in Section 2.3). Other areas will be completely converted to grass.

4. No more than a total of 50 ac/year in each category (100 ac total for military training and wildlife habitat benefits) of land conversion will occur in forested areas with > 3 in dbh trees. This will help to ensure large areas within a contiguous area will not be removed, minimizing the potential to remove a large percentage of unknown roost trees.

5. Time of Year Restriction. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting bats during non-hibernation seasons. Felling of trees must take place between October 16 - April 15 while most Indiana or northern long-eared bats are not on Fort Drum.

6. No cutting of trees will occur within or along the bed or bank of streams protected under Article 15 of the New York State Environmental Conservation Law unless required to meet specific management goals and only after obtaining a permit from NYSDEC.

7. A minimum of 70 sq ft of residual basal area, all snags, and all live trees > 16 in DBH that have noticeable cracks, crevices, or exfoliating bark will be retained around all perennial streams and open waterbodies (2 ac or greater in size) on Fort Drum. A perennial stream is defined as having flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow. If land conversion treatments are needed that do not meet this conservation measure and that do not have a “no effect” determination, then individual consultation will be required with the USFWS. This buffer protects water quality and provides foraging habitat for Indiana and northern long-eared bats. Indiana bats are known to utilize riparian corridors that have suitable vegetative cover for foraging and for roosting in nearby trees (Jachowski et al. 2014a, Garner & Gardner 1992).

8. For annual reporting purposes, the proponent of the land conversion activities will provide shapefiles of converted areas and vegetative cover types pre- and post-conversion (within a scaled map to Fort Drum's Fish and Wildlife Management Program.

This information will be used to describe the vegetative cover types and habitat modification on Fort Drum and will be reported annually to the USFWS.

2.5.3 Effects to Indiana, Northern Long-eared, and Tricolored Bats

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of land conversion activities that was analyzed in the 2021-2023 BA and that will occur on Fort Drum over the next 3 years.

While land conversion locations may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under the prior BA. Fort Drum anticipates limited potential impacts from land conversion to any of the species of bats covered under this document.

After reviewing the project description and effects analysis for this section in the previous BAs we feel that it is suitable in scope to address any potential impacts to Indiana, northern long-eared, and tricolored bats. Additionally, no new information has been collected through monitoring efforts for these species over the past 3 years. Probable acoustic detections of each species are still being collected; however, no new information is being gleaned from this monitoring, other than confirming continued reduced use of the installation since the onset of WNS. Long-term monitoring at historical locations where numerous probable bat calls used to be collected now only document few or no probable calls. All information suggests that the population of all three of these species on Fort Drum are an extremely small fraction of what it was. Therefore, we affirm that the conservation measures and effects analysis is appropriate from the previous BA and suitable to address all three species. Please see Appendix C, Section 2.5 for a more detailed description and background of these activities.

2.5.4 Conclusion

Suitable habitat has never been considered a limiting factor for the one documented Indiana bat colony on Fort Drum given that the core maternity colony habitat has been protected within the BCA. In addition, suitable habitat has not been considered a limiting factor for northern long-eared bats, nor is it now considered such for tricolored bats. Given the reduced populations of these bat species due to WNS impacts, and ample suitable forested habitat for roosting and foraging habitat remaining, this is even less of a concern for the remaining bats. Regardless, land conversion activities could have negative impacts if they removed important roosting networks or foraging locations. However, they are scheduled to occur on a very small proportion of the available habitat on Fort Drum, and are not scheduled to occur within the core roosting and foraging area of Indiana bats. Conservation measures such as time of year restrictions, avoidance of known bat roosting and foraging locations, as well as the vast size of Fort Drum and available forests, reduces potential impacts to Indiana, northern long-eared, and tricolored bats when performing these conversion actions. Given this information, potential impacts to these three bats from land conversion actions at the scale they are proposed should be insignificant. These actions may affect, but should not adversely affect Indiana, northern long-eared, or tricolored bats.

2.6 Pesticides

For the purposes of this BA, a pesticide would be considered any substance or mixture of substances intended for: preventing, destroying, repelling, or mitigating any pest. It would also include herbicides, fungicides, and various other substances (including biological control agents) used to control pests or vegetation. Although the pesticide use mentioned above in Forest Management will also be used to control unwanted vegetation, for the purposes of the BA, it will be tracked and reported separately.

All pesticide application is subject to funding, mission priorities, and other factors. No aerial applications will occur over the Cantonment Area or Bat Conservation Area without further consultation with the USFWS.

2.6.1 Pesticide Activities

Fort Drum does not anticipate any changes to pesticide activities over the next 3 years to the amount, type, and/or application of pesticide that was previously analyzed in the 2021-2023 BA.

While pesticide application locations and acreages may vary annually, we do not anticipate any other deviation in this activity that would cause any additional or unaddressed impacts not previously covered under the previous BA. The previous anticipated acreages from 2021-2023 will remain the same between 2024-2026. Between 2021-2023, it was anticipated that up to 5500 acres of ground application and 6000 acres of aerial application would occur (or approximately 1500-1700 acres ground and 2000 acres aerial annually). During 2021-2023, approximately 1024 acres of ground and 6270 acres of aerial application occurred. While the aerial application did exceed the projected amount by 270 acres, the total amount applied between 2018-2023, was still well below what was anticipated. The discrepancy in 2020 was due to a contract delay. Approximately 1670 acres should have been sprayed that year; however, all of it got pushed to 2021. So the total applied from 2018-2020 was 2920 acres (but should have been 4590 acres) and 2021-2023 was 6270 acres (but should have been 4600). These numbers are still well within what would have been expected between 2018-2023, and the majority of the spraying occurred within the Main Impact Area. Therefore, we affirm that the effects analysis is appropriate from the previous BAs, and the conservation measures are suitable to address Indiana. northern long-eared, and tricolored bat. Please see Appendices A-C, Section 2.7 for more information.

2.6.2 Conservation Measures for Pesticide Application Activities

1. Only pesticides registered by the EPA and State of New York may be applied and only in accordance with their label.

2. Aerial applications will occur between the hours of sunrise and one hour before sunset. This will protect foraging bats in undiscovered foraging areas from direct exposure.

3. Aerial application of pesticides in the BCA will not occur without further consultation with the USFWS.

4. Other pesticide application within the BCA will be limited to 50 ac per year (no more than 25 ac in a contiguous block) for tow behind power blowers, 300 ac per year (no more than 50 ac in a contiguous block) for other ground machine mounted pesticide spraying equipment (e.g., ATVs, tractors, Skid Steers). There will be no limit to the amount of

acreage where individual spot application, slash and squirt hand application, individual stem injection, or other ground application done directly by hand is completed.

5. Tow behind power blowers will not be utilized until after August 15 in all forested areas to allow pups to reach volancy and exit an area if disturbed by this activity. Deviations from this conservation measure will require further consultation with the USFWS.

6. Whenever possible, herbicides that have low toxicity to mammals will be utilized with the tow behind power blowers. Herbicides that may be somewhat toxic to mammals will be mixed and applied at the lowest allowable rate per the label to help minimize any potential exposure concerns.

7. Application of pesticides from ground mounted vehicles (i.e., ATVs, tractors) that spray chemicals directly onto the vegetation or ground and do not result in broad dispersal will be conducted at least 100 ft (30 m) from known roost trees (including roosts identified in the future) and 250 ft (76 m) from known primary roosts. Pesticides applied from ground mounted vehicles will use drift control additives and droplet sizes appropriate for reducing drift.

8. Application of pesticides that result in broad dispersal (e.g., tow behind power blowers) will be conducted at least 250 ft (76 m) away from known roost trees (including roosts identified in the future) and 500 ft (152 m) from known primary roosts. Pesticides will be applied between sunrise and one hour before sunset. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 500 ft (30-76 m) of known roosts. This measure minimizes the risk of exposure to bats and potential effects from pesticides.

9. Pesticides applied from tow behind power blowers will use drift control additives and will be applied using low pressure to reduce drift and potential swirling motion from the blower. All efforts will be made to only spray 10 feet from ground level or below.

10. Pesticides will not be applied outdoors when the wind speed exceeds 10 mi/hr for all ground applications except power mist blowers. Pesticides applied via power mist blower will only be applied with wind speeds 8 mi/hr or less. Pesticides applied aerially will only be applied with wind speed 8 mi/hr or less. This is to reduce the risk of pesticide drift, which could impact water quality or non-target areas. Care will be taken to make sure that any spray drift is kept away from non-target areas and individuals. Additionally, aerial application will utilize helicopters and employ large droplet technology through special nozzles on drop tubes to ensure the herbicide stays on target.

11. Pesticides will not be applied to any protected wetlands, streams, or other waters of NY State without obtaining the appropriate permits.

12. If a bat colony is found roosting in a building, then insecticides will be used sparingly and no foggers will be used. This will minimize impacts to roosting Indiana bats if they are found within a building. Currently, only two colonies of bats have been located in buildings on Fort Drum: a colony of little brown bats within the LeRay Mansion, and a colony of big brown bats within building 2803. Although LeRay Mansion historically housed hundreds of little brown bats, there are now only a few bats found sporadically within the Mansion. The vast majority of these bats now reside in a bat hotel nearby, and as of 2023 there were approximately 600 little brown bats within this colony. The

colony of big brown bats was found in 2022 in building 2803. There are approximately 50-100 bats in that colony; however, no firm exit counts have been performed to determine the exact number, and it is unclear if there are any other species within the structure. No Indiana, northern long-eared or tricolored bats have been identified in any building on Fort Drum to date.

13. For each pesticide application, all entities will report the total amount of PAI used for each pesticide, the size of the treated area (within a scaled map), and the vegetative cover types that were treated to Fort Drum's Fish and Wildlife Management Program for annual reporting purposes to the USFWS. For pesticides applied indoors or immediately along the exterior of the building, only the PAI needs to be reported—no map is required or vegetation types need to be reported.

2.6.3 Effects to Indiana, Northern Long-eared, and Tricolored Bats

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of pesticide application activities that was analyzed in the 2021-2023 BA, and that will occur on Fort Drum over the next 3 years. While pesticide application locations may vary annually, we do not anticipate any activity that would cause any additional or unaddressed impacts not previously covered under the prior BA. Fort Drum anticipates limited potential impacts from pesticide application to either species of bats.

After reviewing the project description and effects analysis for this section in previous BAs, we feel that it is suitable in scope to address any potential impacts to Indiana, northern long-eared and now tricolored bats. Additionally, no new information has been collected through monitoring efforts for these species over the past 3 years. Probable acoustic detections of each species are still being collected; however, no new information is being gleaned from this monitoring, other than confirming continued reduced use of the installation since the onset of WNS. Long-term monitoring at historical locations where numerous probable bat calls used to be collected now only document few or no probable calls. All information suggests that the population of all three of these species on Fort Drum are an extremely small fraction of what it was. Therefore, we affirm that the conservation measures and effects analysis is appropriate from the previous BAs and suitable to address all three species of bats. Please see Appendices A-C, Section 2.7 for a more detailed description and background of these activities.

2.6.4 Conclusion

There is limited suitable roosting habitat on the range areas where aerial herbicide application is occurring. These herbicides are sprayed only a few times a year, and will not be sprayed at night. These aerial applications are typically greater than 7.5 mi (12 km), from known roosting locations for Indiana bats, and outside the known Indiana maternity colony core area within the BCA, Cantonment Area, and southern Training Areas. Given the declines of Indiana bats due to WNS, it is unlikely that the remaining population would abandon a historic roosting and foraging area to exploit new areas. Additionally, there is limited suitable roosting areas within the BCA that are targeted for invasive buckthorn management and/or where pesticides would be applied.

