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ENVIRONMENTAL ASSESSMENT FOR MQ-9 REAPER LAUNCH AND RECOVERY ELEMENT AT THE 119th WING HECTOR INTERNATIONAL AIRPORT

NORTH DAKOTA AIR NATIONAL GUARD
FARGO, NORTH DAKOTA

AIR NATIONAL GUARD
ENVIRONMENTAL PLANNING DIVISION

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DRAFT
FINDING OF NO SIGNIFICANT IMPACT
FOR MQ-9 REAPER LAUNCH AND RECOVERY ELEMENT
NORTH DAKOTA AIR NATIONAL GUARD
HECTOR INTERNATIONAL AIRPORT

1.0 INTRODUCTION

The North Dakota Air National Guard's (ANG's) 119th Wing (119 WG) currently conducts their MQ-1 Predator remotely piloted aircraft (RPA) Continuation Training (CT) and Flying Training Unit (FTU) support from Grand Forks Air Force Base (AFB). Under the Proposed Action, the U.S. Air Force (USAF) is proposing the beddown of the Launch and Recovery (LRE) mission in support of the MQ-9 Reaper at the North Dakota ANG 119 WG installation at Hector International Airport (IAP) in Fargo, North Dakota. Associated with the beddown of four (4) MQ-9 RPA would be the renovation of two (2) buildings and the installation of two (2) Ground Data Terminals (GDTs) and a hoist/crane. The Proposed Action is needed due to the transition from MQ-1 to the MQ-9 RPA and the inefficiencies associated with the separation of the 119 WG's operations and maintenance personnel and the LRE at Grand Forks AFB. The MQ-9 beddown and LRE at Hector IAP would have numerous positive effects including: 1) reduce the MQ-9 aircraft operating costs (e.g., personnel costs and vehicle maintenance costs) associated with traveling to and from Grand Forks AFB; 2) reduce the time associated with maintenance and petroleum, oils, and lubricants (POL) personnel commuting to Grand Forks AFB; 3) decreasing response time for future domestic operations missions; 4) increase overall training time; and 5) provide for increased safety of personnel.

Based on the analyses completed for this Environmental Assessment (EA), the National Guard Bureau (NGB) has determined that the Proposed Action is not a major Federal action significantly affecting the quality of the human environment. Therefore, the preparation of an Environmental Impact Statement (EIS) is not required and the NGB is issuing this Finding of No Significant Impact (FONSI) for the Proposed Action.

1.1 PROPOSED ACTION

There are two primary elements of the Proposed Action: one comprises the proposed beddown of four (4) MQ-9 Reaper RPA, which would require the renovation of two (2) buildings and installation of two large pieces of equipment; the other is the proposed MQ-9 Reaper LRE, which would require the use of local airspace associated with Hector IAP and installation of a Ground Based Sense and Avoid (GBSAA) system or chase aircraft procedures to facilitate transit from the airport to the RPA training area, Restricted Area 5403 (R-5403) A through F (A-F).

1.1.1 MQ-9 Reaper LRE Beddown

Under the Proposed Action, the 119 WG would fly an average of two 4- to 8-hour sorties per day, four days per week and one weekend per month. The 119 WG would typically fly two MQ-9 aircraft at the same time and on occasion launch and recover one aircraft in morning and one in the afternoon, resulting in an average of four additional arrival and departure airport operations daily (i.e., two arrivals and two departures) and up to 20 closed patterns (10 closed patterns for each aircraft [i.e., 40 operations]) at Hector IAP. An additional two sorties would be accomplished during typical Unit Training Assembly (UTA) drill weekend days (24 days per year). No live or releasable inert weapons would be flown from Hector IAP. Each sortie would be used for continuation training and to support other MQ-9 FTUs around the country to include Active Duty Air Force and ANG units.

The MQ-9 aircraft would utilize a short taxi route at Hector IAP to access Runway 18/36 or Runway 09/27, necessary to minimize potential aircraft oil temperature increases. Taxi operations would be conducted in line-of-sight mode using the GDTs. Radio communication would be conducted between the pilot and the Fargo Air Traffic Control (ATC) using Ultra High Frequency (UHF)/Very High Frequency (VHF) radios and Land Line (i.e., telephone) as back-up. The MQ-9 aircraft would utilize Runway 18/36 or Runway 09/27 based on wind direction; however, it is anticipated that Runway 36 would be more heavily utilized given prevailing wind conditions. The ground control station (GCS) would have direct radio and back-up telephone communications with Fargo ATC for ground and in-flight operations. Communications for taxi and takeoff clearance would be accomplished using standard ATC assigned frequencies.

The installation of a GBSAA system displaying near-instantaneous air traffic information from ATC radar will allow the aircrew to accomplish safe transit from Hector IAP Class D airspace to the R-5403 A-F training complex. The intent is transit to and from R-5403 along a predetermined stereo route and then conduct training operations within R-5403, which would include utilization of non-eye safe laser training operations up to six (6) to eight (8) times per month only within R-5403. A chase aircraft contract may be pursued if the installation of the GBSAA system is greatly delayed. Operators use C-Band and Ku-Band links to communicate with and operate the MQ-9 aircraft. However, all RPAs are preprogrammed with a flight profile that the aircraft flies when it is no longer under control of a GCS (Lost Link). Lost Link Procedures (LLPs) are defined as a point, or sequence of points where the aircraft would proceed and hold at a specified altitude for a specified period of time, in the event the command and control link to the aircraft is lost. The aircraft would loiter at the LLP location until the communication link with the aircraft is restored or the specified time elapses. If the time period elapses, the aircraft would proceed as pre-programmed either

to another LLP location in an attempt to regain the communication link, or to the Flight Termination Point (FTP). If on final approach to, or climb-out from, the runway, the RPA would climb on runway heading to 2,400 feet above mean sea level (MSL). Once at 2,400 feet MSL, the aircraft would turn in the shortest direction toward the LL orbit.

The Lost Link (LL) orbit would be a new pattern that would be flown as a result of beddown and LRE of the MQ-9 Reaper LRE at Hector IAP. If on final approach to, or climb-out from, the runway, the RPA would climb at the runway heading for 2.5 nautical miles (NM) and climb to 2,400 feet above mean sea level (MSL). Once at 2,400 feet MSL, the aircraft would turn in the shortest direction toward the LL orbit. If at 2,400 feet MSL within the Hector IAP traffic pattern, the RPA would immediately turn in the shortest direction toward the LL orbit. In the event that the C-Band and Ku-Band links are lost with the aircraft between R-5403 and Hector IAP, the MQ-9 would remain within the lateral confines of the scheduled airspace.

Additionally, in the rare event of a generator failure, the aircrew has a mission profile that would take the MQ-9 aircraft immediately to the FTP at the Camp Grafton R-5403. The supervisor of flying (SOF) would designate the GenFail mission as active and the aircrew would turn the satellite link off to maximize available battery time. The nearest active duty AFB, either Grand Forks AFB or Minot AFB, would attempt recovery of these aircraft in the event the MQ-9 aircraft is not coming from too far away and has at least 30 minutes or more of battery available.

1.1.2 Proposed Renovation and Equipment Installation

Under the Proposed Action, the North Dakota ANG would need to renovate and redesign the interior of the existing Weapons Loading Hangar, Building 210, and Building 223 (Aircraft Ground Equipment) to accommodate the MQ-9 RPA corrosion control activities (Table 1). Two GDTs would be installed atop Building 217 on the east and west rooftops. A hoist/crane would be installed within Building 217, Maintenance Hangar, for use in the storage and removal associated with the MQ-9. These actions would not require any new development or demolition.

2.0 ALTERNATIVES

The National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, 32 Code of Federal Regulations (CFR) Part 651, and Air Force Instruction (AFI) 32-7061 require that a Federal agency consider reasonable alternatives to a Proposed Action.

Table 1. Proposed Equipment Install and Interior Renovation Projects

Project Number	Project Title	Fiscal Year	Area/ Size	Key Components
TBD	Install two GDTs on Building 217 and hoist/crane within	2017	N/A	– Installation two 50-foot antennas on rooftop. – Install hoist crane for MQ-9 aircraft storage and removal.
TBD	Renovate Building 210	2017	TBD	– Renovation of Building 210, Weapons Loading Hangar, to accommodate MQ-9 aircraft.
TBD	Renovate Building 223	2017	TBD	– Renovation of Building 223, the Aircraft Ground Equipment Building, to accommodate MQ-9 aircraft corrosion control.

TBD – To be determined

2.1 ALTERNATIVE 1: MQ-9 REAPER LRE AT GRAND FORKS AFB

The key difference between the Proposed Action and Alternative 1, is while the proposed beddown of the MQ-9 Reaper would occur at Hector IAP, the LRE mission would occur out of Grand Forks AFB, similar to the 119 WG existing operations described for the MQ-1 RPA LRE. Operations and maintenance crews would need to travel to Grand Forks AFB four-days a week and based on available daily operating hours would only be able to complete a two-hour training sortie.

2.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the proposed beddown of the MQ-9 Reaper LRE and associated renovation projects and placement of GDTs would not be implemented. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Because CEQ regulations stipulate that the No-Action Alternative be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented, the No-Action Alternative will be carried forward for analysis in the EA. The No-Action Alternative provides a baseline against which the Proposed Action can be compared.

3.0 ANTICIPATED ENVIRONMENTAL EFFECTS

Airspace Management. Under the Proposed Action, MQ-9 flight operations would occur within existing training areas (i.e., R-5403 and R-4301), transition airspace from Hector IAP to R-5403 and R-4301, and in the local airspace of Hector IAP. The Proposed Action would increase aircraft operations at Hector IAP by 44 additional airport operations daily including during UTA drill weekend days (24

days per year), which would be a 22 percent increase over existing conditions at Hector IAP. Implementation of the Proposed Action would not require any modification to the current terminal airspace structure or operational procedures. Further, implementation of the Proposed Action would not require any changes to the departure and arrival route structure of any airport in the vicinity or the Victor Routes used to transition between airports. The proposed MQ-9 aircraft operations would have no significant impact on the use and management of the Hector IAP Class D airspace or the airspace surrounding public and private airports in the region. Consequently, the Proposed Action would result in *less than significant* impacts to airspace management.

Safety. The Proposed Action would increase aircraft operations at Hector IAP by 44 additional airport operations daily (a 22 percent increase) including during UTA drill weekend days (24 days per year) and operations would adhere to all established flight safety guidelines and protocol. Additionally, 119 WG aircrews operating at Hector IAP and within airspace associated with unit training would continue to follow applicable procedures outlined in the Hector IAP Integrated Bird/Wildlife Air Strike Hazard (BASH) Plan. There would be no safety-related impacts associated with the use of long-range, non-eye safe lasers within R-5403. Further, proposed renovation activities and placement of the GDT have been designed and sited to meet all airfield safety criteria, and implementation of the Proposed Action would not result in adverse impacts to explosives safety or Explosive Safety Quantity Distance (ESQD) arcs at Hector IAP. Therefore, safety impacts associated with implementation of the Proposed Action would be *less than significant*.

Air Quality. Under the Proposed Action, no construction or demolition activities, including site clearing or grading would occur. As such, the Proposed Action would not result in impacts to air quality associated with construction and demolition activities or construction-related combustion emissions. Mobile operational emissions of criteria pollutants at Hector IAP would increase as a result of flight operations associated with the Proposed Action. Emissions from mobile sources (i.e., aircraft) are not currently regulated under the Title V program. Further, operating altitudes would range from 8,500 feet to 9,500 feet MSL under the Proposed Action within R-5403 and R-4301 and above 18,000 feet MSL when transitioning to and from Hector IAP. The Federal Aviation Administration (FAA) (2000) determined that aircraft operations at or above the average mixing height of 3,000 feet above ground level (AGL) have a very small effect on ground level concentrations and could not directly result in a violation of the National Ambient Air Quality Standards (NAAQS) in a local area. Further, North Dakota is in attainment for all criteria pollutants. Implementation of the Proposed Action would result in overall *less than significant* impacts to air quality.

Noise. Proposed interior renovations to Building 210 and Building 223 and placement of GDTs atop Building 217 would result in negligible localized noise

exposure; however, noise generation would be short-term and would be restricted to normal working hours (i.e., between 7:00 AM and 5:00 PM). Given the type of interior renovations associated activities (e.g., sporadic, during daytime hours, short-term, etc.), implementation of the Proposed Action would not be expected to substantially alter the noise environment over the short-term. Proposed MQ-9 aircraft operations at Hector IAP associated with the Proposed Action would represent an overall negligible increase, and consequently, would not have a measurable effect on the existing 65 Day-Night Average Noise Level (DNL) contour. Similarly, establishment of the proposed travel corridor would have a negligible effect on the noise environment in underlying areas do to the flight altitude and low number of daily operations. There would be no sensitive receptors that would be impacted by the Proposed Action. Therefore, potential long-term operational related noise impacts would be *less than significant*.

Land Use. Implementation of the Proposed Action would result in interior renovations to existing facilities that would support the Proposed Action. All component projects included in the Proposed Action are inherently consistent with established planning policies as well as land use and safety guidelines. The Proposed Action would not require any changes to off-site land use patterns. No new incompatible land uses would be introduced and no adverse changes to current land use as a result of the Proposed Action. Therefore, implementation of any alternative of the Proposed Action would result in *less than significant* impacts on land use.

Geological Resources. Implementation of the Proposed Action would not require construction or infrastructure improvements. All project sites are relatively flat do not present any topographical constraints. No grading activities are associated with the proposed renovation. Therefore, impacts to geological resources would be *less than significant*.

Water Resources. Under the Proposed Action, only interior renovations are proposed, of which, would not affect any on-installation surface water features. Groundwater in the project vicinity is naturally restricted and would not be impacted by the Proposed Action. No construction or ground disturbing activities would occur within or near a wetland, and the Proposed Action would not result in any activity on the 100-year floodplain. Therefore, impacts to water resources due to implementation of the Proposed Action would be *less than significant.*

Biological Resources. No potential habitat-disturbing activities associated with the Proposed Action are foreseen. Due to the lack of sensitive or native species at the 119 WG installation and the disturbed nature of existing vegetation, activities under the Proposed Action would have less than significant impacts on vegetation or the habitat it may provide. Further, wildlife located at the installation is generally accustomed to disturbance, and no USFWS-listed migratory bird species or threatened and endangered species are known to utilize project areas for

habitat. Therefore, activities associated with the Proposed Action would not be likely to have a substantial effect on vegetation or wildlife, and impacts to biological resources would be *less than significant*.

Transportation and Circulation. Implementation of the Proposed Action would include delivery of building renovation materials to and from the project site. Vehicle trips associated with building renovation would comprise only a small portion of the total existing traffic volume on the base transportation network and vicinity roadways, and associated activities would be short-term in duration and would occur only during non-peak traffic hours in coordination with applicable agencies. Operationally, implementation of the Proposed Action would increase the personnel at Hector IAP. Vehicle trips to and away from the base as well as parking availability would remain similar under the Proposed Action. Furthermore, implementation of the Proposed Action would reduce vehicle trips associated with LRE operations. The Proposed Action would consolidate beddown and LRE operations to the Hector IAP and eliminate vehicle trips to and from Grand Forks AFB. Therefore, impacts to transportation and circulation would be *less than significant*.