Northern long-eared and tricolored bats have historically been found throughout all of Fort Drum, including near areas where aerial application of herbicide is expected to occur over the next three years. However, the majority of the acreage scheduled for aerial herbicide application is mostly in areas that have been previously and continually disturbed and consist

primarily of grass and shrubs (on the range propers). While there could be some potential roost trees that are covered with herbicide, the likelihood that there would be northern long-eared or tricolored bats in the few remaining trees on ranges and that a non-volant young was within a tree that could not escape is low. Because of the lack of suitable habitat within the range areas, and measures to control pesticide drift, northern long-eared and tricolored bats are unlikely to be directly affected by pesticides.

While herbicide application via power sprayers may be applied within the BCA near the core area for Indiana bats and in other areas near northern long-eared and tricolored bat use, this will be done outside of the primary maternity season. Also whenever possible, herbicides will be utilized that have low toxicity to mammals (bats). If this is not possible, herbicides will be mixed and applied at the lowest allowable rate per the label to help ensure minimal exposure impacts to bats. Additionally, this type of application will only occur on a limited acreage per year within the BCA and in the Training Area. Due to population declines in all three species of bats, the likelihood that spraying would occur near individuals or colonies is extremely low. While it could be sprayed unknowingly near undiscovered roosts, application will only occur after August 15 to allow any bat (to include volant young) to fly away if irritated by the activity. Given the small amount of acreage that herbicide would be applied to in this manner, bats would not have to go far or expend energy to deal with this issue. We would not expect in shifts in home range or roosting or foraging behavior due to this activity. Therefore, although herbicide application via tow behind power blowers may affect Indiana, northern long-eared, and tricolored bats, it is unlikely to indirectly adversely affect these bats.

Pesticide application is not anticipated to measurably reduce any prey within known or unknown foraging areas, and it is not expected to reduce or adversely modify foraging habitat. Additionally, there are adequate foraging locations throughout Fort Drum.

Given these considerations and the proposed conservation measures, the use of pesticides may affect, but is not likely to adversely affect Indiana, northern long-eared or tricolored bats on Fort Drum.

2.7 Wildlife Management/Vertebrate Pest Control

2.7.1 Wildlife Management/ Vertebrate Pest Control Activities

This section includes actions such as bat management, beaver management, BASH management, and vertebrate pest control.

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of wildlife management/vertebrate pest control management that was previously analyzed in the prior BAs that will occur on Fort Drum over the next 3 years. After reviewing the project description and effects analysis for this section in the previous BAs, we believe that it is suitable in scope to include any potential impacts to tricolored bats. Additionally, we feel that the conservation measures should be suitable for Indiana, northern long-eared, and tricolored bats. Therefore, we affirm that the effects analysis is appropriate from the previous BAs, and the conservation measures are suitable to address all three species. Please see Appendix A-C, Section 2.8 for more information.

2.7.2 Conservation Measures for Wildlife Management/Vertebrate Pest Control Activities

1. No Lethal Control. No lethal control methods are permitted for bats unless there is a suspected human health risk for exposure to rabies or other disease. If individual bats are in buildings and there is no evidence of maternity use, then all efforts will be made to safely capture and release individual bats. Or, the bats will be excluded by establishing one-way valves over the roost's exit (if feasible).

2. Time of Year Restriction for Exclusion. The exclusion will only be done during times of the year when pups are not present or when they are volant (i.e., August - early May). The time of year restriction will minimize the risk of separating mothers from non-volant young, so it will prevent potential pup mortality during exclusion activities. Sealing cracks and crevices in buildings will also be done during the late fall or early spring. This is based on the assumption that no bats hibernate in buildings on Fort Drum, which is a valid assumption given the narrow temperature requirements necessary for hibernating bats and the heating of buildings (Tuttle & Kennedy 2002) and the fact that no bats have been found hibernating in buildings to date. Sealing cracks and crevices prevents bats from entering a building and reduces human/bat conflicts.

3. Adhesive Trap Restrictions. No adhesive traps used for rodents or insects will be placed in such a manner that they could capture bats—glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur.

2.7.3 Effects to Indiana, Northern Long-eared, and Tricolored Bats

Please see Appendices A-D for the detailed effects analysis that was performed for the 2009-2011, 2012-2014, 2015-2017, and 2018-2020 BAs. Fort Drum does not anticipate any change in activities that would require any new analysis for tricolored bats. After reviewing the project description and effects analysis for this section in the previous BAs, we believe that it is suitable in scope to include any potential impacts to all three protected bat species. Additionally, we feel that the conservation measures should be suitable for all species. Therefore, we affirm that the effects analysis is appropriate from the previous BAs, and the conservation measures are suitable to address both Indiana, northern long-eared, and tricolored bat.

2.7.4 Conclusion

With conservation measures in place, wildlife management/vertebrate pest control activities may affect, but are not likely to adversely affect Indiana, northern long-eared, or tricolored bats.

2.8 Outdoor Recreation

2.8.1 Outdoor Recreation Activities

There are many outdoor recreation activities that occur on Fort Drum; however, only hunting, skeet shooting, and ATV use are considered to have any potential impacts to bats. All other recreational activities are considered to have no known adverse impacts to these three species of bats.

Fort Drum does not anticipate that there will be any significant change from the amount, type, and/or duration of outdoor recreation that was previously analyzed in prior BAs that will occur on Fort Drum over the next 3 years. After reviewing the project description and effects analysis for

this section in the previous BAs, we believe that it is suitable in scope to include any potential impacts to tricolored bats as well as Indiana and northern long-eared bats. Additionally, we feel that the conservation measures should be suitable for all three species. Therefore, we affirm that the effects analysis is appropriate from the previous BAs, and the conservation measures are suitable to address Indiana, northern long-eared, and tricolored bat. Therefore, we affirm that the previous BA analysis is appropriate. Please see Appendix A-C, Section 2.9 for more information.

2.8.2 Conservation Measures for Outdoor Recreation Activities

1. Skeet Range. Skeet shooting at the current skeet range is located adjacent to the BCA and fires over a known fall, summer, and assumed spring foraging location of Indiana bats. From April 15 - October 15, the skeet range's hours of operation will be no earlier than 30 minutes after sunrise and no later than one hour before sunset. This measure will prevent the accidental shooting of an Indiana bat during the non-hibernation seasons.

2.8.3 Effects to Indiana, Northern Long-eared, and Tricolored Bats

Please see Appendix A-D for the detailed effects analysis that was performed for the 2009-2011, 2012-2014, 2015-2017, 2018-2020 BAs. Fort Drum does not anticipate any change in activities that would require any change to the analysis. After reviewing the project description and effects analysis for this section in the previous BAs, we believe that it is suitable in scope to include any potential impacts to tricolored bats. Additionally, we feel that the conservation measures should be suitable for all three species. Therefore, we affirm that the effects analysis is appropriate from the previous BAs, and the conservation measures are suitable to address Indiana, northern long-eared, and tricolored bat.

2.8.4 Conclusion

Only ATV use, hunting, and skeet shooting are expected to have any potential impacts to Indiana, northern long-eared, or tricolored bats. However, because of the current restrictions for ATV use, the timing and nature of hunting, and the conservation measure for skeet shooting, these recreational activities may affect but are not likely to adversely affect Indiana, northern long-eared, or tricolored bats. Please see Appendix A-C, Section 2.9 for additional information.

3.0 Conservation Activities

Conservation measures for each action are in the appropriate section throughout *Section 2.0*. (A complete list of conservation measures and other beneficial actions from *Section 2.0* can be found in Appendix T) This section elaborates on the Bat Conservation Area, outlines future monitoring and research efforts, and notes outreach activities and the Army Compatible Use Buffer program.

3.1 Bat Conservation Area

A 2,201-ac Bat Conservation Area (BCA) has been established on Fort Drum for the benefit of Indiana bats (Figure 3.1). This BCA will also benefit northern long-eared and tricolored bats in many of the same ways.

The majority of the BCA occurs in undeveloped portions of the Cantonment Area (2,051 ac) and follows Pleasant Creek northward into Training Areas 4A and 3A (151 ac). These areas were selected for the BCA to provide protection for the majority of known Indiana bat roosting and foraging areas. The BCA contains 90% (110 out of 122) of all roosts identified on Fort Drum in the past 13 years (2007-2020). Four of the roosts not found in the BCA are located within 25 m of the boundary of the BCA, four are located in Training Area 3B, and four of the roosts are located off Fort Drum, within approximately 1,000 m of the BCA.

Historically, the BCA has been an important area for Indiana bats known to occur on Fort Drum and in the adjacent Town of LeRay. Indiana bats that have been captured off-post (Fort Drum-I-81 connector project – USFWS 2008, Eagle Ridge housing project – ESI 2006) were noted to roost on Fort Drum for multiple days. In addition, Indiana bats captured and roosting on Fort Drum regularly went off-post into the Town of LeRay to forage (ESI 2008b, USFS 2011). While no Indiana bats have been captured since 2014, acoustic detections still indicate Indiana bat use in the area. Although acoustic detections still indicate use, the number of detections continue to decline, presumably due to the continued impacts of WNS.

Although the BCA was initially established for the benefit of Indiana bats, northern long-eared and tricolored bats have also historically been captured throughout the Cantonment Area and within the BCA. This protected area will likely provide similar benefits to these species of bat as well.

The BCA includes a variety of habitat types and water bodies, including Pleasant and West Creeks. The BCA was configured to allow for continued development approximately 150 m along existing roads and around the Guthrie Ambulatory Health Care Clinic.

Permitted & Restricted Activities in BCA

The intention of the BCA is to not prohibit all actions in the identified areas, but to protect known roosting and foraging habitat from permanent loss to the greatest extent possible. Many activities that currently occur will continue to be conducted within the BCA. The following discusses permitted and restricted activities within the BCA.

1. Roost Tree Protection. No viable roost trees identified within the boundaries of the BCA will be felled. This includes roost trees identified in the future.

2. Construction. The primary activity not allowed in the BCA is construction resulting in the permanent loss of natural habitat. No permanent facility will be constructed within the BCA with the exception of additional facilities (e.g., cabins, picnic shelters, parking lots, a campground, etc.) that may impact up to 7 ac in and around Remington Park. Remington Park is located along the Pleasant Creek corridor of the BCA. The construction of park facilities is included in *Section 2.1 Construction* of this BA. Conservation measures in *Section 2.1 Construction* apply. Construction of temporary facilities, primarily for training purposes, may be constructed within the BCA if the impacts to habitats are minimal. Temporary structures are defined as structures that are easy to assemble and disassemble, and easy to move.

   If construction of other permanent structures must occur within the BCA in the future, further consultation with the USFWS is required.

   Although currently not expected to occur within the next three years, the potential exists for the Installation Restoration Program to remove trees in order to access contaminated ground water sites in response to a contamination episode. Individual consultation will occur with the USFWS and trees would only be removed during the October 16 - April 15 tree clearing window if in a non-emergency situation.

   By restricting construction within the BCA, habitat connectivity, water sources, and suitable roost and foraging sites are maintained for the known Indiana bat maternity colony in the spring and summer and for individuals associated with the maternity colony in the fall. The BCA provides habitat for all sexes and ages of Indiana, northern long-eared and tricolored bats.