Visual Resources. The proposed interior renovation activities under the Proposed Action and within the boundaries of Hector IAP would be consistent with the visual character expected at an airport. While two GDTs would be placed on Building 217 and extend up to 70-feet above ground level (AGL), this would not disrupt any sensitive line-of-sight views. Interior renovations would not affect the exterior viewshed of the buildings at Hector IAP. Consequently, *less than significant* impacts to visual resources would result from implementation of the Proposed Action.

Cultural Resources. The proposed interior renovation activities under the Proposed Action would not affect cultural resources at Hector IAP. Building 210 and Building 223 which shall undergo renovations to accommodate the Proposed Action are not eligible for listing on the National Register of Historic Places (NRHP). Further, Building 217 is not eligible for listing on the NRHP based on the "loss of its original integrity" (North Dakota ANG 2007d). According to previous archaeological surveys, no archaeological resources are present at Hector IAP, and the 119 WG installation has been characterized as having a low potential for containing archaeological resources. Therefore, cultural resource impacts from implementation of the Proposed Action are anticipated to be *less than significant*.

Socioeconomics. The proposed interior renovation activities under the Proposed Action would include short-term economic benefits as a result of temporary construction employment and materials-related expenditures. There would be minor increases of personnel under the Proposed Action; 25 additional full-time and 41 traditional slot positions would be added to support the MQ-9 Reaper LRE mission at Hector IAP. No long-term changes in economic activity associated with

the Proposed Action related to payroll and employee service expenses would occur. Likewise, there would be no impacts to the surrounding community. Therefore, implementation of the Proposed Action would have *less than significant* socioeconomic impacts.

Environmental Justice and Protection of Children. No minority or low-income populations are disproportionately located near Hector IAP and the proposed interior renovation activities under the Proposed Action. Any potential short-term impacts associated with the Proposed Action would be confined to the base and the immediate surrounding vicinity. Additionally, no impacts would be expected to occur in areas where children would be impacted. Consequently, with the implementation of standard safety measures, impacts with regard to environmental justice and protection of children would be *less than significant.*

Hazardous Materials and Wastes. The Proposed Action would result in a short-term minor increase in the storage of building renovation-related hazardous materials and waste. However, the proposed interior renovation activities under the Proposed Action would cause only a temporary increase in storage of hazardous materials and waste and would not constitute a significant impact. Long-term operation of the MQ-9 would result in similar hazardous materials and waste to those currently produced through operation of the MQ-1, thus long-term hazardous materials and waste impacts resulting from operation of the MQ-9 would not be significant. While several Environmental Restoration Program (ERP) sites are located within vicinity of Building 210 and Building 223, nearby ERP sites have undergone complete remedial action. As no construction or demolition activities involving ground-disturbance would occur under the Proposed Action, the Proposed Action is not anticipated to expose workers to contamination from nearby ERP sites. As identified during previous interviews with North Dakota ANG personnel, and given the construction date of the facility, no hazardous building materials, such as asbestos and lead-based paints, are present at Building 210 or Building 223. Therefore, renovation of these facilities under the Proposed Action would not result in any potential impacts with regard to hazardous building materials. The safe handling, storage, and use procedures associated with operation of the Proposed Action would be managed under the North Dakota ANG 119 WG Hazardous Materials Management Plan (HMMP) and the Enterprise Environmental Safety and Occupational Health-Management Information System (EESOH-MIS), in accordance with all Federal, state, and local regulations, and would continue to be implemented with regard to hazardous materials and petroleum products generated from the MQ-9 Reaper LRE. Therefore, impacts associated with hazardous materials and wastes would be *less than significant*.

4.0 PUBLIC NOTICE

NEPA, 40 CFR §§1500-1508, and 32 CFR Part 989 requires public review of the EA before approval of the FONSI and implementation of the Proposed Action. A Notice of Availability (NOA) for public review of the Draft EA was published in the Fargo Forum on 18 September and the Draft EA was made available for public review at the Fargo Public Library, located at 102 3rd Street North, Fargo, North Dakota 58102. Through the agency coordination process, NGB notified relevant Federal, state, and local agencies (listed in Appendix A) and allowed them sufficient time to make known their environmental concerns specific to the Proposed Action. The total review period for public and agency comments was 30 days, ending on 18 October. All public, agency, and Native American comments received on the Draft EA will be incorporated into the Final EA.

5.0 FINDING OF NO SIGNIFICANT IMPACT

Based on the analysis presented in the EA and coordination with all appropriate Federal, state, and other local agencies, the NGB finds that implementation of the Proposed Action would not have a significant effect on the quality of the human or natural environment or generate significant controversy. Accordingly, the requirements of the NEPA, CEQ regulations, and 32 CFR Part 989, et seq. have been fulfilled, and an EIS is not necessary and will not be prepared.

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BENJAMIN W. LAWLESS, P.E., GS-15 Date
Chief, Asset Management Division

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CONTENTS

CONTENTS
(continued)

CONTENTS
(continued)

CONTENTS
(continued)

CONTENTS
(continued)

CONTENTS
(continued)

CONTENTS
(continued)

APPENDICES

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

°F	Fahrenheit
119 FIG	119th Fighter Interceptor Group
119 FW	119 Fighter Wing
119 WG	119th Wing
178 FS	178th Fighter Squadron
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-containing material
ADT	average daily traffic
AFB	Air Force Base
AFI	Air Force Instruction
AFM	Air Force Manual
AGE	aerospace ground equipment
AGL	Above Ground Level
AGM	air-to-ground missile
AIRFA	American Indian Religious Freedom Act
ANG	Air National Guard
AQCR	Air Quality Control Region's
ARTCC	Air Route Traffic Control Center
AT/FP	Anti-Terrorism/Force Protection
ATC	Air Traffic Control
ATCAA	Air Traffic Control Assigned Airspace
BAQ	Basic Aircraft Qualification
BASH	Bird/Wildlife Air Strike Hazard
BFE	Base Flood Elevation
BGEPA	Bald and Golden Eagle Protection Act
bgl	below ground level
bgs	below ground surface
BRAC	Base Realignment and Closure
BRIC	Base Realignment Impact Committee
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAP	Central Accumulation Point
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Controlled Firing Area
CFR	Code of Federal Regulations
CO	carbon monoxide
COA	Certificate of Authorization
CT	Continuation Training

ACRONYMS AND ABBREVIATIONS (CONTINUED)

CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DNL	Day-Night Average Noise Level
DoD	Department of Defense
DoDI	DoD Instruction
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Office
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
EOD	Explosives Ordnance Disposal
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	fixed-based operator
FEMA	Federal Emergency Management Agency
FICON	Federal Interagency Committee on Noise
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FS	Feasibility Study
FTP	Flight Termination Point
FTU	Flying Training Unit
FY	financial year
GBU	Guided Bomb Unit
GCS	Ground Control Station
GDT	Ground Data Terminal
H_2S	hydrogen sulfide
HAP	Hazardous Air Pollutant
HUD	U.S. Department of Housing and Urban Development
HWGP	Hazardous waste generation points
hz	hertz
I-	Interstate Highway
IAP	International Airport
ID	Identification
IFR	Instrument Flight Rules

ACRONYMS AND ABBREVIATIONS (CONTINUED)

INM	Integrated Noise Model
IR	instrument route
JP-8	jet fuel
kW	kilowatts
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
LL	Lost Link
LLP	Lost Link Procedure
LOA	Letter of Agreement
LOP	Letter of Procedure
LRE	Launch and Recovery Element
LUST	leaking underground storage tank
MACA	Mid Air Collision Avoidance
MACT	Maximum Achievable Control Technology
MAT	Metro Area Transit
MBTA	Migratory Bird Treaty Act
MCE	Mission Control Element
MOA	military operations areas
MOGAS	motor vehicle gasoline
MSL	mean sea level
MTS	Multi-Spectral Targeting System
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	National Airspace
NDAAQS	North Dakota Ambient Air Quality Standards
NDDH	North Dakota Department of Health
NDDOT	North Dakota Department of Transportation
NDFGD	North Dakota of Fish and Game Department
NDI	nondestructive inspection
NDSU	North Dakota State University
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFRAP	No Further Remedial Action Planned
NGB	National Guard Bureau
NHPA	National Historic Preservation Act
NM	nautical miles
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOTAM	Notices to Airmen

ACRONYMS AND ABBREVIATIONS (CONTINUED)

NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
OWS	oil/water separator
Pb	lead
PCA	Positive Control Area
PM	particulate matter
PM_{10}	particulate matter equal or less than ten microns in diameter
$PM_{2.5}$	particulate matter equal or less than 2.5 microns in diameter PM2.5
POL	petroleum, oils, and lubricants
POV	privately-owned vehicle
ppm	parts per million
QD	quantity-distance
R-	Restricted Area
RCR	Runway Condition Reading
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROC	Reaper Operations Center
ROD	Record of Decision
RPA	remotely piloted aircraft
RPZ	Runway Protection Zone
SAP	Satellite Accumulation Point
SATAF	Site Activation Task Force
SDD	Sustainable Design and Development
SETTS	Satellite Earth Terminal Sub-System
sf	square feet
SHPO	State Historic Preservation Office
SI	Site Investigation
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOF	Supervisor of Flying
SUA	Special Use Airspace
SWAP	State Wildlife Action Plan
SWPPP	Storm Water Pollution Prevention Plan
TAC	Tactical

ACRONYMS AND ABBREVIATIONS (CONTINUED)

TAF	Terminal Area Forecast
TCE	trichloroethylene
TFR	Temporary Flight Restriction
TMB	1,2,4-trimethylbenzene
TPH	total petroleum hydrocarbons
tpy	tons per year
TSDF	treatment, storage, and disposal facility
UAS	unmanned aerial system
UFC	Unified Facilities Criteria
UHF	Ultra High Frequency
UND	University of North Dakota
US-	U.S. Federal Highway
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGBC	U.S. Green Building Council
USNRCS	U.S. National Resources Conservation Service
UTA	Unit Training Assembly
V-	Victor Routes
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VOC	volatile organic compounds
W-	Warning Areas
WFAS	West Fargo Aquifer System
WTS	Wake Turbulence Separation

SECTION 1
INTRODUCTION

1.1 INTRODUCTION

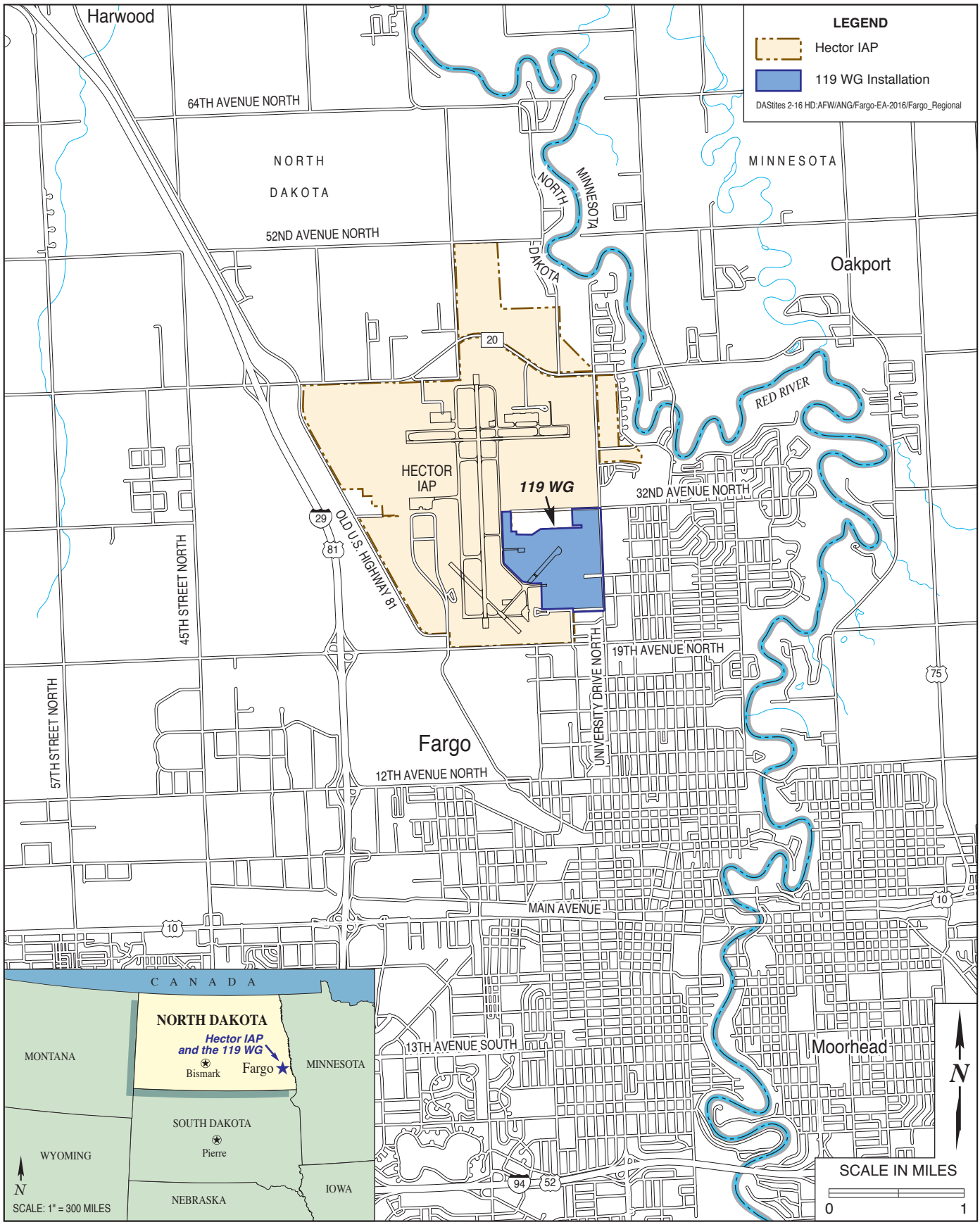
The U.S. Air Force (USAF) is proposing the beddown of the Launch and Recovery (LRE) mission in support of the MQ-9 Reaper at the North Dakota Air National Guard's (ANG's) 119th Wing (119 WG) installation at Hector International Airport (IAP) in Fargo, North Dakota. The MQ-9 Reaper is a multi-mission, medium-altitude, long-endurance remotely piloted aircraft (RPA) that is employed primarily as an intelligence-collection asset and secondarily against dynamic targets.

In support of this Proposed Action, requirements for environmental documentation under the National Environmental Policy Act (NEPA) necessitate the preparation of an Environmental Assessment (EA) to address potential environmental impacts from the proposal to beddown, maintain, and operate the MQ-9 RPA at Hector IAP. This EA has been prepared to evaluate the action proposed by the USAF and to address potential environmental impacts of the proposed beddown and associated operations required to support the proposed MQ-9 Reaper LRE mission.

The Environmental Impact Analysis Process (EIAP) for the Proposed Action has been conducted in accordance with the Council on Environmental Quality (CEQ) regulations to comply with NEPA, 32 Code of Federal Regulations (CFR) 989, and Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*.

1.2 LOCATION AND UNIT BACKGROUND

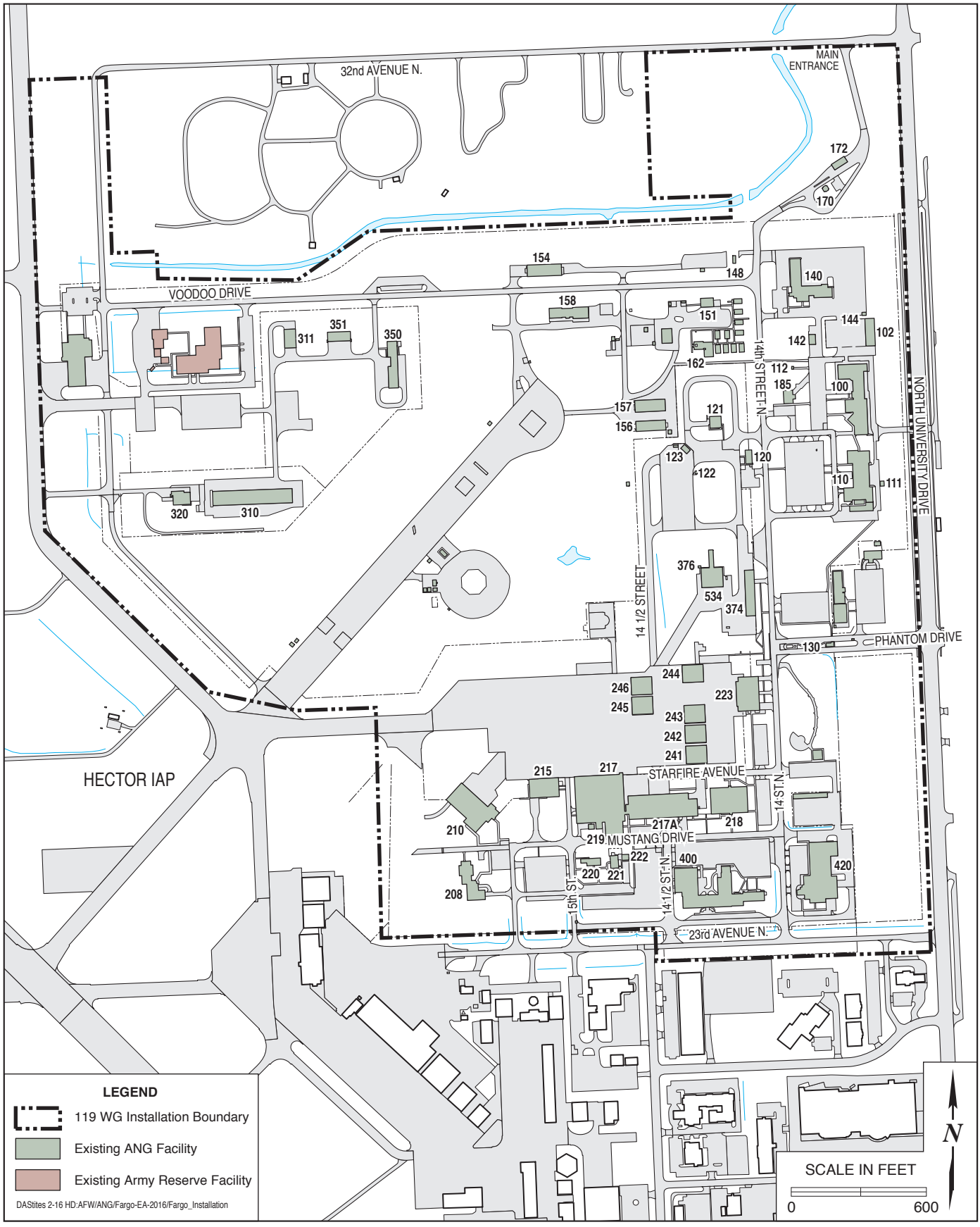
The 119 WG of the North Dakota ANG is located at Hector IAP in Fargo, North Dakota, on land leased by the U.S. government from the City of Fargo Municipal Airport Authority and licensed back to the North Dakota ANG. Hector IAP is located on approximately 2,500 acres in Cass County, near the intersection of Interstates 29 and 94 (Figure 1-1). Fargo is located in southeastern North Dakota approximately 235 miles northwest of Minneapolis and 230 miles north of Sioux Falls, South Dakota. The 119 WG installation occupies approximately 258 acres on the southeast side of the airfield (Figure 1-2).



EA

Regional Location Map
Hector IAP and the 119 WG/North Dakota ANG

FIGURE 1-1



EA

119 WG/North Dakota ANG at Hector International Airport (IAP)

FIGURE 1-2

The 119 WG installation currently maintains an inventory of 47 buildings with a total area of 484,689 square feet (sf) within its 258-acre area (Table 1-1). The average daily population associated with the 119 WG is 369 personnel; however, twice a month during drill weekends that population increases to 875 guardsmen and women.

The North Dakota ANG was established in 1947 as a deactivated World War II flying unit at Hector Airport in Fargo, North Dakota. The first fighter aircraft assigned was the P-51D, which the unit flew from 1947 to 1954. The unit was later transferred to George Air Force Base (AFB) in California and fulfilled both air-to-ground and air-to-air roles. Upon its return to Fargo in 1953, the unit was released from active duty and was assigned an Air Defense mission, flying P-51s for the runway alert program. In 1954, the unit was assigned to the Air Defense Command and has since flown numerous fighter aircraft, including F-94s, F-89s, F-102s, F-101s, F-4s, and F-16s. In 1999, the unit converted from an Air Defense mission to a General Purpose mission with 15 F-16A/B aircraft while activating an alert detachment at Langley AFB in Virginia. Per Base Realignment and Closure (BRAC) Commission recommendations, the unit officially retired the F-16 mission in 2007. Since the retirement of the F-16 mission, the unit completed a bridge flying mission operating the C-21 from 2007 to 2013 and the MQ-1 Predator from 2008 to present day. Once the C-21 bridge mission ceased, the unit was considered as a candidate to receive C-27 aircraft; however, the USAF elected not to distribute this aircraft to the ANG. Thus, the 119 WG currently operates four (4) MQ-1 Predator RPA out of Grand Forks AFB as a result of 2005 BRAC recommendations.

1.3 CURRENT MISSION AND OPERATIONS

The current mission of the 119 WG is two-fold. On the Federal level, the unit is available for mobilization and immediate integration into the USAF in time of war or national emergency. The 119 WG maintains and operates four (4) MQ-1 Predator RPA and conducts the majority of its training missions at Grand Forks AFB and Restricted Areas 5403 (R-5403) A through F (A-F) to fulfill its mission to train and equip combat forces to engage in Intelligence Targeting, RPA Operations, and Expeditionary Combat support missions. The unit's state mission is to protect peace and personal property and to assist the State of North Dakota in the event of emergencies (e.g., natural disasters or civil disturbances).

Table 1-1. Existing Facilities at the 119 WG Installation

Building #[1]	Current Use	Building Area (sf)	Date Constructed
N/A	Fire Crash/Rescue Station	22,400	2010
100	Base Engineering Maintenance Shop	26,516	1987
102	Base Engineering Storage Shed	4,800	1983
110	Communications Facility	27,108	1992
111	Communications Facility	365	2004
120	Petroleum Operations Building	1,716	1993
121	Liquid Fuels Pump Station	2,606	1993
122	Vehicle Refueling Shop	120	1993
123	Liquid Oxygen Storage	210	1993
130	Traffic Check House	471	1993
140	Vehicle Maintenance Shop	15,710	1994
142	Vehicle Service Rack	1,177	1998
144	Vehicle Maintenance Shop	216	1994
150	Troop Camp	6,240	1995
151	Sanitary Latrine	1,144	1995
152	Reserve Forces Ground Training	2,400	2006
154	Base Supply & Equipment Shed	7,500	2003
155	Fireman Training Facility	N/A	1996
156	Base Supply & Equipment Shed	5,590	2005
157	Base Supply & Equipment Shed	6,500	1999
158	Reserve Forces Ground Training	2,400	1997
159	Reserve Forces Operational Training	1,550	2004
160	Vehicle Fueling Station	1,125	2003
162	Camp Troop	3,672	2010
170	Traffic Check House	303	2009
172	Traffic Check House	1,504	2009
185	Branch Exchange	2,378	2001
206	Load & Unload Platform	N/A	1988
208	Aircraft Guidance Station	9,992	2006
210	Full Cell/Corrosion Control	25,200	2002
215	Fire Crash/Rescue Station	10,660	1955
217	Maintenance Hangar	97,490	1955
218	Squadron Operations	22,035	1974
219	Electric Power Station Building	376	1995
223	Aircraft Terminal Operations/ Deployment Processing	11,600	1980

Table 1-1. Existing Facilities at the 119 WG Installation (Continued)

Building #[1]	Current Use	Building Area (sf)	Date Constructed
241	Aircraft Shelter	6,840	2001
242	Aircraft Shelter	6,840	2001
243	Aircraft Shelter	6,840	2001
244	Base Supply & Equipment Shed	6,840	2001
245	Aircraft Shelter	6,840	2001
246	Aircraft Shelter	6,840	2001
310	Storage Igloo	5,248	1963
311	Magazine Storage	4,100	1993
320	Conventional Munitions Shop	3,938	1963
350	Conventional Munitions Shop	8,325	1993
351	Conventional Munitions Shop	4,000	1993
374	AGE Shop Storage Facility	8,092	1989
400	Dining Hall/Medical Facility	36,841	1959
420	Base Supply & Equipment Warehouse	40,564	1959
Total		**484,689**	

Notes: [1] Building number corresponds to presentation in Figure 1-2.
AGE – Aerospace Ground Equipment
N/A – Not Applicable
Source: North Dakota ANG 2011a.

The 119 WG currently comprises one operational flying squadron, 178th Reconnaissance Squadron (formerly the 178th Fighter Squadron).

1.4 BACKGROUND OF THE PROPOSED MQ-9 AIRCRAFT

As briefly described earlier, the MQ-9 is a multi-mission, medium-altitude, long-endurance RPA that is employed primarily as an intelligence-collection asset and secondarily against dynamic targets. Given its significant loiter time (i.e., the time it can remain airborne), wide-range sensors, multi-mode communications suite, and precision weapons, it provides a unique capability to perform strike, coordination, and reconnaissance against high-value fleeting, and time-sensitive targets.

The USAF proposed the MQ-9 Reaper RPA system in response to the Department of Defense (DoD) directive to support initiatives of overseas contingency

operations. Manufactured by General Atomics Aeronautical Systems, the MQ-9 is larger and more powerful than the MQ-1, and is designed to execute time-sensitive targets with persistence and precision, and destroy or disable those targets.

The MQ-9 is a medium-altitude RPA, measuring 36 feet long, with a 66-foot wingspan and powered by a Honeywell TPE-331-10T turboprop engine (670 kilowatts [kW], or 950-shaft-horsepower). Remotely controlled, MQ-9 aircraft can deploy for 24-hour operations (or longer, depending on external fuel stores and munitions being carried), with a range of up to 1,150 miles. The MQ-9 aircraft has an operational ceiling of 50,000 feet above mean sea level (MSL).

The MQ-9 aircraft is fitted with six stores pylons, which are under-wing attachments designed to carry munitions and/or external fuel tanks. The inner stores pylons can carry a maximum of 1,500 pounds each and allow carriage of external fuel tanks. The mid-wing stores pylons can carry a maximum of 600 pounds each, while the outer stores pylons can carry a maximum of 200 pounds each. An MQ-9 aircraft with two 1,000 pound external fuel tanks and 1,000 pounds of munitions can remain airborne without refueling for 42 hours. Fully loaded with munitions, the MQ-9 aircraft can fly 14 hours before refueling. The MQ-9 aircraft is capable of carrying a variety of weapons, including the Guided Bomb Unit (GBU)-12 Paveway II laser-guided bomb and the air-to-ground missile (AGM)-114 Hellfire.

The MQ-9 aircraft carries the Multi-Spectral Targeting System (MTS), which has a robust suite of visual sensors for targeting. The MTS integrates an infrared sensor, color/monochrome daylight television camera, image-intensified television camera, laser designator, and laser illuminator. The full-motion video from each of the imaging sensors can be viewed as separate video streams or fused. The unit also incorporates a laser range finder/designator, which precisely designates targets for employment of laser-guided munitions, such as the GBU-12 Paveway II. The MQ-9 aircraft is also equipped with a synthetic aperture radar to enable future GBU-38 Joint Direct Attack Munitions targeting. The MQ-9 aircraft can also employ four laser guided missiles, AGM-114 Hellfire, which possess highly accurate, low-collateral damage, anti-armor and antipersonnel engagement capabilities.

The MQ-9 aircraft can be disassembled and loaded into multiple containers for deployment worldwide. The entire system can be transported in the C-130 Hercules, or larger aircraft. The MQ-9 aircraft operates from standard U.S. airfields with clear line-of-sight to the Ground Data Terminal (GDT) antennas, which provide redundant line-of-sight communications for take-off and landing.

The typical MQ-9 Reaper RPA system includes several components: a Ground Control Station (GCS), a Satellite Earth Terminal Sub-System (SETSS), a GDT, the MQ-9 aircraft, and all associated power and maintenance equipment. The GCS is built into a single Conex shipping container and functions as the aircraft cockpit where pilots control the aircraft either within line-of-sight or beyond line-of-sight via a combination of satellite relay and ground-based communications. All GCS are backed up with multiple generators in case of a power loss. The GDT consists of an antenna with scissor jacks that provide the data links between the GCS and the MQ-9 aircraft.

The basic aircrew for the MQ-9 aircraft consists of a pilot in command and a sensor operator. The pilot and sensor operator control the aircraft from a station near the aircraft for take-off and landing and from a remotely located GCS in the airspace for the Mission Control Element (MCE). The maintenance team is responsible for maintaining the GCS and the RPA itself.

Additionally, there is a Reaper Operations Center (ROC), which consists of a team of specialists supporting both the LRE and MCE. Mission specialists within the ROC include mission commander, mission support analysts, mission intelligence analysts, mission coordinator, and a weather analyst. The ROC is located within a building and resembles a mission control setting.

The LRE team consists of a pilot and sensor operator that are specially trained for the take-off and landing of the aircraft. This is a specialized capability that requires extensive training given the unique situation of remotely piloting an aircraft. Shortly after takeoff, the LRE crew hands control of the aircraft over to the MCE crew and the MCE crew hands control back to the LRE crew prior to landing. For training purposes, the LRE and MCE can be collocated to increase efficiencies in training and operation; however, in combat, the LRE and MCE can be geographically separated by thousands of miles.

The MCE looks much the same as the LRE, with a pilot and a sensor operator conducting the mission from a GCS. The MCE crew operates the aircraft throughout the remainder of the mission until the aircraft returns to home station and is handed back off to the LRE team for landing.