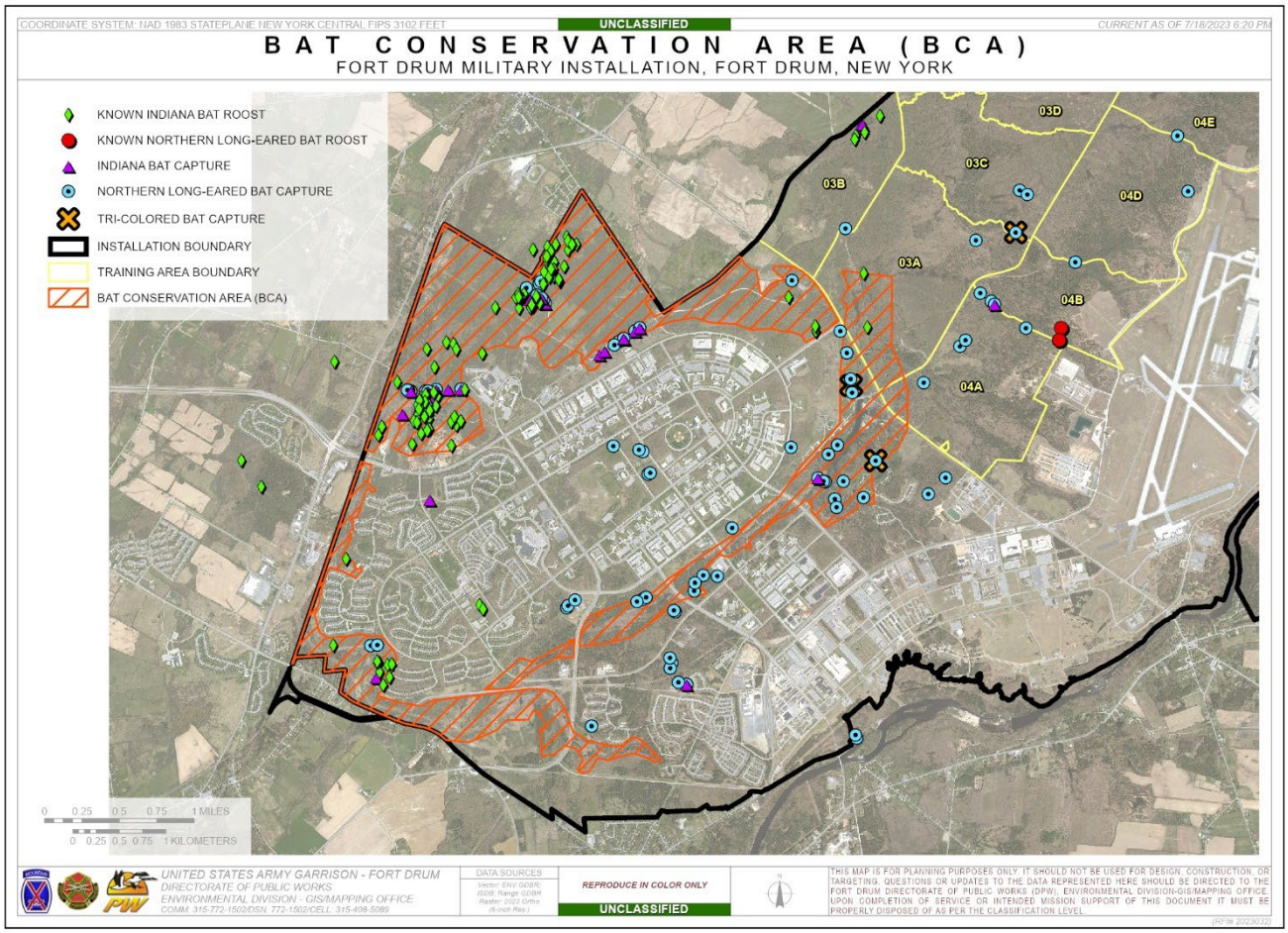

Figure 3.1 Bat Conservation Area on Fort Drum Military Installation

3. Military Training. Relatively low impact military training (e.g., land navigation and small unit tactics) is conducted in the northern portion of the BCA within Local Training Areas (LTAs). No live fire is allowed, however, weapons that fire the equivalent of blanks or paintball rounds are used. Occasionally artillery (with blanks) and other simulated explosives are also used. Current training allowed in the Cantonment Area will continue which may include the construction of small temporary buildings (e.g., mock villages for urban warfare training) as long as no trees or large areas of natural habitat are removed.

   Category 2 smoke may not be used within 100 m of any forested areas within the LTAs between April 16 - October 15 to minimize impacts to roosting bats (with the exception of the MOUT sites as identified below). Approval from Range Control and NEPA review is required prior to any use of Category 2 smoke in the LTAs, and these reviews will help ensure that Category 2 smoke use is in line with this conservation measure. See *Section 2.2 Military Training* for more information on impacts.

Category 2 smoke may be periodically used at three mobile MOUTs (Figure 3.1) within the LTAs during April 15- October 15. All mobile MOUTs are currently outside of the BCA, but are in relatively close proximity (approximately 25, 35, 140m, respectively). Only infrequent use of colored smoke is expected to be used in around the mobile MOUTs. The closest known roost tree to the Mobile MOUTs is approximately 270m away. With the exception of the Category 2 colored smoke used at the mobile MOUTS, no other smoke or obscurant may be used in the BCA. Currently, all known Indiana bat maternity roosts are found within the BCA or within 1,000 m from the installation boundary.

4. Vegetation Management. Limited tree removal is expected as part of required maintenance activities for the perimeter fence and/or utilities (Refer to *Section 2.4 Vegetation Management*). This is expected to be no more than 20 ac. Hazard trees may also be removed for safety concerns along roadways, trails, or parking areas. Conservation measures in *Section 2.4 Vegetation Management* will apply.

   Invasive species management is expected to occur over approximately 900 acres over the next three years. This will be limited to 300 acres annually and will not occur via machinery within 100ft of known roost trees. Large invasive shrub/plant patches will be targeted as well as patches of invasives within forested areas. Some targeted trees may have to be removed to support this type of management.

   Spraying of herbicides will conducted along the perimeter fence, utility line corridors, and within the shrubland and forested areas to manage vegetation and invasive species. Conservation measures in *Section 2.6 Pesticides* will apply.

5. Recreation. Most of the BCA is currently used for recreational purposes. The primary recreational use is Physical Training (PT) by Soldiers, hiking, running, and cross-country skiing throughout an extensive trail system, and archery (and shotgun now in select areas) hunting during the big game season.

   There are currently plans to improve the trail system—both in quantity and quality. Any new trails will avoid trees and wetlands if at all possible—if trees >3 in DBH must be removed, only the minimum required will be removed during the October 16 - April 15 tree clearing window.

6. Natural Resources Management. The management of natural resources is expected to continue throughout the BCA including the control/eradication of invasive species via mechanical, chemical (see also Section 2.6), biocontrol and physical removal. Only areas of up to 300 acres per year, with no more than 25-50 acres in one contiguous block will be mechanically cut or treated with herbicide. All appropriate conservation measures will be followed regarding the respective treatments. Natural resources surveys, inventories, and research will also continue in these areas. In the future, there may be potential to create or enhance wetland and/or stream mitigation sites (one wetland mitigation site is already located within the BCA) and future forest management activities may occur. Mitigation and forest management activities will be addressed in future consultations, biological assessments, and/or management plans.

3.2 Monitoring & Research

Past and Ongoing Efforts

Please see Appendices P-W for more detailed information about Fort Drum survey efforts and results for bats.

No mist net surveys were completed during 2021-2023 specifically targeting Indiana, northern long-eared bats, or tricolored bats. However, one night of targeted mist netting occurred around the LeRay little brown bat maternity colony bat house for WNS and coronavirus monitoring. Only little brown bats were captured.

Acoustical surveys using Anabat echolocation detectors were completed during 2021-2023, and based on a cursory examination of these data, there is still evidence to suggest some use of the installation by Indiana, northern long-eared, and tricolored bats. However, although probable calls of these three species are still being detected, the number of calls continue to decline. These data will be fully analyzed in the near future and results will be provided to the USFWS if anything new/different is uncovered.

Conservation Recommendations

Fort Drum recognizes that Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out discretionary conservation programs for the benefit of endangered and threatened species. Within previous BOs, the USFWS identified the following actions that, if performed, would further the conservation and assist in the recovery of the Indiana bat and assist in collecting information on other potentially imperiled bat species. The following is the progress Fort Drum has achieved to date:

1. Assist with WNS investigations (to include, but not limited to): (a) Monitoring the status/health of the little brown bat colony at the LeRay mansion/bat houses; (b) Collecting samples for ongoing or future studies; (c) Providing funding for off-post WNS research activities; and (d) Allowing staff to participate in off-post research projects.

Fort Drum has examined the effects of WNS on the little brown myotis (*Myotis lucifugus*) maternity colony found in Fort Drum's Historic LeRay area during 2009-2020. Fort Drum published manuscripts in the December 2011 and the June 2018 issues of the Journal of Fish and Wildlife Management (Dobony et al. 2011, Dobony and Johnson 2018, respectively) presenting results on this colony's ability to survive, heal and reproduce post WNS infection and the changes to demographic parameters over time. This effort has been ongoing, and we will continue to analyze results to determine the potential persistence and transmission of *Pseudogymnoascus destructans* and WNS at the colony. Additional related projects are ongoing at the LeRay area, and once these data are analyzed they will be made available to the USFWS.

Acoustical surveys using Anabat echolocation detectors have been conducted since 2003, providing good baseline and follow on information about temporal and spatial use of various species of bats on Fort Drum. Results from these efforts can be found in Ford et al. (2011), Coleman et al. (2014a), Coleman et al. (2014b), Coleman et al. (2014c), Nocera et al. 2019a and b and 2020)

Although previous efforts addressed (c) and (d), no work has been performed recently regarding those actions.

2. Pursue additional acquisition of parcels or easements to protect Indiana bat roosting, foraging, and commuting habitat through the ACUB program.

In 2021 and 2022 the David S. Smith (formerly known as Columbia LeRay; approximately 101 acres; acquired 12/29/2021 Figure 3.2) and the Contech (approximately 314 acres; acquired 11/28/2022; Figure 3.2) properties were entered into the ACUB Programs, respectively. These parcels contain a diverse mix of habitat and 13 historical Indiana bat roosts collectively. Fort Drum is currently working with our ACUB partners to develop management plans for the properties. The primarily management goals will be to conserve and enhance existing bat roosting and foraging habitat and to manage non-bat habitat for other at risk species such as pollinators and turtles, where applicable. Secondary goals will be to support educational trails and other environmentally educational uses compatible with the TES management actions. While other parcels currently within the ACUB program likely don't offer any direct protection for Indiana bat, they do likely offer a measure of protection for northern long-eared and tricolored bats and other bat species and wildlife in general. It is possible (but not probable at this point) that we could pursue one additional parcel that is adjacent to the Contech and Smith parcels. This parcel also contains 4 historical Indiana bat roosts. The USFWS will be kept informed of any progress on these efforts.

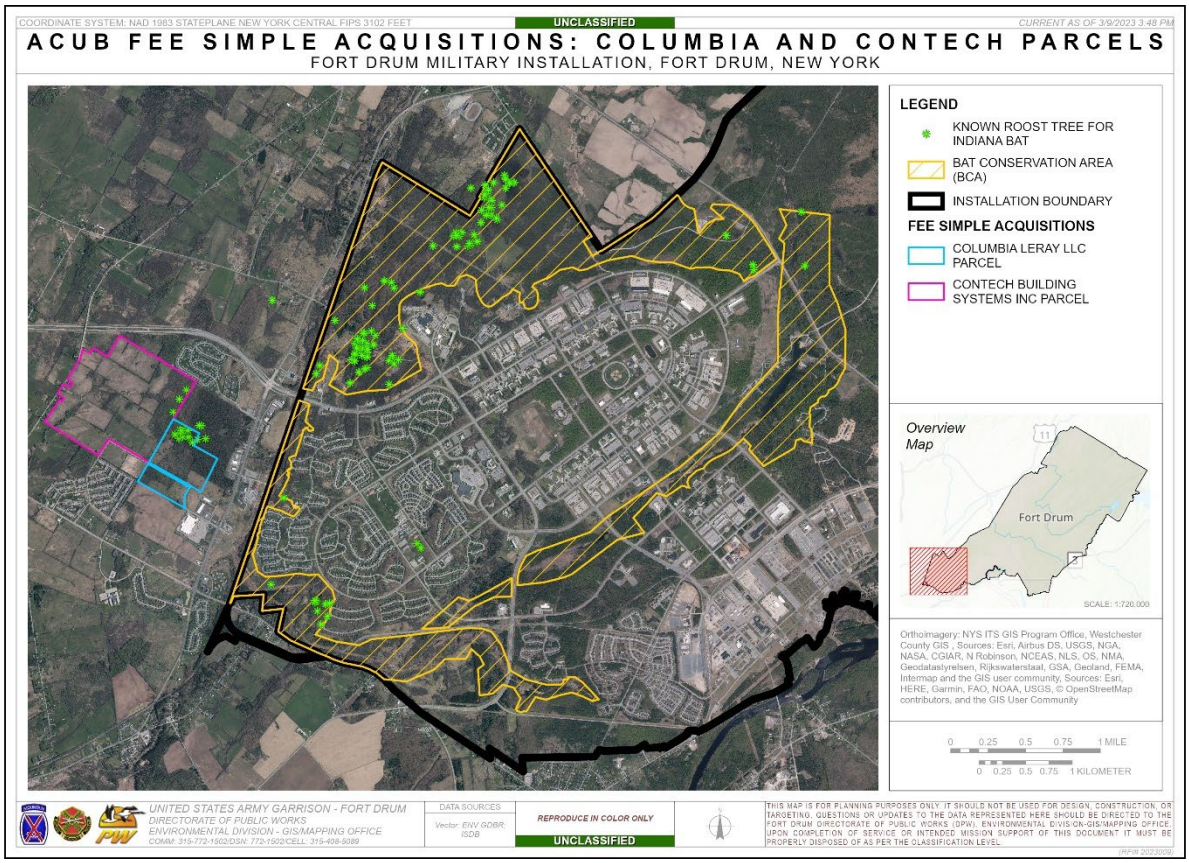

Figure 3.2 David S. Smith (Formerly Columbia Leray) and Contech Fee Simple ACUB Bat Conservation Acquisitions Near Fort Drum Military Installation.

3. Conduct research on smoke/obscurant impacts to the Indiana bat.

Fort Drum did not conduct any research in regards to smoke/obscurant impacts to the Indiana bat.

4. Conduct research on the summer habitat requirements and distribution of Indiana bats.

Fort Drum has been involved with this type of activity since 2003 with information collected via Anabat detectors. Additional information has been gathered in subsequent years via Anabat and mistnet surveys. Efforts have documented foraging and roosting areas of the Indiana bat colony within the Cantonment Area, BCA, and adjacent Training Areas (USFS 2011, Jachowski et al. 2014a, Jachowski et al. 2016). They have documented captures of northern long-eared bats throughout the installation. They have also documented the declines of multiple species of bats due to WNS, and the subsequent change in bat behavior and habitat use (Ford et al. 2011, Jachowski et al. 2014b). Acoustic monitoring has also documented changes in distribution of bats over time and due to WNS impacts. These results can be found in Nocera et al. (2019b). Fort Drum will continue to examine summer habitat requirements and distribution of Indiana, northern long-eared, and tricolored bats as resources allow.

5. Evaluate potential to correlate USFS foraging data with training activities to glean any information on Indiana bat response to night training exercises.

Fort Drum has not performed any actions specific to this recommendation.

Future Planned Efforts

Fort Drum will continue to monitor the Indiana bat maternity colony as resources allow. This will primarily be accomplished through monitoring areas around the known maternity colony with Anabat detectors and mist net efforts.

Fort Drum will continue to assist with WNS related research when able and other projects and funding opportunities will be explored with NYSDEC, other military installations, universities, etc.

3.3 Outreach Efforts

Fort Drum has participated in and facilitated several outreach efforts including publishing articles in local outlets, cooperating with local media, participating in community and school events publishing in peer-reviewed journals, and presenting at professional wildlife workshops, meetings, and conferences. These efforts can be found in past BAs and in annual reports and below.

Professional Publications and Presentations

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3.4 Army Compatible Use Buffer (ACUB) Program

Please see Appendices A-D for more detailed information about the Army Compatible Use Buffer (ACUB) program.

For the purposes of this BA, the ACUB program has been reviewed to: (1) ensure that the inclusion of easements primarily acquired to establish buffer areas around Fort Drum to limit effects of encroachment and maximize land inside the installation that can be used to support the mission do not adversely affect the Indiana and northern long-eared bat; and (2) ensure that the inclusion of easements primarily acquired to sustain natural habitats for the benefit of the Indiana, northern long-eared, and/or tricolored bat will beneficially affect these species and assist Fort Drum to meet its environmental regulatory requirements for endangered species conservation.

As of July 2023, 34 properties have been added to the Fort Drum ACUB program encompassing approximately 8,890 ac; Figure 3.3-acreages are based on GIS calculations of tax parcel boundaries and may not match exactly to parcel easement descriptions or final surveys). Fort Drum's Public Works Directorate-Natural Resources Branch still has all responsibility for the ACUB program, and will continue to ensure that all ESA Section 7 requirements are met. Ducks Unlimited (DU) has been Fort Drum's ACUB Cooperative Agreement lead partner since 2008. DU performs administrative and reporting tasks for the program and currently holds one parcel easement. They also coordinate and cooperate with local land trusts (primarily Tug Hill Tomorrow Land Trust, for the holding, monitoring, and management of all other parcel easements. The ACUB Cooperative Agreement is currently in limbo, as Fort Drum is still waiting on approval of a new plan/proposal. It is unclear what the timing is for approval at this point, and whether new/additional partners may be added.

Once the new plan/proposal has received Army approval, a copy will be provided to the USFWS. As Fort Drum determines potential new parcels for inclusion in the program, we will coordinate with the USFWS to ensure that the latest information about the distribution of the Indiana, northern long-eared, and tricolored bat (or other species) is utilized to make the best decisions to avoid adverse effects any protected species.

To date, all parcels have been acquired with the main intent of limiting the effect of potential encroachment on Fort Drum. These parcels have primarily been farmland with some forested areas; however, some recent parcels have had more forested areas than farmland. As such, the "Agricultural" model easement discussed in previous BAs has been slightly modified. Please see (Appendix Z) for the latest version. This will be utilized for the foreseeable future for all these types of parcels. As long as this model easement is utilized, "Agricultural" ACUB parcels may affect, but will not adversely affect the Indiana, northern long-eared, or tricolored bat. If a different type of easement is developed, the USFWS will be consulted.

Fort Drum has also acquired parcels for the dual benefits of protecting military mission encroachment concerns and for conservation benefit of the Indiana and northern long-eared (and now tricolored) bat (see above). These parcels were acquired through a Fee Simple acquisition process. This approach should allow for much more management flexibility for any potential conservation concerns, as Fort Drum and the partners can work directly together and manage the parcels appropriately with no other competing interests of a third party landowner. Fort Drum contends that these (and any additional fee simple) parcels will be wholly beneficial for the Indiana, northern long-eared, and tricolored bat, as well as, provide benefits to the military mission.

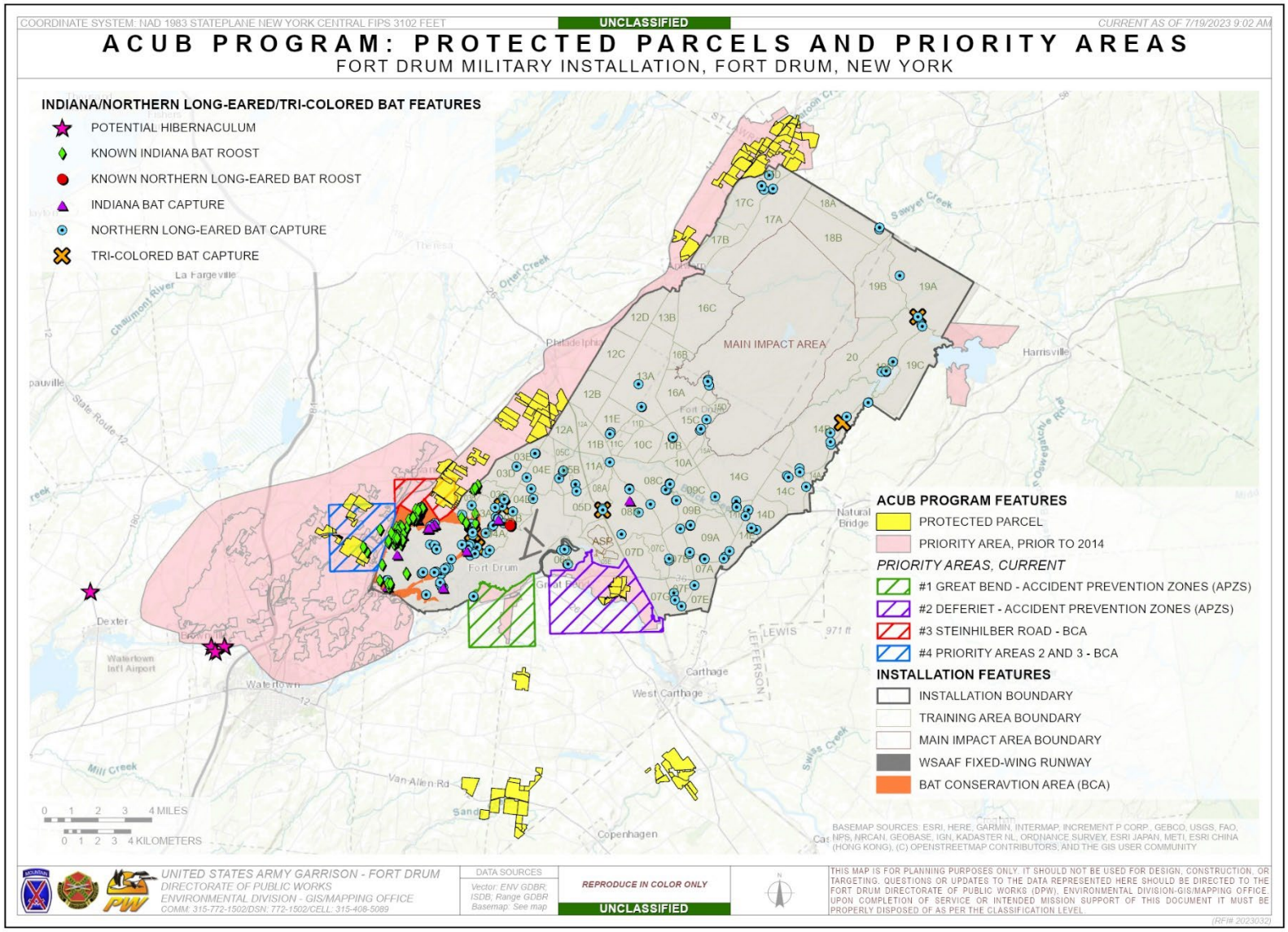

Figure 3.3. Protected Parcels and Priority Areas currently within the Army Compatible Use Buffer Program at Fort Drum Military Installation.

3.5 Conclusion

The establishment of the Bat Conservation Area, monitoring and research efforts, and outreach efforts will all have discountable or wholly beneficial impacts to the Indiana bat and other forest bat species. The establishment of ACUB areas for noise buffer or encroachment concerns (aka "Agricultural easements") may affect, but should not adversely affect the Indiana, northern long-eared, and tricolored bats as long as the easement language is followed and the landowners contact the NYSDEC or USFWS prior to completing any type of forest clearing or land management action. The establishment of ACUB areas for the dual benefits of mission and species conservation will have wholly beneficial impacts to the Indiana bat and other forest bat species.

4.0 Cumulative Effects

All future actions on Fort Drum are subject to federal agency involvement, and federal involvement is anticipated in all or most future actions within the Action Area (see *Section1.*4).