1.5 DESCRIPTION OF CONTINUATION MQ-1 TRAINING OPERATIONS AND FLYING TRAINING UNIT

1.5.1 Continuation Training Operations

All in-flight operations during Continuation Training missions are currently conducted from the ROC located at Grand Forks AFB. All 119 WG operations and maintenance personnel complete continuation training missions, weather permitting, three days per week. The decision to complete training is made by 0500 in order to accommodate the three-hour round trip travel time of both maintenance and operators and two-hour sortie duration within an eight-hour work day. The MQ-1 aircraft is launched from Grand Forks AFB, enters a Temporary Flight Restriction (TFR) corridor, and directly accesses R-5403 A-F (see Section 2.2.1.4, *Special Use Airspace Description*). Only one RPA is permitted within the TFR at a time, once one MQ-1 enters R-5403 A-F, the other MQ-1 departs Grand Forks AFB airspace, enters the TFR, and eventually accesses R-5403 A-F. After the completion of the training mission, both MQ-1s return to Grand Forks AFB in a similar manner in which they departed (e.g., one MQ-1 in the TFR at a time, etc.).

1.5.2 Flying Training Unit Training Operations

The 119 WG also supports the USAF/ANG FTU's mission to provide fully trained pilots and sensor operations to support unmanned aerial reconnaissance operations. The 119 WG supports FTU operational objectives in providing Initial Qualification Training, Mission Qualification Training, and Continuation Training to pilots and sensors of the MQ-1 aircraft. Initial qualification training includes classroom instruction, ground training accomplished through simulator missions in an MQ-1 Aircrew Training Device, and flight training under the supervision of a qualified instructor until completing the initial qualification check ride and obtaining Basic Aircraft Qualification (BAQ) status. The FTU flying training requires both the launch and recovery of multiple MQ -1 aircraft by the LRE

operation, and several flying training hours conducted as part of the MCE operation.

All in-flight operations during FTU training missions are conducted from Grand Forks AFB. The MQ-1 aircraft is launched from Grand Forks AFB, transitions the TFR, the accesses to R-5403 A-F (see Section 2.2.1.4, *Special Use Airspace Description*).

1.6 PURPOSE AND NEED

Purpose. The *purpose* of the Proposed Action is two-fold: 1) to beddown the MQ-9 Reaper RPA at Hector IAP; and 2) to complete LRE training missions from Hector IAP.

Need. The *need* for the Proposed Action, both beddown and LRE mission at Hector IAP, is driven by the upgrade to the 119 WG's RPA and inefficiencies associated with the separation of the existing MQ-1 beddown at Hector IAP and the MQ-1 LRE element at Grand Forks AFB. The beddown and LRE mission of the MQ-9 RPA at Hector IAP would 1) upgrade the 119WG's RPA; 2) reduce the MQ-9 aircraft operating costs (e.g., personnel costs and vehicle maintenance costs) associated with traveling to and from Grand Forks AFB; 3) reduce the time associated with maintenance and petroleum, oils, and lubricants (POL) personnel commuting to Grand Forks AFB; 4) increase overall training time for the Continuation Training Mission; and 5) provide for increased safety of staff and personnel.

1.7 SUMMARY OF ENVIRONMENTAL STUDY REQUIREMENTS

1.7.1 National Environmental Policy Act

NEPA requires that Federal agencies consider potential environmental consequences of proposed actions. The law's intent is to protect, restore, or enhance the environment through well-informed Federal decisions. The CEQ was established under NEPA for the purpose of implementing and overseeing Federal policies as they relate to this process. In 1978, the CEQ issued *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (40

CFR § 1500-1508 [CEQ 1978]). These regulations specify that an EA be prepared to:

- Briefly provide sufficient analysis and evidence for determining whether to prepare an Environmental Impact Statement (EIS), Finding of No Practicable Alternative (FONPA), or a Finding of No Significant Impact (FONSI);
- Aid in an agency's compliance with NEPA when no EIS is necessary; and
- Facilitate preparation of an EIS when one is necessary.

Further, to comply with other relevant environmental requirements (e.g., the Safe Drinking Water Act, Endangered Species Act [ESA], and National Historic Preservation Act [NHPA]) in addition to NEPA, and to assess potential environmental impacts, the EIAP and decision-making process for the proposed action involves a thorough examination of all environmental issues pertinent to the Proposed Action.

1.7.2 The Environmental Impact Analysis Process

The EIAP is the process by which the Air Force facilitates compliance with environmental regulations (32 CFR Part 989, *Environmental Impact Analysis Process*). The primary legislation affecting these agencies' decision-making process is the NEPA of 1969. This act and other facets of the EIAP are described below.

1.7.3 Endangered Species Act

The ESA (16 U.S. Code [USC] §§ 1531–1544, as amended) established measures for the protection of plant and animal species that are federally listed as threatened and endangered, and for the conservation of habitats that are critical to the continued existence of those species. Federal agencies must evaluate the effects of their proposed actions through a set of defined procedures, which can include the preparation of a Biological Assessment and can require formal consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the ESA.

1.7.4 Clean Air Act and Conformity Requirements

The Clean Air Act (CAA) (42 USC §§ 7401–7671, as amended) provided the authority for the U.S. Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, Federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. The USEPA has set forth regulations in 40 CFR 51, Subpart W, which require the proponent of a proposed action to perform an analysis to determine if its implementation would conform to the SIP. However, air quality conformity applicability is only required within areas that have been categorized non-attainment or maintenance for any criteria pollutants.

1.7.5 Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC §§ 1251 et seq.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA, and EO 11990, *Protection of Wetlands*, regulate development activities in or near streams or wetlands. Section 404 also regulates development in streams and wetlands and requires a permit from the U.S. Army Corps of Engineers (USACE) for dredging and filling in wetlands. EO 11988, *Floodplain Management*, requires Federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains. DoD has implemented storm water requirements under Section 438 (42 USC § 17094) of the Energy Independence and Security Act (EISA) to maintain the hydrologic functions of a site and mitigate the adverse impacts of storm water

runoff from DoD construction projects. Section 438 requires that Federal facility projects greater 5,000 sf must "maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow" (DoD 2010).

1.7.6 Cultural Resources Regulatory Requirements

The NHPA of 1966 (16 USC § 470) established the National Register of Historic Places (NRHP) and the Advisory Council on Historic Preservation (ACHP) which outlined procedures for the management of cultural resources on Federal property. Cultural resources can include archaeological remains, architectural structures, and traditional cultural properties such as ancestral settlements, historic trails, and places where significant historic events occurred. The NHPA requires Federal agencies to consider potential impacts to cultural resources that are listed, nominated to, or eligible for listing on the NRHP; designated a National Historic Landmark; or valued by modern Native Americans for maintaining their traditional culture. Section 106 of NHPA requires Federal agencies to consult with the appropriate State Historic Preservation Office (SHPO) if their undertaking might affect such resources. *Protection of Historic and Cultural Properties* (36 CFR 800) provides an explicit set of procedures for Federal agencies to meet their obligations under the NHPA, which includes inventorying of resources and consultation with SHPO.

EO 13007, *Indian Sacred Sites*, directs Federal land (any land or interests in land owned by the U.S., including leasehold interests held by the U.S., except Indian trust lands) managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites (any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe [an Indian or Alaska Native tribe, band, nation, Pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian tribe pursuant to Public Law No. 103-454, 108 Stat. 4791, an "Indian" refers to a member of such an Indian tribe] or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion) provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site.

The American Indian Religious Freedom Act (AIRFA) (42 USC § 1996) established Federal policy to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions, including providing access to sacred sites. The Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC §§ 3001–3013) requires consultation with Native American Tribes prior to excavation or removal of human remains and certain objects of cultural importance.

In addition, DoD Instruction (DoDI) 4710.02, *DoD Interactions with Federally-Recognized Tribes*, assigns responsibilities and provides procedures for DoD interactions with federally recognized tribes in accordance with EO 13175, *Consultation and Coordination with Indian Tribal Governments*. This DoDI requires that all DoD components shall consult with tribes whenever proposing an action that may have the potential to significantly affect protected tribal resources, tribal rights, or Indian lands.

1.7.7 Anti-Terrorism/Force Protection

The DoD has developed Anti-Terrorism/Force Protection (AT/FP) standards that are designed to reduce the likelihood of physical damage and mass casualties from potential terrorist attacks. Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Anti-terrorism Standards for Buildings,* outlines various planning, construction, and operational standards to address potential terrorist threats. A key element of AT/FP standards is the establishment of minimum setbacks and other security standoffs between mass gathering facilities and potentially non-secure adjacent uses (e.g., parking lots, off-installation property). AT/FP setbacks typically extend outward from the sides and corners of facilities for a prescribed distance (i.e., 25 meters); development is either limited or altogether prohibited in such setback areas. Additional AT/FP standards address other facility design and operational considerations, including internal building layout, facility access and security, site circulation, and emergency mass notification.

1.7.8 Sustainability and Greening

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* strives to improve efficiency and environmental performance of Federal agencies

by setting goals in the areas of energy efficiency, greenhouse gas emission mitigation, water conservation, waste management and recycling, green procurement, pollution prevention, and livable communities, among others. The EO specifies that every Federal organization and agency must make the reduction of greenhouse gas emissions a priority and establishes specific goal-setting, inventorying, and reporting requirements for Federal agencies. This includes an order for each agency to develop, implement, and update a Strategic Sustainability Performance Plan, which should work toward continual improvement of sustainable practices associated with Federal actions.

Sustainable green building and development practices can be recognized through sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. The U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is a third-party certification program and the nationally-accepted benchmark for the design, construction, and operation of high-performance green buildings (USGBC 2010). LEED rating systems are based on a set number of prerequisites and credits in six major categories: 1) sustainable sites; 2) water efficiency; 3) energy and atmosphere; 4) materials and resources; 5) indoor environmental quality; and 6) innovation and design process (USGBC 2009). In the most recent LEED rating system (version 2.2), buildings can qualify for four levels of certification, in order from highest to lowest: platinum, gold, silver, and certified. Benefits of constructing LEED-certified facilities include lower operating costs and increased asset value, reduced waste sent to landfills, conservation of energy and water, healthier and safer facilities for occupants, reduction of harmful greenhouse gas emissions that incrementally contribute to global climate change, and the demonstration of an owner's commitment to environmental stewardship and social responsibility.

In addition, the USAF issued a memorandum on 31 July 2007, *Air Force Sustainable Design and Development (SDD) Policy*. The goal of the policy memo is to: reduce the environmental impact and total ownership cost of facilities; improve energy efficiency and water conservation; and provide safe, healthy, and productive built environments. It requires that all USAF construction projects, regardless of scope or funding source, shall endeavor to use the USGBC's LEED rating system as their

self-assessment metric and shall incorporate LEED principles where financially feasible.

1.7.9 Other Executive Orders

Additional regulatory legislation that potentially applies to the implementation of this Proposed Action includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected. Additionally, potential health and safety impacts that could disproportionately affect children are considered under the guidelines established by EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, acts as additional protection for migratory birds.

1.7.10 Intergovernmental Review of Federal Programs

EO 12372, *Intergovernmental Review of Federal Programs*, structures the Federal government's system of consultation with state and local governments on its decisions involving grants, other forms of financial assistance, and direct development. Under EO 12372, states, in consultation with local governments, design their own review processes and select those federally supported development activities that they wish to review. As detailed in 40 CFR § 1501.4(b), CEQ regulations require intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the consultation under EO 12372, the USAF notifies relevant Federal, state, and local agencies and allows them sufficient time to make known their environmental concerns specific to a proposed action. Comments and concerns submitted by these agencies are subsequently incorporated into the analysis of potential environmental impacts conducted as part of the EA.

SECTION 2
DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

The North Dakota Air National Guard's (ANG's) 119th Wing (119 WG) currently conducts their MQ-1 Predator remotely piloted aircraft (RPA) Continuation Training (CT) and Flying Training Unit (FTU) support from Grand Forks Air Force Base (AFB). The Federal Aviation Administration (FAA) requires a Certificate of Authorization (COA) to operate RPA within FAA identified airspace. The North Dakota ANG has a COA addressing Closed Pattern operations at Hector IAP; however, the FAA has not yet issued a COA addressing the Launch and Recovery Element (LRE) from Hector IAP and accessing Restricted Area 5403 (R-5403), sections A through F (A-F).

This Environmental Assessment (EA) addresses the potential environmental consequences that could result following the proposed beddown and LRE mission of the MQ-9 RPA at Hector IAP. Three alternatives for the Proposed Action are addressed in this EA, including the Proposed Action and Alternative 1, which are described in detail below. Additionally, Council on Environmental Quality (CEQ) regulations stipulate that the No-Action Alternative must also be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented.

2.2 PROPOSED ACTION

There are two primary elements of the Proposed Action: one comprises the proposed beddown of four (4) MQ-9 Reaper RPA; the other is the proposed MQ-9 Reaper LRE.

2.2.1 Proposed MQ-9 Reaper LRE

2.2.1.1 Ground Operations at Hector IAP

The U.S. Air Force (USAF) is proposing to beddown the MQ-9 Reaper RPA and the MQ-9 LRE for all CT and FTU sorties to Hector IAP. Under the Proposed

Action, the 119 WG would fly an average of two 4- to 8-hour sorties per day, four days per week and one weekend per month. The 119 WG would typically fly two MQ-9 aircraft at the same time and on occasion launch and recover one aircraft in morning and one in the afternoon, resulting in an average of four additional arrival and departure airport operations daily (i.e., two arrivals and two departures) at Hector IAP. An additional two sorties would be accomplished during typical Unit Training Assembly (UTA) drill weekend days (24 days per year). No live or releasable inert weapons would be flown from Hector IAP. Each sortie would be used for continuation training and to support other MQ-9 FTUs around the country to include Active Duty Air Force and ANG units.

The MQ-9 aircraft would utilize a short taxi route at Hector IAP to access Runway 18/36 or Runway 09/27, necessary to minimize potential aircraft oil temperature increases. Taxi operations would be conducted in line-of-sight mode using the Ground Data Terminal (GDT) (refer to Section 1.4, *Background of the MQ-9 Aircraft*). Radio communication would be conducted between the pilot and the Fargo Air Traffic Control (ATC) using Ultra High Frequency (UHF)/Very High Frequency (VHF) radios and Land Line (i.e., telephone) as back-up. The MQ-9 aircraft would utilize Runway 18/36 or Runway 09/27 based on wind direction; however, it is anticipated that Runway 36 would be more heavily utilized given prevailing wind conditions. The ground control station (GCS) would have direct radio and back-up telephone communications with Fargo ATC for ground and in-flight operations. Communications for taxi and takeoff clearance would be accomplished using standard ATC assigned frequencies.

The installation of a Ground-Based Sense and Avoid (GBSAA) system displaying near-instantaneous air traffic information from ATC radar will allow the aircrew to accomplish safe transit from Hector IAP Class D airspace to the R-5403 A-F training complex. The intent is transit to and from R-5403 along a predetermined stereo route and then conduct training operations within R-5403 (see Section 2.2.1.3, *Proposed Travel Corridor to R-5403*). A chase aircraft contract may be pursued if the installation of the GBSAA system is greatly delayed.

Operations will only be conducted during Visual Meteorological Conditions (VMC). The MQ-9 aircraft would hold at a designated safe position if weather

conditions deteriorate while a mission is being conducted. The aircraft is released to return to base as the weather conditions improve back to VMC.