Besides those activities occurring on Fort Drum addressed in this BA, there are numerous activities that occur in the action area off-post that affect the Indiana, northern long-eared, and tricolored bat. These activities include residential and commercial development associated with the expansion at Fort Drum, agriculture, timber harvesting, and outdoor recreation. Although many of these are private actions, some involve permitting through the US Army Corps of Engineers due to impacts to waters of the United States. Because of the permitting requirements, the USFWS is engaged in consultation with many of these off-post projects. The USFWS is also engaged with the Town of LeRay in ongoing development in the area, and is actively involved with reviewing most, if not all, development projects within the Town (regardless of USACE involvement). The USFWS are working with the Town and developers to conserve and connect suitable Indiana bat habitat whenever possible and hope to work with other towns in the area in a similar fashion.

Because of the active Federal agency involvement in the immediate area, no detailed cumulative effects analysis is presented here. In addition, there are no negative cumulative effects anticipate on ACUB land because easements or fee-simple acquisitions are designed to ensure no adverse effects to federally-listed species.

5.0 Overall Conclusion

Over the past 17 years (2007-2023), mist net surveys at more than 800 net locations on Fort Drum have been conducted, where more than 4,000 bats were captured. There were 46 captures of Indiana bats (of which 43 were unique individuals), 406 captures of northern long-eared bats (of which 399 were known unique individuals), and 6 captures of tricolored bats.

All evidence now suggests that suspected Indiana bat use within the Training Area is most likely periodic foraging or exploratory movement activity by bats from the known colony in the Cantonment Area. Historically, mist-netting, radio-tracking, and acoustic efforts identified one maternity colony focused within the Cantonment Area of Fort Drum; however, the continued persistence of this colony is unknown. Although suspected acoustic detections of the species are still being documented, no Indiana bats have been captured since 2014. The declining population counts from Glen Park and the paucity of recent positive data from the installation suggests that any remaining population left at Fort Drum is extremely small. Due to the extensive declines of Indiana bats in the Glen Park Hibernaculum and on Fort Drum, we expect no changes to this historic use. It is unlikely that the Indiana bats utilizing the Cantonment Area and BCA will leave this historic core range as long as suitable roosting and foraging habitat remains available. Utilizing all available information and the revised assumptions, Fort Drum contends that as long as all conservation measures and project descriptions are followed, no proposed activity will have any adverse effect to Indiana bats on Fort Drum Military Installation during 2024-2026.

Historically, Fort Drum likely contained relatively high numbers of individuals and maternity colonies of northern long-eared bats. All evidence suggests that there is no concentrated use for this species, and that they could be found throughout most of installation in appropriate habitat in small pockets of activity. As with Indiana bats, impacts from WNS have been severe to this species in New York and on Fort Drum, and the disease has caused drastic declines in their populations. Historically over 400 northern long-eared bats were captured throughout the installation while performing mist net surveys; however, the vast majority of these captures occurred between 1999-2010. Despite extensive mist net surveys between 2011-2017, there has been only one additional capture (in 2011). Although suspected acoustic detections of the species continue to be collected sporadically and in extremely low numbers throughout the installation, evidence suggests that northern long-eared bats are either locally extirpated, or at numbers low enough to be functionally so. Utilizing all available information and the revised assumptions, Fort Drum contends that as long as all conservation measures and project descriptions are followed, no proposed activity will have any adverse effect to northern long-eared Indiana bats on Fort Drum Military Installation during 2024-2026.

Tricolored bats were first confirmed on Fort Drum in 2007, when four individual bats were captured during mist net surveys. Subsequently, only two additional tricolored bats have been captured (one in 2009 and one in 2010). Suspected acoustic detections have been collected throughout the installation; however, there have been relatively few detections on average annually. It appears that this species may still be present on Fort Drum, but also in extremely low numbers. It is unknown where tricolored bats are (or were) hibernating around Fort Drum. However, acoustic detections of probable tricolored bats are still being detected on the installation. Thus it is likely the installation is still being utilized to some degree by this species.

Subsequently, Fort Drum has determined that in season clearing for small scale range construction projects and the use of smoke/obscurants is likely to adversely affect tricolored

bats on Fort Drum. However, all other proposed activities on Fort Drum will not affect, or may affect, but should not adversely affect tricolored bats. Table 5.1 summarizes the effects analysis of each activity in this BA for Indiana, northern, and tricolored long-eared bat.

Table. 5.1 Overall Effects Summary. (0 = No effect; 1 = may affect, but not likely to adversely affect; 2 = may affect, likely to adversely affect; + = beneficial effect). IBAT=Indiana bat; NLEB= northern long-eared bat; TCB= tricolored bat.

ACTIVITY	ATTRIBUTE	DIRECT EFFECT				INDIRECT EFFECT		
		IBAT	NLEB	TCB		IBAT	NLEB	TCB
Construction	Hibernation	0	0	0		0	0	0
	Roosting	1	1	2		1	1	1
	Foraging	1	1	1		1	1	1
Military Training – All Except Smoke/Obscurants	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	1	1	1		1	1	1
Military Training – Smoke/Obscurants	Hibernation	0	0	0		0	0	0
	Roosting	1	1	2		1	1	2
	Foraging	1	1	1		1	1	1
Forest Management	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	1	1	1		1	1	1
Mechanical Vegetation Management	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	0	0	0		1	1	1
Land Conversion	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	1	1	1		1	1	1
Pesticide Application	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	1	1	1		1	1	1
Wildlife Management/ Vertebrate Pest Control	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	0	0	0		1	1	1
Outdoor Recreation	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	1	1	1		1	1	1
ACUB – Non Indiana Bat Easements	Hibernation	0	0	0		0	0	0
	Roosting	1	1	1		1	1	1
	Foraging	1	1	1		1	1	1
ACUB – Bat Easements	Hibernation	0	0	0		0	0	0
	Roosting	+	+	+		+	+	+
	Foraging	+	+	+		+	+	+

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7.0 Appendices

Appendix A. Fort Drum, New York Biological Assessment for the Indiana Bat (*Myotis sodalis*) 2009-2011. Can be viewed at: https://fortdrum.isportsman.net/publications.aspx

Appendix B. Biological Assessment on the Proposed Activities on the Fort Drum Military Installation, Fort Drum, New York (2012-2014) for the Federally-Endangered Indiana bat (*Myotis sodalis*). Can be viewed at: https://fortdrum.isportsman.net/publications.aspx

Appendix C. Biological Assessment on the Proposed Activities on Fort Drum Military Installation, Fort Drum, New York (2015-2017) for the Indiana bat (*Myotis sodalis*) and Northern Long-eared bat (*Myotis septentrionalis*). Prepared by: US Army Garrison Fort Drum, Fish and Wildlife Management Program, Environmental Division, Directorate of Public Works, Fort Drum, New York. Can be viewed at: https://fortdrum.isportsman.net/publications.aspx

Appendix D. Biological Assessment on the Proposed Activities on Fort Drum Military Installation, Fort Drum, New York (2018-2020) for the Indiana bat (*Myotis sodalis*) and Northern Long-eared bat (*Myotis septentrionalis*). Prepared by: US Army Garrison Fort Drum, Fish and Wildlife Management Program, Environmental Division, Directorate of Public Works, Fort Drum, New York. Can be viewed at: https://fortdrum.isportsman.net/publications.aspx

Appendix E. Biological Assessment on the Proposed Activities on Fort Drum Military Installation, Fort Drum, New York (2021-2023) for the Indiana bat (*Myotis sodalis*) and Northern Long-eared bat (*Myotis septentrionalis*). Prepared by: US Army Garrison Fort Drum, Fish and Wildlife Management Program, Environmental Division, Directorate of Public Works, Fort Drum, New York. Can be viewed at: https://fortdrum.isportsman.net/publications.aspx

Appendix F. Biological Opinion on the Proposed Activities on the Fort Drum Military Installation (2009-2011) for the Federally-Endangered Indiana Bat (*Myotis sodalis*) in the towns of Antwerp, Champion, LeRay, Philadelphia, and Wilna, Jefferson County and the Town of Diane, Lewis County, New York. Can be viewed at: http://www.fws.gov/midwest/Endangered/mammals/inba/bos/09_NY_Fort Drum.pdf**.**

Appendix G. Biological Opinion on the Proposed Activities on the Fort Drum Military Installation (2012-2014) for the Federally-Endangered Indiana Bat (*Myotis sodalis*) in the towns of Antwerp, Champion, LeRay, Philadelphia, and Wilna, Jefferson County and the Town of Diane, Lewis County, New York. Can be viewed at: http://www.fws.gov/midwest/Endangered/mammals/inba/bos/12_NY_Fort Drum.pdf

Appendix H. Biological Opinion on the Effect of Proposed Activities on the Fort Drum Military Installation (2015-2017)) in the towns of Antwerp, Champion, LeRay, Philadelphia, and Wilna, Jefferson County and the Town of Diana, Lewis County, New York on the Northern Long-eared bat (*Myotis Septentrionalis*).

Appendix I. Consultation on the Effect of Proposed Activities on the Fort Drum Military Installation (2018-2020)) in the towns of Antwerp, Champion, LeRay, Philadelphia, and Wilna, Jefferson County and the Town of Diana, Lewis County, New York on the Northern Long-eared bat (*Myotis Septentrionalis*).

Appendix J. Consultation on the Effect of Proposed Activities on the Fort Drum Military Installation (2021-2023)) in the towns of Antwerp, Champion, LeRay, Philadelphia, and Wilna, Jefferson County and the Town of Diana, Lewis County, New York on the Northern Long-eared bat (*Myotis Septentrionalis*).

Appendix K. Species Status Assessment Report for the Northern Long-Eared Bat, Version 1.2. Can be viewed at: https://ecos.fws.gov/ServCat/DownloadFile/225001

Appendix L. USFWS Interim Consultation Framework for the Northern Long-Eared Bat. Can be viewed at: Interim Consultation Framework for the Northern Long-eared Bat (fws.gov).

Appendix M. Species Status Assessment Report for the Tricolored Bat, Version 1.1. Can be viewed at: https://ecos.fws.gov/ServCat/DownloadFile/221212.

Appendix N. Endangered and Threatened Wildlife and Plants; Endangered Species Status for Tricolored Bat. Proposed Rule. Can be viewed at: 2022-18852.pdf (govinfo.gov).

Appendix O. Fort Drum, New York Integrated Natural Resources Management Plan 2021. Can be viewed at: https://fortdrum.isportsman.net/files/Documents%2FPublications%2FINRMP%202021Oct%20FINAL.pdf.

Appendix P. Summer Mist Net and Radio-Telemetry Surveys for the Indiana Bat (*Myotis sodalis*) on Fort Drum, Jefferson and Lewis Counties, New York – 2007. Prepared by Environmental Solutions & Innovations, Inc. Previously Provided to USFWS.

Appendix Q. Fall Mist Net and Radio-Telemetry Surveys for the Indiana Bat (*Myotis sodalis*) on Fort Drum, Jefferson and Lewis Counties, New York – 2007. Prepared by Environmental Solutions & Innovations, Inc. Previously Provided to USFWS.

Appendix R. Summer 2008 Bat Survey and Radiotelemetry Study Conducted at Fort Drum, Jefferson and Lewis Counties, New York. Prepared by Copperhead Environmental Consulting. Previously Provided to USFWS.

Appendix S. Summer Mist Net and Radio-Telemetry Surveys for the Indiana Bat (*Myotis sodalis*) on Fort Drum, Jefferson and Lewis Counties, New York – 2009. Prepared by Environmental Solutions & Innovations, Inc. Previously Provided to USFWS.

Appendix T. Summer Mist Net and Radio-Telemetry Surveys for the Indiana Bat (*Myotis sodalis*) on Fort Drum, Jefferson and Lewis Counties, New York – 2010. Prepared by Environmental Solutions & Innovations, Inc. Previously Provided to USFWS.

Appendix U. Bat Species Inventory of the Ft. Drum Military Installation, Jefferson and Lewis Counties, New York – 2012. Prepared by Jackson Environmental Consulting Services, LLC. Previously Provided to USFWS.

Appendix V. Summer 2015 bat survey and radiotelemetery study conducted at the Fort Drum Military Reservation, Jefferson and Lewis Counties, New York. Prepared by Copperhead Environmental Consulting, Inc. Previously Provided to USFWS

Appendix W. Fort Drum Military Installation Cantonment Area Indiana Myotis Survey. 2008 and 2009. Prepared by West Virginia University Under US Forest Service Agreement # 09-PA-11092000-106. Previously Provided to USFWS.

Appendix X. Conservation Measures and Beneficial Actions for Indiana and Northern Long-Eared Bats on Fort Drum.

This appendix includes all conservation measures and other beneficial actions that are implemented on Fort Drum which directly or indirectly benefit the Indiana and northern long-eared bat. These measures and actions are consolidated from Section 2. *Proposed Actions* and are in addition to those outlined in Section 3 *Conservation Measures*.

Conservation Measures for Construction Activities

1. Bat Conservation Area. A 2,200+ ac Bat Conservation Area (BCA) was established in 2008 to protect known Indiana bat roosting and foraging areas from permanent development within the Cantonment Area. The BCA attempts to provide connectivity of existing habitat in the Cantonment Area along the West Creek and Pleasant Creek corridors and the relatively undeveloped northern portion of the Cantonment Area where most of the known primary and maternity roosts are known. The BCA accounts for more than 20% of the total land area in the Cantonment Area. See *Section 3.1* for more information about the BCA. The BCA will also provide protection for northern long-eared bats within the Cantonment Area.

2. Roost Tree Protection. All female roosts, including roosts identified in the future, will be protected from construction for the lifespan of the roost tree. Additionally, a buffer will be placed around all female roosts to protect the roost from disturbance and to maintain a semblance of a natural environment for Indiana and northern long-eared bats. The size and shape of a buffer will be determined on a case by case basis by Fort Drum's Fish and Wildlife Management Program in consultation with the USFWS. Factors that will be considered will include surrounding landscape, habitat connectivity, distance to other roosts, distance to known foraging areas, and any other issue important to target species.

3. Time of Year Restriction for Tree Felling. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting Indiana and northern long-eared bats during non-hibernation seasons. For the majority of construction activities, felling of trees must take place between October 16 - April 15 while most bats are at the hibernaculum. This will greatly reduce the risk of accidentally harming bats that may potentially be present in trees scheduled to be removed. Specifically, maternity colonies and their associated non-volant young will be protected from disturbance.

4. Flagging or signs will be used to demarcate areas to be cleared vs. not cleared prior to any construction activities for a given project. Flagging will be removed upon completion of the project.

5. Via Environmental Protection Plans, Scope of Works, Contracts, etc., all personnel responsible for construction activities will be informed about the need to follow design plans, stay within flagging, minimize impacts to wildlife and other environmental concerns.

6. Outdoor Lighting Minimization. For all future projects, Fort Drum will evaluate the use of outdoor lighting and seek to minimize light pollution by angling lights downward or via other light minimization measures following Appendix U. High light levels may deter bats from areas as their nocturnal behavior may have evolved in response to predation risks (Speakman 1995, Sparks et al. 2005). By angling the light away from potential foraging and roosting areas, the area will be darker thus providing bats more protection from predators.

7. Demolition. If the building has pre-existing known bat colonies, then Fort Drum's Fish and Wildlife Management must be contacted before demolition is to occur. If during the course of demolition, bats of any species are discovered, then all work must cease and

Fort Drum's Fish and Wildlife Management Program must be immediately contacted. If bats are identified as Indiana or northern long-eared bats, then additional steps will be taken to try and minimize impacts to the species and additional consultation with the USFWS is required. If the structure is safe to leave as is, then it will be left until after October 15, or until bats have stopped using the structure. If the structure is unsafe and poses a risk to human health and safety, Fort Drum will attempt to exclude the bats immediately. If this is not possible, or bats are found to be using the structure during the maternity season when pups are not volant, the Fort Drum Fish and Wildlife Management Program will contact USFWS to discuss the most appropriate next course of action.

8. Water Quality. All construction activities with ground disturbance greater than one acre or that meets another requirement of the New York State Department of Environmental Conservation, are required to follow standards in New York State Pollutant Discharge Elimination System: Storm water General Permit for Storm water Discharges (Permit No. GP-0-08-001 Issued Pursuant to Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law). All construction projects over an acre are required to prepare a sediment and erosion control plan or a storm water pollution prevention plan (SWPPP), which details all erosion and sediment control practices and, when necessary, post-construction storm water management practices. Practices mentioned within the SWPPP will be in accordance with the New York State Stormwater Management Design Manual ("Design Manual") dated August 2003, or the most current version or its successor. Erosion and sediment controls vary, depending on individual impacts from each project. Some temporary examples of erosion and sediment controls include silt fences, check dams, and sediment traps. Permanent controls may include retention ponds, detention ponds, and grass lined swales. With water quality control measures in place, it is expected that declines in water quality will be minimal and thus will continue to provide adequate habitat for Indiana bat prey and drinking water for Indiana bats. In fact, water quality may actually improve during the construction of future projects due to new stormwater practices that mitigate for old water quality issues when no conservation measures were required or implemented.

9. Record-keeping and Reporting. For annual reporting purposes, all entities responsible for construction activities on Fort Drum will submit electronic shapefiles of clearing limits to Fort Drum's Fish and Wildlife Management Program. This information will be used to describe vegetative cover types and habitat loss on Fort Drum and reported annually to the USFWS.

Beneficial Actions for Construction Activities

1. Time of Year Restriction for Land Clearing. For all construction activities, a time of year restriction for clearing natural vegetation (i.e. shrubs, grasses and trees-excluding trees 3 4 in DBH) has been established. Vegetation is typically not removed between April 15 - August 1. This time of year restriction was established in order to minimize take of migratory birds and their young in accordance with the Migratory Bird Treaty Act.

2. Minimizing Building Footprints. To minimize environmental impacts, construction activities attempt to minimize building footprints by combining infrastructure (i.e. roads, utility lines, etc.) for multiple buildings or by constructing multi-story versus multiple or expanded single story buildings whenever possible

3. Bat Roost Minimization in Buildings. Buildings will be appropriately designed and constructed so cracks and crevices are not created, vents are screened, etc. Properly constructed buildings will discourage bats from roosting in buildings, thus minimizing human/bat conflicts in occupied dwellings.

4. Stormwater Management. Fort Drum anticipates reviewing stormwater management plans with the objective of moving towards integrated infrastructure to reduce the number or completely eliminate the need for stormwater retention ponds and the excessive land use required.

Conservation Measures for Military Training

1. a) No Category 1 smoke operation will be conducted within 1,000 m of the installation boundary, public roads, Cantonment Area, ammunition supply point or WSAAF in accordance with *Fort Drum Regulation 350-4 Range Regulation* and *Fort Drum Regulation 350-6 Assignment and Operational Use of Local Training Areas (LTAs)*. This restriction currently protects all known Indiana roosts and the majority of the known maternity use area (i.e., roosting and core foraging area) from close proximity smoke exposure.

   b) In the Training Area, Category 1 smoke and obscurants must be used >100 m from any known Indiana or northern long-eared bat maternity roost areas between April 16 – October 15. This will help to protect Indiana and northern long-eared bat roosts into the future. The 100 m buffer serves to minimize the effects of smoke and obscurants by providing distance between the roost and the densest amount of the smoke/obscurants. Training missions will be aware of maternity areas via the NEPA process and will be directed to avoid these areas.

   c) Category 1 smoke operations must also be rotated among training areas to minimize impacts to any one area.

   d) The use of Category 2 smoke (aka pyrotechnics) may be used in the Training Areas at any time within 1,000 m of the installation boundary, but will not be used within 100 m of any known Indiana or northern long-eared bat roost areas between April 16 - October 15.

   e) Category 2 smoke may not be used within 100 m of any forested areas within the LTAs between April 15 - October 15 (with the exception of use at the mobile MOUTs as identified in f) below). Approval from Range Control and NEPA review is required prior to any use of Category 2 smoke, and these reviews will help ensure that Category 2 smoke use is in accordance with this conservation measure.

   f) Category 2 smoke may be periodically used at three mobile MOUTs within the LTAs during April 15- October 15. All mobile MOUTs are currently outside of the BCA, but are in relatively close proximity (approximately 25, 35, 140m, respectively). Only infrequent use of colored smoke is expected to be used in around the mobile MOUTs. The closest known roost tree to the Mobile MOUTs is approximately 270m away. With the exception of the Category 2 colored smoke used at the mobile MOUTS, no other smoke or

obscurant may be used in the BCA. Currently, all known Indiana bat maternity roosts are found within the BCA or within a 1,000 m from the installation boundary.

2. In the Training Area and LTAs, the cutting of trees and tree removal is prohibited without approval by Fort Drum's Forest Management Program in accordance with current Environmental Guidelines. If approved, actions will be in accordance with all conservation measures in *Section 2.3 Forest Management*. In general, this is a relatively rare military training action. No female roosts, including roosts identified in the future, will be felled for training for the lifespan of the roost. No tree felling will occur in the BCA for training purposes.

3. In the LTAs, vehicular traffic is restricted to open grassy areas within easy access of the road in accordance with *Fort Drum Regulation 350-6 Assignment and Operational Use of Local Training Areas*. Vehicles are not permitted to cross streams, ditches, wetlands, or dense vegetation in order to reach grassy areas without prior NEPA review, thus minimizing impacts to natural habitats.

4. In the LTAs, POL operations are prohibited in accordance with *Fort Drum Regulation 350-6 Assignment and Operational Use of Local Training Areas.* This helps to minimize the risk of accidental water/ground contamination.

5. Fort Drum will abide by the Fort Drum Integrated Wildland Fire Management Plan (Fort Drum 2013) which includes fire danger ratings, unless under special circumstances that are approved by the commander. Military activities that may spark fires will not be conducted during moderate to high danger ratings in order to prevent unintentional wildfires. Although unintentional fires will still ignite and burn, this conservation measure will help protect Indiana and northern long-eared bats from smoke exposure and from roost destruction. Burn bans are most likely implemented during the summer months when reproductive bats are present on Fort Drum.

Conservation Measures for Forest Management Activities

1. Bat Conservation Area. Approximately 2,200 ac have been set aside for Indiana bats. This BCA will also provide the same protections to northern long-eared bats. Timber harvests will not occur within the BCA until an appropriate management plan is developed and the plan has been consulted on. If timber harvesting is needed within the BCA, then consultation with the USFWS is needed.

2. Roost Tree Protection. No female roost trees, including roosts identified in the future, will be felled for the lifespan of the roost, unless there is a human health and safety concern. This includes roost trees in and outside of the BCA.

3. Roost Tree Avoidance-Timber Harvest. Clearcutting and overstory roost tree removal will not occur within 0.75 mi (1.2 km) of known maternity roost trees located outside the BCA without further consultation with the USFWS. An exception to this requirement is a small number of small forested patches (ranging from ~5-15 acres) that will be clearcut at or near WSAAF to meet federal regulations for air safety. The majority of these patches contain trees primarily less than 4 in dbh. They will be maintained as forest, but will be clearcut approximately every 5-10 years to keep them at the appropriate height.

Selective thinning will not occur within one tree height of the known roost trees to minimize the risk of accidentally felling a known maternity roost during the non-hibernation season. Tree height is based on the average height of the stand (~80 ft (24 m)) surrounding the roost tree. For selective thinning harvests within 0.75 mi of a known maternity roost, all snags will be retained, and live trees > 16 in DBH that have noticeable cracks, crevices, or exfoliating bark will be favored as residuals. Further consultation will be needed with the USFWS for timber harvests that do not follow this conservation measure.

4. Roost Tree Avoidance- TSI. TSI actions will be performed at least 250 ft (76 m) away from known roost trees (including roosts identified in the future) and 500 ft (152 m) from known primary roosts (including roosts identified in the future). Pesticides used for TSI actions will be applied between sunrise and one hour before sunset. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 500 ft (30-76 m) of known roosts. This measure minimizes the risk of exposure to bats and potential effects from pesticides.