The maximum wind conditions for MQ-9 aircraft, per Technical Order, are:

- 30 knots – all aircraft operations (ground)
- 20 knots – gust factor
- 15 knots – crosswind

The weather requirements for takeoff and landing are 1,500 feet/3 nautical miles (NM). Pilots would not takeoff if forecast or reported turbulence at the departure field is greater than moderate. Precipitation adversely affects aircraft performance and reduces visibility. If conditions permit, pilots would minimize exposure to all types of precipitation during all phases of flight. Pilots would not conduct flight into forecast icing greater than moderate and would not conduct flight into known icing conditions. Pilots would not taxi with a Runway Condition Reading (RCR), the measure of tire-to-runway friction coefficient, less than five and will not takeoff or land with RCR less than 12.

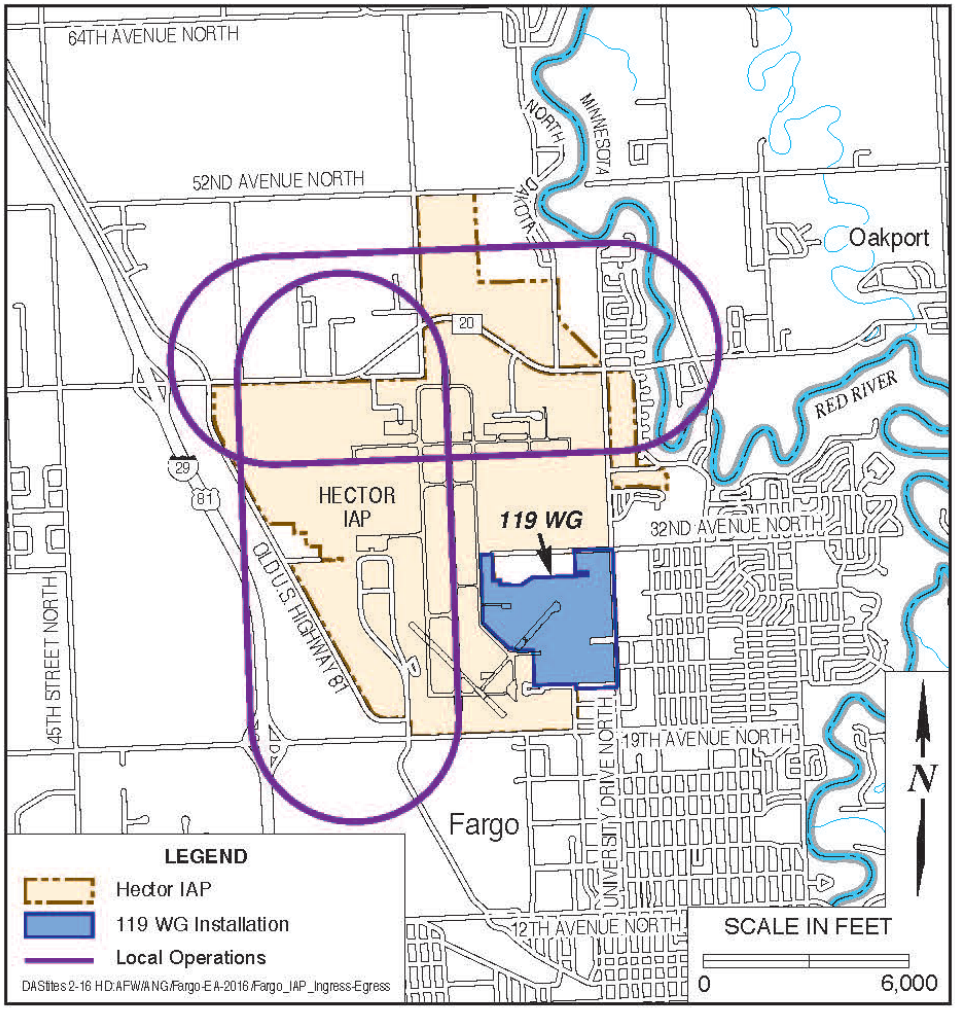
2.2.1.2 Hector IAP Class D Operations

Hector IAP Terminal Airspace is joint-use Class D airspace surrounded by a terminal radar service area (TRSA) that extends out to 30 NM from surface to 10,000 feet above mean sea level (MSL). All in-flight MQ-9 aircraft operations in the Hector IAP Terminal Airspace would be conducted under VMC as specified in 14 Code of Federal Regulations (CFR) Part 91. However, these flights would be under Instrument Flight Rules (IFR) clearance for procedural separation and traffic notifications. The GCS would have direct radio and backup telephone communications with Fargo ATC in-flight operations. Communications for would be accomplished using standard ATC assigned frequencies.

Departures from Hector IAP would involve following runway heading, then circling west if departing Runway 18/36 or north if departing Runway 09/27, to cross the departing runway at mid-field and spiraling upward. The aircraft would climb to and maintain an altitude of 18,000 feet MSL and would report to Minneapolis Air Route Traffic Control Center (ARTCC) when transitioning from

Fargo Departure. Similarly, the aircraft would follow standard tactical arrival patterns into Hector IAP.

In additional to departure and arrival operations, the MQ-9 aircraft would also utilize Hector IAP Terminal Airspace for closed pattern operations, both low approaches and touch and gos (Figure 2-1). The MQ-9 aircraft would follow a standard circuit avoiding housing areas and other potential sensitive land uses. On average, each sortie would include eight touch and gos, two low approaches, and one full stop. Pattern Operations would be conducted in line-of-sight, VMC (under IFR, Fargo ATC control). Radio communication would be maintained between the pilot and Fargo ATC via UHF/VHF radios and telephone back-up.



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119 WG Local Operations at Hector IAP

FIGURE 2-1

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

The following procedures would be followed while operating in the Hector IAP Terminal Airspace:

1. During MQ-9 aircraft in-flight operations, the 119 WG would maintain a Supervisor of Flying (SOF) on the airfield during launch, recovery, and transition to the operating airspace, and when aircraft are within Class D airspace. The SOF would readily have access to all applicable aircraft technical and regulatory documents. The SOF would also be able to conduct direct communications with the aircrews and Fargo ATC.
2. The MQ-9 aircraft would be considered a Category I aircraft for Same Runway Separation (SRS) and a Small aircraft for Wake Turbulence Separation (WTS).
3. The MQ-9 aircraft would fly Tactical Visual Flight Rules (VFR) Departures and Tactical VFR Arrivals.
4. Closed Traffic Pattern would require approval by Fargo ATC; however, manned aircraft operations would have priority.
5. Manned aircraft emergencies would take priority over MQ-9 aircraft emergencies.
6. MQ-9 aircraft would adhere to standard traffic patterns as directed by ATC and in accordance with the FAA COA. MQ-9 aircraft would avoid overflight of populated areas to the maximum extent possible.
7. MQ-9 aircraft would remain at Fargo ATC assigned altitudes while in the pattern.
8. Multiple low approach or touch and go landings for formal MQ-9 aircraft syllabus aircrew training, pilot currency, and requirements, or for functional, maintenance checks of the aircraft and its components may be performed with Fargo ATC approval.
9. Unless otherwise directed by Fargo ATC, standard climb-out instructions will be climbing runway heading, then west to the VFR pattern altitude of 1,000 feet Above Ground Level (AGL) on a downwind leg for all runways.
10. Unless specifically prohibited, MQ-9 aircraft and manned aircraft may be allowed to operate concurrently in the Class D airspace. However, only one MQ-9 aircraft would be in the traffic pattern at any one time.
11. The MQ-9 aircraft would adhere to Fargo ATC direction for holding operations to remain clear of runway arrival and departure courses and clear of populated and congested areas.

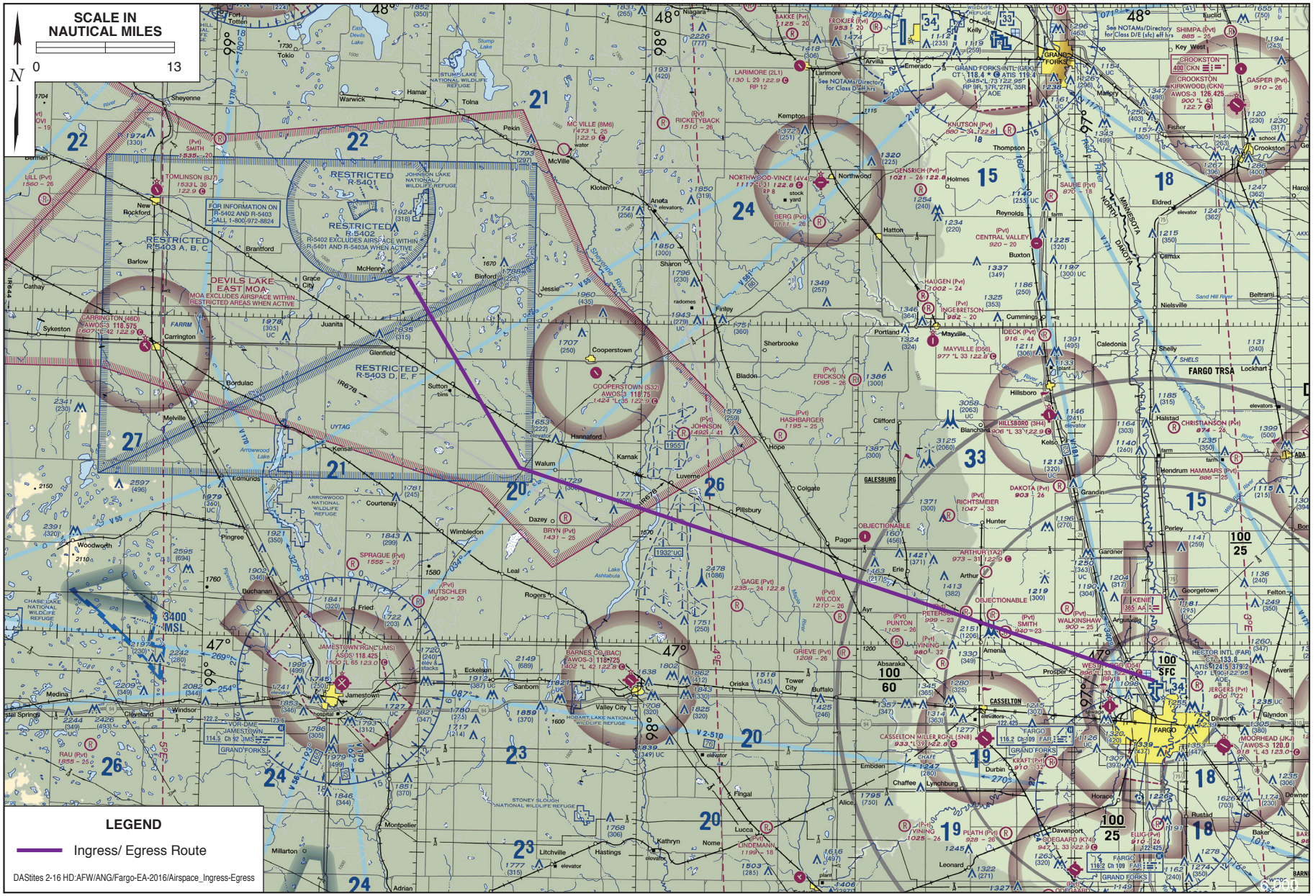
2.2.1.3 Proposed Travel Corridor to R-5403

The U.S. military has two primary means for flying RPAs in the National Airspace (NAS). First, the RPA may be flown within Special Use Airspace (SUA), defined as Restricted Areas (R-) or Warning Areas (W-) controlled by the Department of Defense (DoD). When operating in SUA, the FAA allows the military to assume responsibility for the safety of any RPA flights within that airspace. Alternatively, RPAs may be segregated from normal manned air traffic through the use of FAA designated Temporary Flight Restriction (TFR) areas. RPA operators may also apply for permission to fly elsewhere by means of the COA process with the FAA.

MQ-9 aircraft operations at Hector IAP would be under an FAA COA where authorization to fly is granted for a specific platform, for a specific mission, in a given piece of airspace. Currently, the FAA utilizes a COA as the means of authorizing RPA operations in the NAS with certain specific provisions which could include escort by manned chase aircraft.

To enable NAS access, the 119 WG proposes to utilize a GBSAA system tied to Fargo ATC radar to provide traffic deconfliction in the climb to 18,000 feet MSL or above and transit via a stereo flight planned route to R-5403 (see Figure 2-2). Additionally, Fargo ATC radar and Minneapolis ARTCC would provide normal IFR separation service to the MQ-9 aircraft to include traffic calls that will allow the aircrew to cue the camera to the traffic. To facilitate transit to the R-5403 the 119 WG would:

1. Maintain a SOF on the airfield during all transits.
2. Provide radial/DME and Latitude/Longitude coordinates for all proposed flight paths to/from R-5403 in the COA application and Letter of Agreement (LOA).



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119 WG Ingress/Engress

Route R5403 – Hector IAP

FIGURE 2-2

3. Utilize GBSAA for traffic deconfliction while below Flight Level 18,000 feet MSL (FL180) during transit to/from R-5403. Transits will be at or above FL180 unless coordinated otherwise in the FAA COA & LOA.

2.2.1.4 Special Use Airspace Description

Proposed MQ-9 Reaper RPA training activities would be conducted in R-5403, located approximately 60 NM northwest of Hector IAP. This SUA measures approximately 30 NM by 40 NM, with its floor starting at 8,000 feet MSL and extending to a ceiling of 17,999 feet MSL. R-5403 A-F is currently used by the 119 WG for MQ-1 RPA operations conducted out of Grand Forks AFB.

Two MQ-9 aircraft would operate in R-5403 at the same time and would be deconflicted by altitude. The type of training missions and number of daily sorties (i.e., two [2]) would not change under the Proposed Action; however, flight time within R-5403 would increase.

Also, in coordination with the Wisconsin Army National Guard personnel at Camp Grafton, the 119 WG would occasionally implement laser operations in conjunction with their flight operations within R-5403 A-F. These operations are expected to take place anywhere from once per month to ultimately 6-8 times per month. Laser activation would only take place while the RPA is within R-5403 A-F and when two RPAs are active, each would fire multiple times during a sortie.

To facilitate operations in R-5403, the 119 WG would:

1. Maintain a SOF on the airfield while the RPA is in the Restricted Area.
2. Conduct RPA operations in the SUA under VMC conditions as specified in 14 CFR § 91.155.
3. Complete laser operations in accordance with the 119 WG Laser Safety Plan and coordination with Camp Grafton personnel.

All MQ-9 aircraft operations in R-5403 would be conducted as specified in 14 CFR § 91.133 and in accordance with the 119 WG Letter of Agreement (LOA). The GCS would have direct radio communications with Minneapolis ARTCC and any assigned ATC agency for MQ-9 aircraft flight operations.

2.2.1.5 Lost Link Flight Profile and Emergency Procedures

Operators use C-Band and Ku-Band links to communicate with and operate the MQ-9 aircraft. However, all RPAs are preprogrammed with a flight profile that the aircraft flies when it is no longer under control of a GCS (Lost Link). Lost Link Procedures (LLPs) are defined as a point, or sequence of points where the aircraft would proceed and hold at a specified altitude for a specified period of time, in the event the command and control link to the aircraft is lost. The aircraft would loiter at the LLP location until the communication link with the aircraft is restored or the specified time elapses. If the time period elapses, the aircraft would proceed as pre-programmed either to another LLP location in an attempt to regain the communication link, or to the Flight Termination Point (FTP).