5. Firewood Cutting Restriction. All of the Cantonment Area (which includes the known primary Indiana bat roosting areas) is now off limits to any/all firewood cutting. This restriction will help avoid any associated noise or disturbance in the wooded roosting areas from chainsaws and/or tractors used in the harvest of the wood.

6. Time of Year Restriction. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting bats during non-hibernation seasons. Felling of trees must take place between October 16 - April 15 while most Indiana or northern long-eared bats are at the hibernaculum.

7. Snag Retention. Indiana and northern long-eared bats typically select areas that have high snag densities for establishment of maternity colonies, so snag retention will benefit roosting bats by providing areas to rear young. All snags will be left in silvicultural treatments unless there is a safety concern for the contractor or the military units training in the stands (e.g., maneuver corridors), or unless the treatment is a salvage harvest or clearcut. Snags should be distributed and retained throughout the landscape.

8. No cutting of trees will occur within or along the bed or bank of streams protected under Article 15 of the New York State Environmental Conservation Law unless required to meet specific management goals and only after obtaining a permit from NYSDEC.

9. A minimum of 70 sq ft of residual basal area, all snags, and all live trees > 16 in DBH that have noticeable cracks, crevices, or exfoliating bark will be retained around all perennial streams and open waterbodies (2 ac or greater in size) on Fort Drum. A perennial stream is defined as having flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow. If silvicultural treatments are needed that do not meet this conservation measure and that do not have a “no effect” determination, then individual consultation will be required with the USFWS. This buffer protects water quality and provides foraging habitat for Indiana bats. Indiana bats are known to utilize riparian corridors that have suitable vegetative cover for foraging and for roosting in nearby trees (Jachowski et al. 2014a, Garner & Gardner 1992).

10. For annual reporting purposes, the Forest Management Program will provide shapefiles of harvested and TSI areas, vegetative cover types pre- and post-harvest (within a scaled map), and the harvesting or TSI method used to Fort Drum's Fish and Wildlife Management Program. This information will be used to describe the vegetative cover types and habitat modification on Fort Drum and will be reported annually to the USFWS.

Beneficial Actions for Forest Management Activities

1. If possible, new log landings will be constructed at least 200 ft (61 m) from water bodies and wetlands.

2. Spill kits and oil absorbent mats will be present on log landings in case of fuel, lubricant or hydraulic fluid spills or leaks.

3. If necessary, soil will be stabilized by seeding and mulching at the end of the operation.

4. Where possible, skid trail grade will be maintained at less than 15%. Where higher grade is unavoidable, the grade will be broken, drainage structures will be installed, and soil stabilization practices will be used where needed to minimize runoff and erosion.

5. Debarking and other damage to residual trees will be minimized wherever possible.

6. Stream crossings will be used only when absolutely necessary.

7. Streams will be crossed by the most direct route.

8. Ruts will be filled in, and water bars and erosion barriers will be installed to prevent or minimize erosion and sedimentation from roads, skid trails and log landings.

9. Erosion control measures will be inspected within 24 hours after a rain event and checked once per week. Erosion controls will be maintained or removed as needed.

10. No machinery will be operated in streams protected under Article 15 of the NYS Environmental Conservation Law without first obtaining a permit from NYSDEC.

11. Oak Tree Retention. During hardwood removals, dead or dying oak trees that may have been typically removed from the stand will be left in the targeted units. This would be limited to areas that receive large amounts of sunlight during the day (e.g. the edge of the stand, near an opening within the stand, etc.) to provide roost trees for Indiana bats and other wildlife.

12. Live Tree Retention near Wetlands. Whenever possible, a percentage of suitable live trees (i.e., trees that look as if they have the potential to develop into future snags) will be retained, so cavities appropriate for wildlife may develop and for future snag recruitment. Suitable trees will be long lived hardwoods >15 in DBH and have the greatest potential to develop cavities. In wetland areas 10 ac or larger with open water and shorelines greater than 30 m apart, 20 suitable trees will be left for every 50 ac harvested within 0.5 mi (0.8 km) of wetlands. Although this measure was originally developed to benefit cavity nesting waterfowl species (e.g., wood ducks and hooded mergansers), it can also benefit Indiana bats. By retaining trees near wetlands that have

the potential to develop into snags, future potential Indiana bat roosts will be located near water sources and potential foraging areas.

13. Forest Openings. When possible, unique forest openings (e.g. patch cuts of aspen varying from 1-10 ac in size removed from the stand) will be provided. This action will create openings in wooded habitat that can provide foraging opportunities for Indiana bats (Brack 2006).

Conservation Measures for Mechanical Vegetation Management Activities

1. Time of Year Restriction for Tree Felling. A time of year restriction for clearing trees (> 3 in DBH) and removing low- to medium-risk hazard trees has been established to protect roosting bats during non-hibernation seasons. Felling of trees must take place between October 16 - April 15 while most Indiana and northern long-eared bats are at hibernation sites. This will greatly reduce the risk of accidentally harming bats that may potentially be present in trees scheduled to be removed. Specifically, maternity colonies and their associated non-volant young will be protected from this disturbance.

2. Roost Tree Protection. No female roost trees, including roosts identified in the future, will be removed unless determined to be high risk hazard trees (see #5 below). Hazard trees that are not considered high risk, will be removed during the winter. Roost trees may not be removed for any other reason (e.g., aesthetically unappealing).

3. Mowing/ vegetation removal by machinery will not occur within 100 ft of known roost trees to avoid disturbing roosting bats and maintaining cover around the roosts. However, individual or clusters of invasive plants close to known roosts (< 3 in DBH) may be removed by hand clipping or cutting or with brush saws between 15 August-15 April. This clarifies the process to remove invasive species from within the roosting areas, yet still minimizes disturbance around the potential roosts during the primary roosting season.

4. No more than 300 ac per year (and no more than 50 ac in a contiguous block) will be mechanically removed within the BCA annually.

5. High Risk Hazard Trees. For hazard trees that are determined to be high or critical classified between April 16 – October 15, Fort Drum's Fish and Wildlife Management Program personnel will be notified in advance, so they may assess the hazard tree. If appropriate, an emergence survey will be conducted and if no bats are observed, then the roost tree will be promptly removed. This will reduce the risk of removing an undiscovered roost tree. If bats are observed, then further consultation with the USFWS is needed.

6. Reporting. Personnel responsible for each vegetation management action must provide a scaled map of the treated area, specify the type of management action that occurred, report the total acreage of impacted habitat, and the vegetative cover types that were managed (i.e., number of hazard trees removed, amount of shrubland habitat cleared) to Fort Drum's Fish and Wildlife Management Program for annual reporting requirements to the USFWS. Mowing of landscaped grass in the Cantonment Area does not need to be documented.

Beneficial Actions for Mechanical Vegetation Management Activities

1. Typically, for all mechanical vegetation management not exempted for military readiness activities, a time of year restriction for clearing natural vegetation (i.e. shrubs, grasses and trees-excluding trees > 3 in DBH) has been established. Vegetation is typically not removed between April 15 - August 1. This time of year restriction was established in order to minimize take of migratory birds and their young in accordance with the Migratory Bird Treaty Act.

2. Vegetation management for military readiness may be conducted year-round although it is recommended that shrubs, grassess and small trees (< 3 in DBH) not be removed between April 15 - August 1 in order to minimize impacts to migratory birds and to maintain foraging areas for bats.

3. If soils are impacted by vegetation clearing, degraded areas will be repaired via actions that may include grading, compacting, seeding, and application of fertilizer, lime, and mulch. In the past, vegetation management activities typically have not disturbed soils to such an extent that repair work was necessary. This minimizes erosion run-off into waterways, and thus protects water quality and associated invertebrate abundance, including possible prey for Indiana bats.

4. Vegetation management activities typically avoid delineated water bodies/wetlands. Although there is no formal buffer requirement around wetlands, a 20-30 ft (6-9 m) buffer is typically maintained around identified wetlands. By retaining shrubs and small trees around wetlands, it passively directs military activities (i.e. vehicle maneuvers) from these areas to more upland, drier sites. This leads to less military impacts to water quality and protects water sources for bats.

Conservation Measures for Land Conversion Activities

To minimize the risks of impacting Indiana and northern long-eared bats during land conversion activities, several conservation measures have been implemented.

1. Bat Conservation Area. Approximately 2,200 ac have been set aside for Indiana bats. This BCA will also provide the same protections to northern long-eared bats. Land conversion will not occur within the BCA without additional consultation with the USFWS.

2. Roost Tree Protection. No female roost trees, including roosts identified in the future, will be felled for the lifespan of the roost, unless there is a human health and safety concern. This includes roost trees in and outside of the BCA.

3. Roost Tree Avoidance. Land conversion activities will not occur within 0.75 mi (1.2 km) of known maternity roost trees located outside the BCA without further consultation with the USFWS. An exception to this requirement would be the forested areas at WSAAF. In order to meet federal regulations for air safety, some of these areas may be converted from forest to grassland for ease of maintenance. These areas were originally clearcut in 2005 and contain trees primarily less than 4 in dbh. They have now regrown to heights that are once again becoming a safety concern. Some areas will be maintained as forest, but will be clearcut approximately every 5-10 years to keep them at the

appropriate height (as described in Section 2.3). Other areas will be completely converted to grass.

4. No more than a total of 50 ac/year in each category (100 ac total for military training and wildlife habitat benefits) of land conversion will occur in forested areas with > 3 in dbh trees. This will help to ensure large areas within a contiguous area will not be removed, minimizing the potential to remove a large percentage of unknown roost trees.

5. Time of Year Restriction. A time of year restriction for clearing trees (> 3 in DBH) has been established to protect roosting bats during non-hibernation seasons. Felling of trees must take place between October 16 - April 15 while most Indiana or northern long-eared bats are not on Fort Drum.

6. No cutting of trees will occur within or along the bed or bank of streams protected under Article 15 of the New York State Environmental Conservation Law unless required to meet specific management goals and only after obtaining a permit from NYSDEC.

7. A minimum of 70 sq ft of residual basal area, all snags, and all live trees > 16 in DBH that have noticeable cracks, crevices, or exfoliating bark will be retained around all perennial streams and open waterbodies (2 ac or greater in size) on Fort Drum. A perennial stream is defined as having flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow. If land conversion treatments are needed that do not meet this conservation measure and that do not have a “no effect” determination, then individual consultation will be required with the USFWS. This buffer protects water quality and provides foraging habitat for Indiana and northern long-eared bats. Indiana bats are known to utilize riparian corridors that have suitable vegetative cover for foraging and for roosting in nearby trees (Jachowski et al. 2014a, Garner & Gardner 1992).

8. For annual reporting purposes, the proponent of the land conversion activities will provide shapefiles of converted areas and vegetative cover types pre- and post-conversion (within a scaled map to Fort Drum's Fish and Wildlife Management Program. This information will be used to describe the vegetative cover types and habitat modification on Fort Drum and will be reported annually to the USFWS.

Beneficial Actions for Land Conversion Activities

1. Typically, for all land conversion activities, a time of year restriction for clearing natural vegetation (i.e. shrubs, grasses and trees-excluding trees > 3 in DBH) will be established. Vegetation will not be removed between April 15 - August 1. This time of year restriction is primarily to minimize take of migratory birds and their young in accordance with the Migratory Bird Treaty Act. However, it can also benefit foraging bats, if they are using the area.

2. If soils are impacted by vegetation clearing, degraded areas will be repaired via actions that may include grading, compacting, seeding, and application of fertilizer, lime, and mulch. In the past, vegetation management activities typically have not disturbed soils to such an extent that repair work was necessary. This minimizes erosion run-off into

waterways, and thus protects water quality and associated invertebrate abundance, including possible prey for bats.