The Lost Link (LL) orbit would be a new pattern that would be flown as a result of beddown and LRE of the MQ-9 Reaper LRE at Hector IAP. If on final approach to, or climb-out from, the runway, the RPA would climb on runway heading to 2,400 feet MSL. Once at 2,400 feet MSL, the aircraft would turn in the shortest direction toward the LL point. If at 2,400 feet MSL within the Hector IAP traffic pattern, the RPA would immediately turn in the shortest direction toward the LL point. In the event that the C-Band and Ku-Band links are lost with the aircraft between R-5403 and Hector IAP, the MQ-9 would remain within the lateral confines of the scheduled airspace, and climb or descent to the last altitude assigned and hold for 30 minutes while attempts are made to reestablish link. If the link is not established after 30 minutes, the RPA shall then fly the published LL route back through the corridor at the previously cleared corridor altitude and orbit at the LL point. It will hold in the LL orbit at the assigned airspace altitude for 30 minutes, after which time it will descend in the current LL orbit to 2,400 feet MSL and hold until either link is re-established or fuel is exhausted. North Dakota ANG personnel would respond to the crash site to retrieve the aircraft and collect mishap information/data.

2.2.1.6 FAA Coordination and Communication

A COA is an authorization issued by the FAA to a public operator for a specific RPA activity. Each COA has a specified time period for which the authorization is active – typically two years – and the authorization can be rescinded by the FAA

at any time. The FAA currently allows RPAs to operate without a COA only when operations are conducted within active Restricted Area or Warning Area airspace, or approved prohibited areas with permission from the appropriate authority or using agency of that airspace (FAA Order 8900.1 Change 351, Volume 16). RPA operation in all other airspace requires a COA issued by the FAA. The COA would include all of the requirements, crew certifications, and special provisions necessary to operate the MQ-9 aircraft at Hector IAP. After a complete application is submitted, the FAA will conduct a comprehensive operational and technical review. If necessary, additional provisions or limitations may be imposed as part of the approval to ensure the RPA can operate safely with other airspace users.

In most cases, FAA provides a formal response within 60 days from the time a completed application is submitted. Current FAA RPA policy is specified in Flight Standards Service (AFS) 400 Unmanned Aircraft Systems Policy 05-01, published on September 16, 2005. Because the DoD certifies military aircraft of airworthiness, an Airworthiness Certification from the FAA is not required. The 119 WG has been coordinating with the FAA as this proposal has been developed and any anticipated requirements are being incorporated into this analysis proactively. The unit currently has a COA addressing MQ-9 local patterns at Hector IAP. Coordination with the FAA regarding the transition of the MQ-9 from the local pattern at Hector IAP to R-5403 is well advanced and a COA is currently under review by the FAA.

The Interdepartmental Radio Advisory Council/Spectrum Management Subcommittee has approved and assigned the C-band LOS frequencies for Hector IAP.

2.2.1.7 Operational Maintenance

While the 119 WG completed maintenance activities for the MQ-1 at both the installation at Hector IAP and Grand Forks AFB, under the Proposed Action all MQ-9 maintenance activities would take place at the Hector IAP installation. In addition to existing maintenance activities for the MQ-1 that would transition to the MQ-9, new maintenance activities at the 119 WG for the MQ-9 would include the following; Pneudraulics, Non-Destructive Inspection (NDI) activities, Jet Engine Inspection and Maintenance, Fuel System Maintenance, Weapons and

Release Systems maintenance, and Aircraft Ground Equipment (AGE) operation and maintenance. These activities would be limited to buildings 210, 217, 217A, 223, and 350, with the processes being similar to the previous operations at Hector IAP for the F-16 and C-21 airframes. New processes would be developed within the Enterprise Environmental Safety and Occupational Health and Management Information System (EESOH-MIS) and a Hazardous Materials Pharmacy (HazMart) would be set up to track usage and location of usage.

2.2.1.8 Public Outreach

Leadership from the North Dakota ANG and the 119 WG have proactively reached out to the surrounding communities to provide information regarding the capabilities of the MQ-9 aircraft and its support to operations overseas as well as domestic support for firefighting, search and rescue, etc.

There are 30 airports within the operational volume of airspace, defined as within 25 NM of the transit corridor or within the boundaries of R-5403; however, most airports in the local area have a low volume of traffic. The 119 WG would develop a fixed-based operator (FBO) e-mail group to provide real time notification of flights and disseminate information as part of an outreach program. They will continue that outreach program as part of the North Dakota ANG Mid Air Collision Avoidance (MACA) Program. Additionally, 24-hour Notices to Airmen (NOTAMs) will be published for all MQ-9 aircraft operations.

Known airspace users that will require additional coordination or airspace deconfliction include:

- **University of North Dakota.** University of North Dakota (UND) Flight Operations represent the largest group of airspace users in the proposed operating area. The 119 WG will work closely with UND to ensure deconfliction between the two organizations.
- **Cooperative Aircraft.** Any air traffic that is squawking a Mode 3/C beacon code and is in voice communications with either tower or radar personnel.
- **Non-participating Aircraft.** Air traffic that is squawking a VFR Mode 3/C beacon code (1200) and is not in voice communication with ATC. This air traffic may be equipped with a radio.

- **Non-cooperative Aircraft.** Defined as air traffic that is getting primary returns and tracked on the radar without being reinforced by a beacon code. These air hazards may not be using their radio to talk with ATC or other aircraft. They do not have altitudes associated with the track developed and are assumed to be a potential conflict. These includes balloons, ultralights, gliders, and other small private aircraft.

2.2.2 Proposed Facility Improvements

Implementation of the Proposed Action would not include new facility development but would require interior renovations to two buildings and exterior additions to one building to beddown the proposed MQ-9 Reaper and associated LRE:

- **Installation of two Ground Data Terminals on Building 217:** As described in Section 1.4, *Background of the MQ-9 Aircraft*, the Ground Data Terminal (GDT) is responsible for providing the line-of-sight flying capabilities of the MQ-9 aircraft. The GDT must be located where the extended 50-foot would have line-of-sight contact with the operating MQ-9 aircraft on the ground and well into the flight track. The proposed location for two GDTs would be on the east and west rooftop of Building 217, Maintenance Hangar, where antennae pads already exist. Also, a hoist/crane would be placed within this building for MQ-9 removal and storage. Building 217, while over 50-years old is not eligible for listing on the National Register of Historic Places (NRHP) based on the loss of its original integrity (North Dakota ANG 2007d).

- **Internal Upgrades to Building 210:** Building 210, the current Weapons Loading Hangar, would require only internal upgrades and reconfiguration to accommodate MQ-9 RPAs.

- **Internal Upgrades to Building 223:** Building 223, the current Aircraft Ground Equipment building which also contains a paint booth and

sanding equipment would have internal upgrades completed to allow for corrosion control operations for the MQ-9.

2.2.3 Alternatives Considered for Analysis

2.2.3.1 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the proposed beddown of the MQ-9 Reaper would occur at Hector IAP; however, the LRE mission would occur out of Grand Forks AFB, similar to the 119 WG existing operations described for the MQ-1 RPA LRE. Operations and maintenance crews would need to travel to Grand Forks AFB four-days a week and based on available daily operating hours would only be able to complete a two-hour training sortie.

2.2.3.2 No-Action Alternative

Under the No-Action Alternative, the proposed beddown of the MQ-9 Reaper and LRE mission at Hector IAP would not be implemented. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Because CEQ regulations stipulate that the No-Action Alternative be analyzed to assess any environmental consequences that may occur if the Proposed Action is not implemented, the No-Action Alternative will be carried forward for analysis in the EA. The No-Action Alternative provides a baseline against which the Proposed Action can be compared.

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SECTION 3
AFFECTED ENVIRONMENT

This section describes pertinent existing environmental conditions for resources potentially affected by the Proposed Action and identified alternatives. In compliance with the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, Unified Facilities Criteria (UFC) 3-260-01, and 32 Code of Federal Regulations (CFR) 989, the description of the affected environment focuses on only those aspects potentially subject to impacts.

In the case of the Proposed Action at the 119th Wing (119 WG), the affected environment description is limited primarily to the North Dakota Air National Guard (ANG) installation at Hector International Airport (IAP), the City of Fargo, and, regionally, to Cass County, North Dakota. Resource descriptions focus on the following areas: airspace management, safety, air quality, noise, land use, geological resources, water resources, biological resources, transportation and circulation, visual resources, cultural resources, socioeconomics, environmental justice, and hazardous materials and wastes.

3.1 AIRSPACE MANAGEMENT

3.1.1 Definition of Resource

Airspace management is defined by the USAF as the coordination, integration, and regulation of the use of airspace of defined dimensions. The objective is to meet military training requirements through the safe and efficient use of available navigable airspace in a peacetime environment while minimizing the impact on other aviation users and the public (AFI 13-201). There are two categories of airspace or airspace areas: regulatory and nonregulatory. Within these two categories, further classifications include *controlled*, *uncontrolled*, *special use*, and *other airspace*. The categories and types of airspace are dictated by: (1) the complexity or density of aircraft movements; (2) the nature of the operations conducted within the airspace; (3) the level of safety required; and (4) national and public interest in the airspace.

3.1.1.1 Controlled Airspace

Controlled airspace is a generic term that encompasses the different classifications of airspace (Class A, B, C, D, and E airspace shown in Figure 3-1) and defines dimensions within which air traffic control service is provided to Instrument Flight Rules (IFR) flights and to Visual Flight Rules (VFR) flights (U.S. Department of Transportation 1994). All military and civilian aircraft are subject to Federal Aviation Regulations (FARs).

Class A Airspace

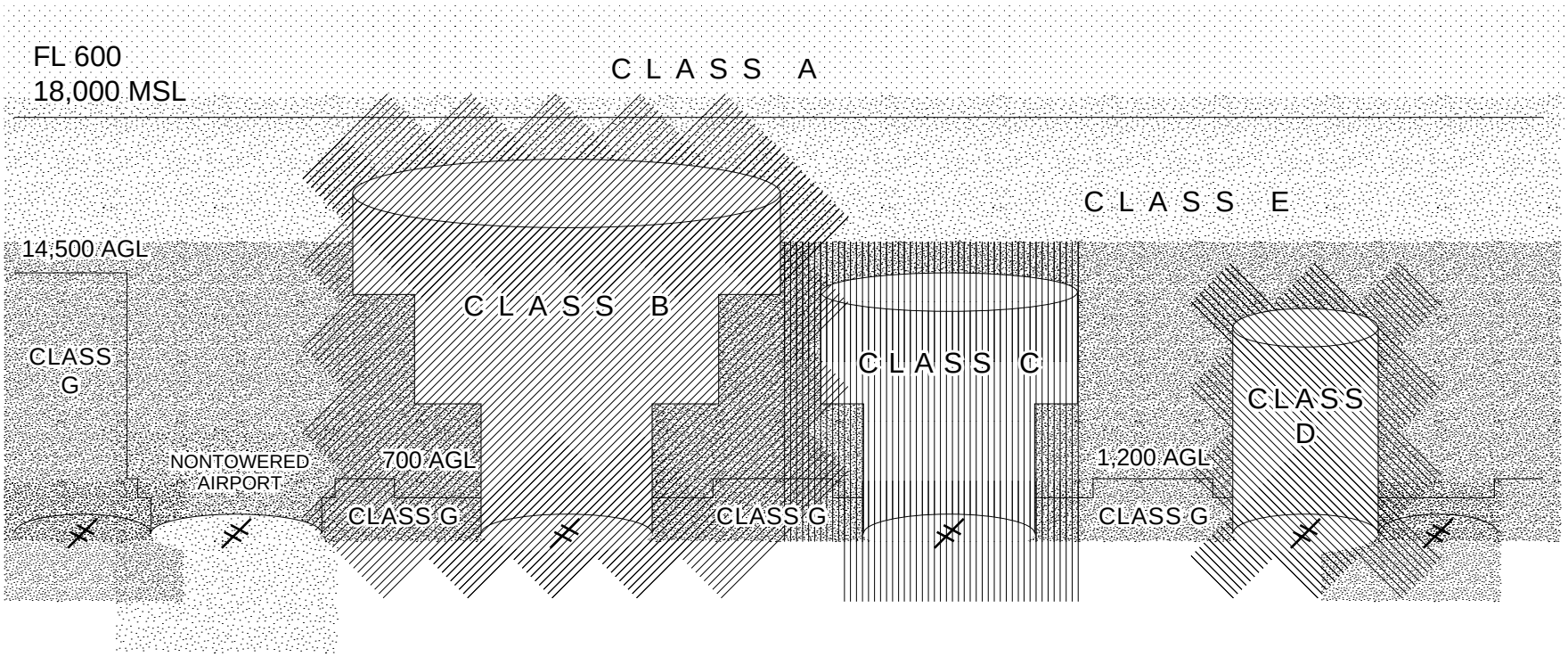
Class A airspace includes all flight levels or operating altitudes over 18,000 feet above mean sea level (MSL). Formerly referred to as a Positive Control Area (PCA), Class A airspace is dominated by commercial aircraft utilizing routes between 18,000 and 60,000 feet above MSL.

Class B Airspace

Class B airspace typically comprises contiguous cylinders of airspace, stacked upon one another, extending from the surface up to 14,500 feet above MSL. To operate in Class B airspace, pilots must contact appropriate controlling authorities and receive clearance to enter the airspace. Additionally, aircraft operating within Class B airspace must be equipped with specialized electronics that allow air traffic controllers to accurately track aircraft speed, altitude, and position. Class B airspace is typically associated with major metropolitan airports.

Class C Airspace

Airspace designated as Class C can generally be described as controlled airspace that extends from the surface or a given altitude to a specified higher altitude. Class C airspace is designed and implemented to provide additional air traffic control (ATC) into and out of primary airports where aircraft operations are periodically at high-density levels. All aircraft operating within Class C airspace are required to maintain two-way radio communication with local ATC entities.



AGL – above ground level
FL – flight level
MSL – mean sea level

NOTE: Altitudes not to scale.
SOURCE: FAA 1993.

FIGURE 3-1

FAA Airspace Classification

EA

Class D Airspace

Hector IAP is within Class D airspace, which encompasses a 5-statute-mile radius of an operating ATC-controlled airport, extending from the ground to 2,500 feet above ground level (AGL) or higher. All aircraft operating within Class D airspace must be in two-way radio communication with the ATC facility.

Class E Airspace

Class E airspace, which can be described as general controlled airspace, includes designated Federal airways consisting of the high altitude (J or "Jet" Route) system and low altitude (V or "Victor" Route) system. Class E airspace extends upward from either the surface or a designated altitude to the overlying or adjacent controlled airspace. Also included in this class of airspace are Federal Airways, airspace beginning at either 700 or 1,200 feet AGL used to transition to or from the terminal or enroute environment and enroute domestic and offshore airspace, designated below 18,000 feet above MSL.

3.1.1.2 Uncontrolled Airspace

Uncontrolled airspace (Class G) is not subject to restrictions that apply to controlled airspace. Limits of uncontrolled airspace typically extend from the ground surface to 700 feet AGL in urban areas and from the ground surface to 1,200 feet AGL in rural areas. Uncontrolled airspace can extend above these altitudes to as high as 14,500 feet above MSL if no other types of controlled airspace have been assigned. ATC does not have authority to exercise control over aircraft operations within uncontrolled airspace. Primary users of uncontrolled airspace are general aviation aircraft operating in accordance with VFR.

3.1.1.3 Special Use Airspace

Special use airspace consists of airspace within which specific activities must be confined, or wherein limitations are imposed on aircraft not participating in those activities. With the exception of Controlled Firing Areas (CFAs), special use airspace is depicted on aeronautical charts, including hours of operation, altitudes,

and the agency controlling the airspace. All special use airspace descriptions are contained in FAA Order 7400.8.

Prohibited and Restricted Areas (R-) are regulatory special use airspace and are established in FAR Part 73 through the rulemaking process. Warning Areas, CFAs, and military operations areas (MOAs) are nonregulatory special use airspace.

Warning Areas are airspace of defined dimensions over international waters that contain activity that may be hazardous to nonparticipating aircraft. Because international agreements do not provide for prohibition of flight in international airspace, no restrictions to flight are imposed. As such, warning areas are established in international airspace to alert pilots of nonparticipating aircraft to potential danger.

CFAs are established to contain activities that, if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft. The approval of a CFA shall only be considered for those activities that are either of short duration or of such a nature that they could be immediately suspended upon notice that such activity might endanger nonparticipating aircraft. Examples of such activities include: firing of missiles, rockets, anti-aircraft artillery, and field artillery; static testing of large rocket motors; blasting; and ordnance or chemical disposal.

MOAs are airspace of defined vertical and lateral limits outside of controlled airspace that are used to separate certain military flight activities from IFR traffic, and to identify for VFR traffic the areas where concentrated military aircraft operations may occur. When a MOA is active, IFR traffic may be cleared to enter and pass through the area if adequate IFR separation criteria can be met. Nonparticipating VFR aircraft are not prohibited from entering an active MOA; however, extreme caution is advised when such aircraft transit the area during military operations.

All MOAs within the U.S. are depicted on sectional aeronautical charts identifying the exact area, the name of the MOA, altitudes of use, published hours of use, and the corresponding controlling agency.

3.1.1.4 Military Training Routes

Military Training Routes, or MTRs, are flight paths that provide a corridor for low-altitude navigation and training. Low altitude navigation training is important because aircrews may be required to fly at low altitudes for tens or hundreds of miles to avoid detection in combat conditions. To train realistically, the military and the FAA have developed MTRs. This system allows the military to train for low-altitude navigation at air speeds in excess of 250 knots. There are two types of MTRs, instrument routes (IR) and visual routes (VR).

Air Traffic Control Assigned Airspace (ATCAA) is airspace above 18,000 feet above MSL designed to accommodate non-hazardous high-altitude military flight training activities; this airspace remains in the control of the FAA and, when not in use by military aircraft, may be used to support civil aviation activities. ATCAA permits military aircraft to conduct high-altitude air-to-air combat training, practice evasion maneuvers, perform air refueling, and initiate or egress from attacks on targets within a range. ATC routes IFR traffic around this airspace when activated; ATCAA does not appear on any sectional or enroute charts. Currently, by agreement with the FAA, no ATCAA is authorized over any of the existing airspace.

3.1.2 Existing Conditions

3.1.2.1 Aircraft Inventory

The 119 WG has a current inventory of four (4) MQ-1 Predator Remotely Piloted Aircraft (RPA) that are launched and recovered out of Ground Forks Air Force Base (AFB) and operate within the Ground Forks AFB local airspace and Restricted Area 5403 (R-5403), sections A through F (A-F). Both Grand Forks AFB and R-5403 A-F allow the 119 WG to fulfill its mission to train and equip combat forces to engage in Intelligence Targeting, RPA Operations, and Expeditionary Combat support missions.

3.1.2.2 Airspace Operations

On average, there are approximately 204 aircraft operations per day at Hector IAP (Table 3-1). Military aircraft operations comprise approximately 3 percent of daily aircraft operations while general aviation (both transient and local) accounts for approximately 64 percent of daily operations. The remaining operations include 26 percent air taxi and 7 percent air carrier (FAA 2016).

Table 3-1. Baseline Aircraft Operations at Hector International Airport

	Daily Operations	Annual Operations
Civilian	198.9	72,616
Air Carrier	*13.9*	*5,059*
Air Taxi	*53.6*	*19,611*
General Aviation	*131.4*	*47,946*
Military-Based	0.0	0
Military-Transient	5.5	2,038
Total	**204.4**	**74,654**

Sources: FAA 2016.

The 119 WG conducts approximately 36 operations per day at Grand Forks AFB, which in addition to standard arrivals (2 per day) and departures (2 per day), includes low approaches and touch and gos (32 operations). Currently, no 119 WG MQ-1 RPA operate at Hector IAP.

3.1.2.3 Runways

Hector IAP operates three runways, two of which are utilized by the 119 WG. The primary runway, 18/36, is 9,000 feet long and 150 feet wide with 1,000-foot overruns at both ends. Both Runway 18 and 36 are equipped with a precision instrument landing system. The smaller crosswind runway, 09/27, is 6,300 feet long and 100 feet wide. A third runway, Runway 13/31 is 3,100 feet in length and 150 feet in width.

3.1.2.4 Flight Procedures

Flight plans and schedules for the 119 WG are filed monthly with Minneapolis Center Air Route Traffic Control Center (ARTCC), the controlling agency of regional airspace. Prior to initiating a training mission, 119 WG pilots file a flight plan with Minneapolis Center ARTCC and receive takeoff clearance from ATC at Grand Forks AFB.

The MQ-1 aircraft is launched from Grand Forks AFB, enters a Temporary Flight Restriction (TFR) corridor, and directly accesses R-5403 A-F (see Section 2.2.1.4, *Special Use Airspace Description*) to complete training. Only one RPA is permitted within the TFR at a time, once one MQ-1 enters R-5403 A-F, the other MQ-1 departs Grand Forks AFB airspace, enters the TFR, and eventually accesses R-5403 A-F. After the completion of the training mission, both MQ-1s return to Grand Forks AFB in a similar manner in which they departed (e.g., one MQ-1 in the TFR at a time, etc.). The 119 WG also completes closed pattern work at Grand Forks AFB as both, either a specific training sortie or in combination with training at R-5403 A-F.

3.2 SAFETY

3.2.1 Definition of Resource

The primary concern with regard to military training flights is the potential for aircraft mishaps (i.e., crashes), which may be caused by mid-air collisions with other aircraft or objects, weather difficulties, or bird-aircraft strikes. The U.S. Air Force (USAF) has developed criteria for Runway Protection Zones (RPZs) at the ends of runways based upon the analysis of previously-occurring aircraft mishaps at USAF installations. RPZs ensure that land use in areas extending outward from the ends of runways is compatible with aircraft operations.

Air Force Instruction (AFI) 91-202, *The USAF Mishap Prevention Program* provides guidance for the development of a Bird-Aircraft Strike Hazard (BASH) plan to address and reduce potential bird/wildlife strikes to aircraft. Because migratory bird species are considered of special ecological value, Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds,* was introduced in 2001 to ensure that Federal agencies focus attention on the environmental effects to migratory bird species and, where feasible, implement policies and programs, which support the conservation and protection of migratory birds.

Siting requirements for explosive materials storage (e.g., munitions) and handling facilities are based on safety and security criteria. Air Force Manual (AFM) 91-201, *Explosives Safety Standards*, requires that defined distances be maintained between these and a variety of other types of facilities. These quantity-distance (QD) arcs are determined by the type and quantity of explosive materials to be stored; each explosive material storage or handling facility has QD arcs extending outward from its sides and corners for a prescribed distance. Within QD arcs, development is either restricted or altogether prohibited in order to maintain safety of personnel and minimize the potential for damage to other facilities in the event of an accident. QD arcs for multiple facilities at a single site may overlap, leaving a series of arcs as edges of the safety zone. Explosive materials storage and build-up facilities must be located in areas where security can be assured.

The U.S. Department of Defense (DoD) has developed Anti-Terrorism/Force Protection (AT/FP) standards, which are designed to reduce the likelihood of mass casualties from potential terrorist attacks. UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings*, outlines various planning, construction, and operational standards to address potential terrorism threats. A key element of AT/FP standards is the establishment of minimum setbacks and other security standoffs between mass gathering facilities and potentially non-secure adjacent uses (e.g., parking lots, areas outside of security fences, etc.). AT/FP setbacks typically extend outward from the sides and corners of facilities for a prescribed distance (e.g., 45 meters); development is either limited or altogether prohibited in such setback areas. Additional AT/FP standards address other facility design and operational considerations, including internal building layout, facility access and security, site circulation, and emergency mass notification.

3.2.2 Existing Conditions

3.2.2.1 Aircraft Mishaps

Five mishap classifications have been defined by the USAF. Class A mishaps result in a fatality or permanent total disability; total cost in excess of $2 million for injury, occupational illness, and property damage; or destruction or damage beyond repair to military aircraft. Class B mishaps result in a permanent partial disability; total cost in excess of $500,000 but less than $2 million for injury, occupational illness, and property damage; or hospitalization of five or more personnel. Class C mishaps result in total damages between $50,000 and $500,000, and Class D mishaps result in total damages between $2,000 and $50,000. The fifth mishap category, Class E, includes occurrences that do not meet reportable mishap classification criteria, but are deemed important to investigate and/or report for mishap prevention.

The 119 WG has been flying the MQ-1 at Grand Forks AFB since 2008 and has not had any mishaps (e.g., Class A, Class B, etc.) to date (North Dakota ANG 2016a). The Class A and Class B mishap rate for the MQ-1 within the USAF is 7.58 and 1.66 per 100,000 flight hours, respectively (Taranto 2013).

3.2.2.2 MQ-9

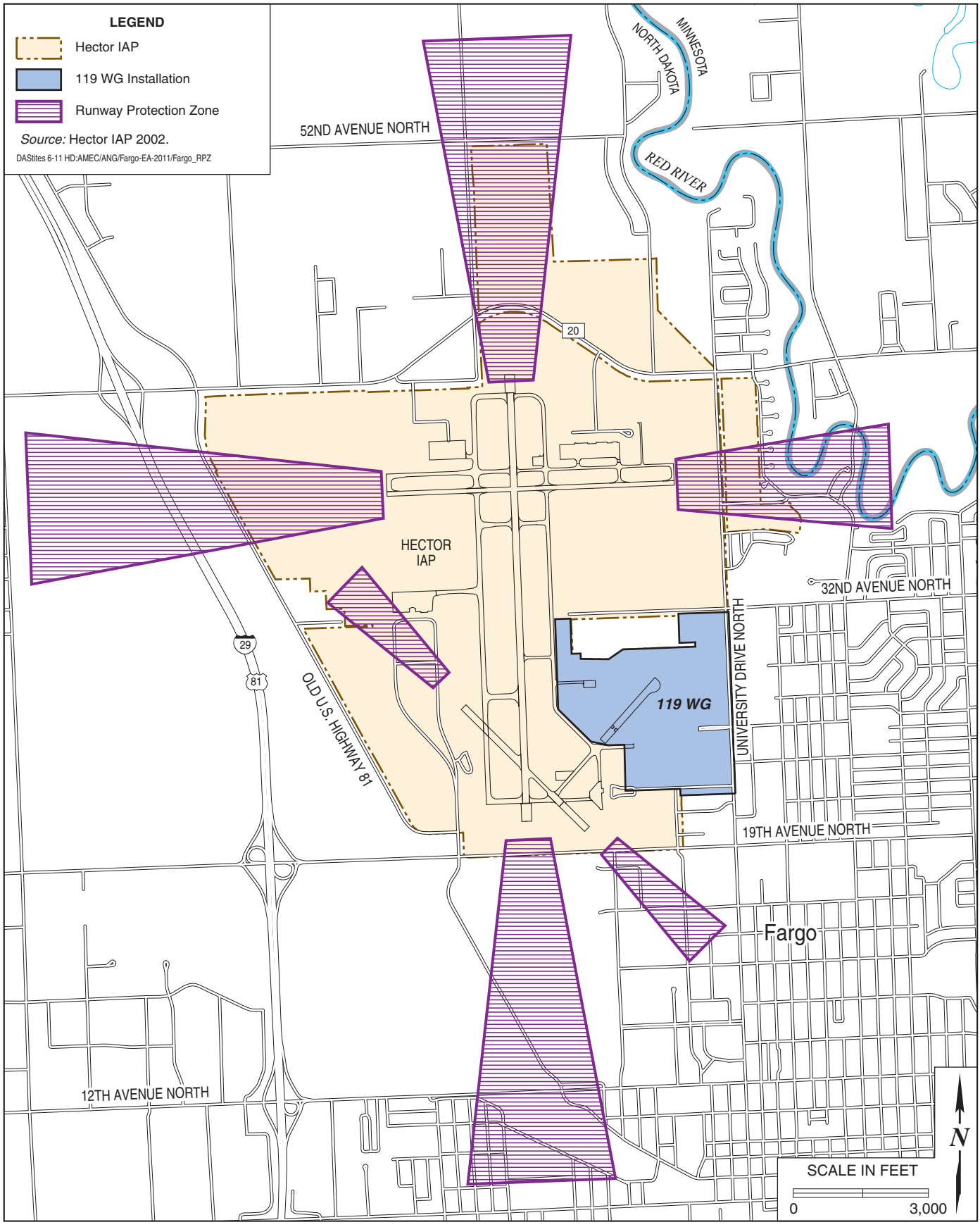
Flight safety is generally associated with the containment of manned aircraft flight within approved operational areas. The unique aspect of RPA flying operations is that the aircraft is unmanned. This means that an RPA mishap has no risk to aircrew. An external pilot flies the aircraft via a data-link from a ground control station. In flight, if malfunctions occur and the data link (i.e., either communication or GPS) is lost, the aircraft is programmed to return to a predetermined unpopulated area (e.g., Lost Link Orbit), or the Flight Termination Point; it then orbits while attempts are made to restore the datalink.

As described in Section 2.2.1.5, *Lost Link Flight Profile and Emergency Procedures* if an MQ-9 aircraft goes lost link while in transit or operating within R-5403, the lost link profile will be flown at the last cleared altitude to the Lost Link Orbit. In the rare event that a link cannot be re-established before the aircraft runs out of fuel, the aircraft would fly to a predetermined FTP. However, no RPA aircraft have been lost during 119 WG operations.

MQ-9 RPA aircraft have flown more than 468,000 hours in 13 years for the USAF. Over that period, 20 Class A and 3 Class B mishaps have occurred, and a total of 7 aircraft have been destroyed (USAF 2014b). The MQ-9 Class A and Class B mishap rate for the USAF is 4.79 and 1.28 per 100,000 flight hours (Taranto 2013).

3.2.2.3 Safety Zones

Restricted safety zones at Hector IAP and the 119 WG installation include runway, taxiway, and apron clearances (Figure 3-2). Because Hector IAP is a public/civilian airport, airfield operating clearances are established by Federal Aviation Administration (FAA) Federal Aviation Regulations Part 77, *Objects Affecting Navigable Airspace*. Clearances related specifically to the on-installation operations of the 119 WG, such as apron clearances, are established by UFC 3-260-01, *Airfield and Heliport Planning and Design*.