Conservation Measures for Pesticide Application Activities

1. Only pesticides registered by the EPA and State of New York may be applied and only in accordance with their label.

2. Aerial applications will occur between the hours of sunrise and one hour before sunset. This will protect foraging bats in undiscovered foraging areas from direct exposure.

3. Aerial application of pesticides in the BCA will not occur without further consultation with the USFWS.

4. Other pesticide application within the BCA will be limited to 50 ac per year (no more than 25 ac in a contiguous block) for tow behind power blowers, 300 ac per year (no more than 50 ac in a contiguous block) for other ground machine mounted pesticide spraying equipment (e.g., ATVs, tractors, Skid Steers). There will be no limit to the amount of acreage where individual spot application, slash and squirt hand application, individual stem injection, or other ground application done directly by hand is completed.

5. Tow behind power blowers will not be utilized until after August 15 in all forested areas to allow pups to reach volancy and exit an area if disturbed by this activity. Deviations from this conservation measure will require further consultation with the USFWS.

6. Whenever possible, herbicides that have low toxicity to mammals will be utilized with the tow behind power blowers. Herbicides that may be somewhat toxic to mammals will be mixed and applied at the lowest allowable rate per the label to help minimize any potential exposure concerns.

7. Application of pesticides from ground mounted vehicles (i.e., ATVs, tractors) that spray chemicals directly onto the ground and do not result in broad dispersal will be conducted at least 100 ft (30 m) from known roost trees (including roosts identified in the future) and 250 ft (76 m) from known primary roosts. Pesticides applied from ground mounted vehicles will use drift control additives and droplet sizes appropriate for reducing drift.

8. Application of pesticides that result in broad dispersal (e.g., tow behind power blowers) will be conducted at least 250 ft (76 m) away from known roost trees (including roosts identified in the future) and 500 ft (152 m) from known primary roosts. Pesticides will not be applied between sunrise and one hour before sunset. Location-specific applications (i.e. hatchet or stem injections of trees, individual application to specific plants) may be used within 500 ft (30-76 m) of known roosts. This measure minimizes the risk of exposure to bats and potential effects from pesticides.

9. Pesticides applied from tow behind power blowers will use appropriate nozzles and drift control additives, and will be applied using low pressure to reduce drift and potential swirling motion from the blower. All efforts will be made to only spray 10 feet from ground level or below.

10. Pesticides will not be applied outdoors when the wind speed exceeds 10 mi/hr for all applications except power mist blowers. Pesticides applied via power mist blower will only be applied with wind speeds 8 mi/hr or less. Pesticides applied aerially will only be applied with wind speed 8 mi/hr or less. This is to reduce the risk of pesticide drift, which could impact water quality or non-target areas. Care will be taken to make sure that any spray drift is kept away from non-target areas and individuals. Additionally, aerial application will utilize helicopters and employ large droplet technology through special nozzles on drop tubes to ensure the herbicide stays on target.

11. Pesticides will not be applied to any protected wetlands, streams, or other waters of NY State without obtaining the appropriate permits.

12. If a bat colony is found roosting in a building, then insecticides will be used sparingly and no foggers will be used. This will minimize impacts to roosting Indiana bats if they are found within a building. Currently, only one colony of bats has been located on Fort Drum. The LeRay Mansion houses several hundred little brown bats according to a survey conducted in 2007. No Indiana bats were identified in the survey.

13. For each pesticide application, Pest Control will report the total amount of PAI used for each pesticide, the size of the treated area (within a scaled map), and the vegetative cover types that were treated to Fort Drum's Fish and Wildlife Management Program for annual reporting purposes to the USFWS. For pesticides applied indoors or immediately along the exterior of the building, only the PAI needs to be reported—no map is required or vegetation types need to be reported.

Conservation Measures for Wildlife Management/Vertebrate Pest Control Activities

1. No Lethal Control. No lethal control methods are permitted for bats unless there is a suspected human health risk for exposure to rabies or other disease. If individual bats are in buildings and there is no evidence of maternity use, then all efforts will be made to safely capture and release individual bats. Or, the bats will be excluded by establishing one-way valves over the roost's exit (if feasible).

2. Time of Year Restriction for Exclusion. The exclusion will only be done during times of the year when pups are not present or when they are volant (i.e., August - early May). The time of year restriction will minimize the risk of separating mothers from non-volant young, so it will prevent potential pup mortality during exclusion activities. Sealing cracks and crevices in buildings will also be done during the late fall or early spring. This is based on the assumption that no bats hibernate in buildings on Fort Drum, which is a valid assumption given the narrow temperature requirements necessary for hibernating bats and the heating of buildings (Tuttle & Kennedy 2002) and the fact that no bats have been found hibernating in buildings to date. Sealing cracks and crevices prevents bats from entering a building and reduces human/bat conflicts.

3. Adhesive Trap Restrictions. No adhesive traps used for rodents or insects will be placed in such a manner that they could capture bats—glue traps will not be placed in any crawl space or attic compartment within buildings or in areas where bats are known to occur.

Beneficial Actions for Wildlife Management/Vertebrate Pest Control Activities

1. Bat Houses. Two large bat structures have been successfully installed and utilized near LeRay Mansion. Additional bat houses may be erected throughout the Installation to provide alternate roosting opportunities for bats.

2. Systematic Planning & Exclusion. Any future exclusion of colonies of bats (such as the LeRay Mansion colony) will only be done through a systematic process. Exit counts will be performed to determine approximate numbers of bats utilizing the structure and alternate roosting structures with enough capacity for the colony will be provided in the area (when practicable) prior to any exclusions or sealing of exit holes. The exclusion will only be done during times of the year when pups are not present or when they are volant (i.e. August - early May) to avoid potentially trapping and killing any non-volant pups.

Conservation Measures for Outdoor Recreation Activities

1. Skeet Range. Skeet shooting at the current skeet range is located adjacent to the BCA and fires over a known fall, summer, and assumed spring foraging location of Indiana bats. From April 15 - October 15, the skeet range's hours of operation will be no earlier than 30 minutes after sunrise and no later than 1 hour before sunset. This measure will prevent the accidental shooting of an Indiana bat during the non-hibernation seasons.

Appendix Y. Outdoor Lighting Minimization Measures.

Purpose

The purpose of the Fort Drum Outdoor Lighting Guidelines is to regulate outdoor lighting in order to reduce or prevent light pollution. This means to the extent reasonably possible the reduction or prevention of glare and light trespass, the conservation of energy, and promotion of safety and security. These Guidelines will ensure appropriate outdoor lighting in compliance with the Endangered Species Act and in accordance with the Fort Drum's Army Strategic Plan for Sustainability.

Definitions

a. Fixture Height: height of the fixture shall be the vertical distance from the ground directly below the centerline of the fixture to the lowest direct light emitting part of the fixture.

b. Foot-candles: a unit of illumination of a surface that is equal to one lumen per square foot. For the purposes of these regulations, foot-candles shall be measured at a height of 3 ft. above finished grade.

c. Fully Shielded Light: light fixtures shielded or constructed so that no light rays are directly emitted by the installed fixture at angles above the horizontal plane as certified by a photometric test report. The fixture must also be properly installed to effectively down direct light in order to conform with the definition.

d. Light Trespass: the shining of light produced by a light fixture beyond the boundaries of the property on which it is located.

e. Lumen: the unit of luminous flux, the total amount of light falling uniformly on or passing through an area of 1 square foot, each of which is 1 foot from a 1-candela source, yielding an illuminance of 1 foot candle at that distance (the output of lamps and bulbs is customarily measured in lumens, a common 100 watt incandescent light bulb, for example, having an output less than 1,800 lumens).

f. Point Light Source: the exact place from which illumination is produced (i.e., a light bulb filament or discharge capsule).

g. Sag-lens or Drop-lens: A clear or prismatic refracting lens that extends below the lowest opaque portion of a light fixture.

Applicability

All outdoor lighting fixtures installed, retro-fitted, or replaced on Fort Drum property shall comply with these regulations. These regulations do not apply to interior lighting.

Exemptions

The following are exempt from the provisions of these guidelines:

a. Traffic control signals and devices.

b. Temporary emergency lighting (i.e., fire, police, repair workers).

c. Moving vehicle lights.

d. Navigation lights (i.e., airports, heliports, radio/television towers).

e. Seasonal decorations with individual lights in place no longer than 60 days.

f. Lighting for flags. Efforts should be made in these areas to minimize sky glow and light trespass whenever feasible.

g. Sports field outdoor lighting (i.e. ball fields, football, soccer, ice rink, etc.). Sports outdoor lighting is to be turned off when a sporting event is not occurring.

h. Other special situations for temporary or periodic events (i.e. fairs, festivals, carnivals, night-time construction).

i. Security lights of any wattage that are controlled by a motion-sensor switch and which do not remain on longer than 10 minutes after activation.

j. Access points, Army Supply points, or other high security areas subject to AR 190-11 or TM-8-583-2. Efforts should be made in these areas to minimize sky glow and light trespass whenever feasible.

Additional exemptions may be provided after coordination with Fort Drum's Fish and Wildlife Management Program.

General Standards

All building exterior lighting and site lighting shall be at a minimum in accordance with these requirements and/or the most recent Fort Drum Utility Design Standards. A Professional Engineer must review any lighting plan in and ensure it is sound and meets minimization requirements. The following general standards shall apply to all outdoor lighting installed, retrofitted, or replaced on Fort Drum, which is not exempted above :

a. Outdoor lighting must be hooded, fully shielded (i.e. full cutoff fixtures), and/or aimed downward. Outdoor lighting used to illuminate parking spaces, driveways, maneuvering areas, or buildings shall conform to the definition for "fully shielded light fixtures" and be designed, arranged and screened so that the point light source shall not be visible from adjoining lots (i.e. woodlands) or streets.

b. The intensity of light within a site shall not exceed two (2) footcandles at any property line, edge of pavement, or road. There shall be no or minimal measureable light output behind the light pole.

c. The hood or shield must mask the direct horizontal surface of the light source. The light must be aimed to insure that the illumination is only pointing downward onto the ground surface, with no escaping light permitted to contribute to sky glow by shining upward into the sky.

d. Any bright light shining onto adjacent properties (i.e. woodlands) or streets which would result in a nuisance glare or a disabling glare shall not be permitted. Light trespass beyond property boundaries or above the horizontal plane shall be considered non-compliant.

e. Existing fixtures may be adapted to comply with these guidelines by adding a properly designed hood or shield, or by pointing any upward-mounted, shielded fixture downward onto the ground surface.

f. All outdoor lighting fixtures shall be designed, installed, located and maintained such that nuisance glare onto adjacent properties (i.e. woodlands) or streets shall be minimized and all direct illumination kept within the boundaries of a building’s property.

g. Accent lighting shall be directed downward onto the building or object and not toward the sky or onto adjacent properties (i.e. woodlands). Direct light emissions shall not be visible above the roof line or beyond the building edge.

h. Spotlighting on landscaping and foliage shall be limited to 150 watts (2220 lumens output) and lighting is to be angled downwards. The lamp shall be fully shielded and not create disabling or nuisance glare.

i. No sag-lens or drop-lens are to be used.

j. LED light fixtures will be utilized to the maximum extent practicable. These fixtures shall be long life, coupled with high efficient drivers. LED lights shall incorporate measures to reduce blue-rich white light output. These measures will be coordinated with Fort Drum's electric shop and Natural Resources Branch prior to implementation, but could include things such as targeting wavelengths between 550-650 nm, and/or reducing the correlated color temperature of the fixture to 3000K or lower. A map is available that designates areas in which utilizing lower correlated color temperatures is required. This can be viewed through Fort Drum's Fish and Wildlife Management Program and/or the electric shop. (**This map can be provided to the USFWS upon request**)

Appendix Z. Example Army Compatible Use Buffer Program "Agricultural Easement". Previously Provided to USFWS.