EA

Runway Protections Zones (RPZs) Associated with Hector IAP

FIGURE 3-2

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

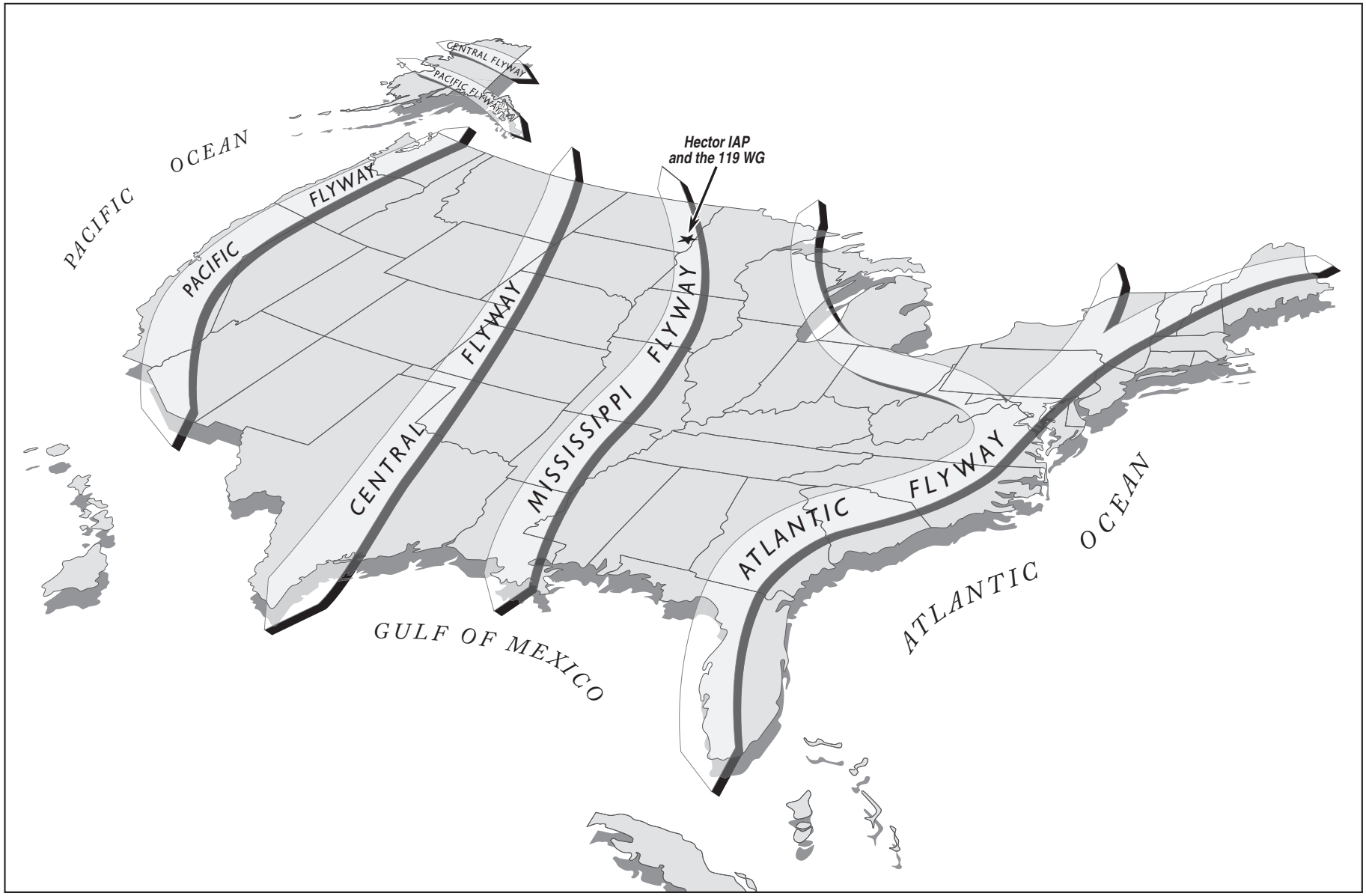
RPZs, or zones extending outward from the ends of active runways at airports, delineate those areas recognized as having the greatest risk for an aircraft mishap (i.e., during takeoff or landing). Development restrictions within RPZs are intended to preclude incompatible land use activities from being established in these areas. Currently, no incompatible land use activities occur within RPZs at Hector IAP (Hector IAP 2002).

Apron clearances at the 119 WG installation are established by USAF Joint Manual 32-103, *Airfield and Heliport Planning Criteria*, which establishes a standoff from the edge of the parking apron to permanent facilities, including buildings, fences, and other non-airfield related objects. Currently, no buildings at the installation are in violation of established apron clearances (Hector IAP 2002).

3.2.2.4 Bird-Aircraft Strike Hazard (BASH)

BASH is defined as the threat of aircraft collision with birds or other wildlife during flight operations and is a safety concern at all airfields due to the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. Most birds fly close to ground level; correspondingly, more than 95 percent of all reported bird-strikes occur below 3,000 feet AGL. At most military installations, about half of reported bird strikes occur in the immediate vicinity of the airfield and another 25 percent occur during low-altitude local training exercises.

Bird-aircraft strikes present a potential threat to Hector IAP and 119 WG aircraft and aircrew safety due to resident bird species as well as the Hector IAP's location within the Mississippi Flyway (Figure 3-3). According to most recent available data, between 2003 and 2008, a total 17 BASH events occurred at the installation (North Dakota ANG 2008a). The 119 WG's *BASH Plan* (North Dakota ANG 2004) identifies specific sources of bird-aircraft strikes, including migratory flight patterns and proximity to nearby agricultural areas. The document also outlines measures to reduce BASH during airfield and flight operations as well as the integration of BASH reduction into long-term maintenance and construction planning activities.



EA

Migratory Flyways over the United States

FIGURE 3-3

3.2.2.5 Explosives Safety

Presently, the only mission at the 119 WG with a need for high explosives is Explosives Ordnance Disposal (EOD). EOD requires a small amount of C4, which is used for ordinance disposal and training purposes. Current MQ-1 aircraft require Hazard Class/Division 1.3 and 1.4 munitions (limited to chaff and flares), which must be inspected and stored at the installation. QD arcs at the 119 WG installation are located in the northwest portion of the installation and are associated with weapons and explosives storage capability that must be retained to accommodate EOD and training purposes (Figure 3-4). Three facilities contain QD arcs: Building 310 (Storage Igloo) has a 250-foot QD arc to the east and west, and a 500-foot QD arc to the north and south; Building 311 (Magazine Storage) contains a 100-foot QD arc on all sides; and, Building 350 (Conventional Munitions Shop) has a 400-foot QD arc to the north and south, and a 500-foot QD arc to the east and west (North Dakota ANG 2007a, 2010a).

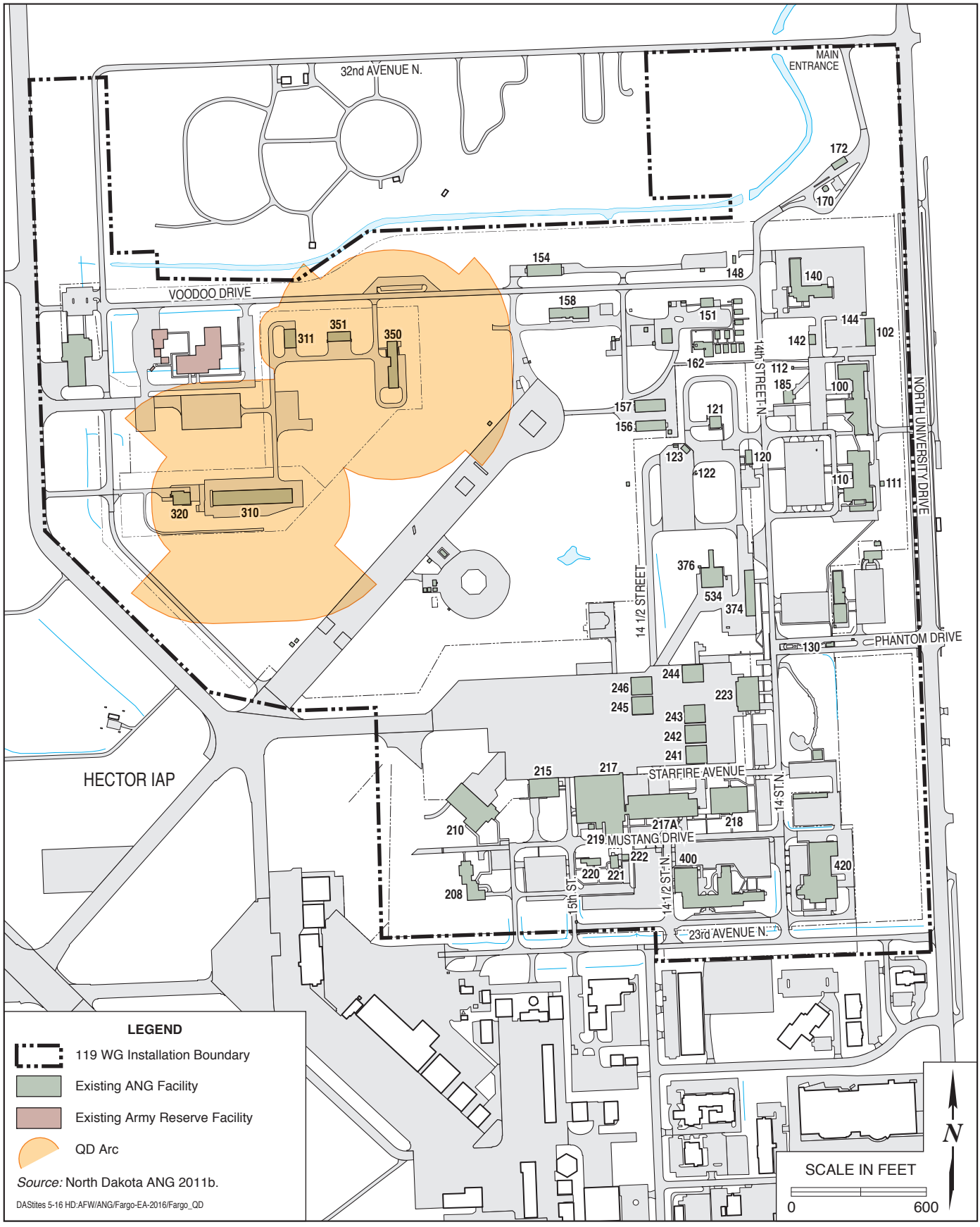
3.2.2.6 Anti-Terrorism/Force Protection (AT/FP)

Multiple facilities at the 119 WG installation are presently in violation of AT/FP standards related to setbacks and facilities construction (Table 3-2). Three parking lots are located within the 82-foot (25-meter) setback between unsecured parking and mass gathering facilities. Additionally, the Operational Training Facility, located in Building 400 (Dining Hall/Medical Facility), does not comply with AT/FP facilities construction standards (windows criteria) or installation perimeter setbacks. However, efforts to remedy AT/FP violations have been proposed under a separate action, which has been analyzed in a previous Environmental Assessment (EA) (North Dakota ANG 2009a).

Table 3-2. Current AT/FP Violations at the 119 WG Installation

Facility	Description
Parking Lot 217	Located within AT/FP parking setback
Parking Lot 400	Located within AT/FP parking setback
Supply/Squadron Operations Parking Lot	Located within AT/FP parking setback
Operational Training Facility (Building 400)	Located within AT/FP installation perimeter setback, and facility does not comply with AT/FP window criteria construction standards.

Source: North Dakota ANG 2009a.



EA

QD Arcs at the 119 WG Installation

FIGURE 3-4

3.3 AIR QUALITY

3.3.1 Definition of Resource

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA) for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal or less than ten microns in diameter (PM_{10}) and 2.5 microns in diameter ($PM_{2.5}$) and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

3.3.1.1 Air Pollutants

Air quality is affected by stationary sources (e.g., urban and industrial development) and mobile sources (e.g., motor vehicles). Air quality at a given location is a function of several factors, including the quantity and type of pollutants emitted locally and regionally, and the dispersion rates of pollutants in the region. Primary factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions, and topography.

Ozone (O_3). The majority of ground-level (or terrestrial) ozone is formed as a result of complex photochemical reactions in the atmosphere involving volatile organic compounds (VOCs), nitrogen oxides (NO_x), and oxygen. O_3 is a highly reactive gas that damages lung tissue, reduces lung function, and sensitizes the lung to other irritants. Although *stratospheric* O_3 shields the earth from damaging ultraviolet radiation, terrestrial O_3 is a highly damaging air pollutant and is the primary source of smog.

In April 2004, the USEPA issued the final rule for 8-hour O_3, revising the 1-hour O_3 NAAQS standard. The 8-hour standard is more stringent than the 1-hour standard, and non-attainment areas for 8-hour O_3 are now designated. As of June 15, 2005, the 1-hour standard was revoked for all areas except those without effect dates for 8-hour O_3 designations (USEPA 2011). On March 12, 2008, the USEPA

revised the 8-hour O_3 NAAQS to a level of 0.075 parts per million (ppm) from the previous level of 0.08 ppm. The change, which was designed to improve the protection of public health, went into effect on March 27, 2008 (USEPA 2011).

Carbon Monoxide (CO). CO is a colorless, odorless, poisonous gas produced by incomplete burning of carbon in fuel. The health threat from CO is most serious for those who suffer from cardiovascular disease, particularly those with angina and peripheral vascular disease.

Nitrogen Dioxide (NO_2). NO_2 is a highly reactive gas that can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Repeated exposure to high concentrations of NO_2 may cause acute respiratory disease in children. Because NO_2 is an important precursor in the formation of O_3 (or smog), control of NO_2 emissions is an important component of overall pollution reduction strategies. The two primary sources of NO_2 in the U.S. are fuel combustion and transportation.

Sulfur Dioxide (SO_2). SO_2 is emitted primarily from stationary source coal and oil combustion, steel mills, refineries, pulp and paper mills, and from non-ferrous smelters. High concentrations of SO_2 may aggravate existing respiratory and cardiovascular disease; asthmatics and those with emphysema or bronchitis are the most sensitive to SO_2 exposure. SO_2 also contributes to acid rain, which can lead to the acidification of lakes and streams and damage trees.

Particulate Matter (PM_{10} and $PM_{2.5}$). Particulate matter (PM) is a mixture of tiny particles that vary greatly in shape, size, and chemical composition, and can be comprised of metals, soot, soil, and dust. PM_{10} includes larger, coarse particles, whereas $PM_{2.5}$ includes smaller, fine particles. Sources of course particles include crushing or grinding operations, and dust from paved or unpaved roads. Sources of fine particles include all types of combustion activities (e.g., motor vehicles, power plants, wood burning) and certain industrial processes. Exposure to PM_{10} and $PM_{2.5}$ levels exceeding current standards can result in increased lung- and heart-related respiratory illness. The USEPA has concluded that finer particles are more likely to contribute to health problems than those greater than 10 microns in diameter.

Airborne Lead (Pb). Airborne lead can be inhaled directly or ingested indirectly by consuming lead-contaminated food, water, or non-food materials such as dust or soil. Fetuses, infants, and children are most sensitive to Pb exposure. Pb has been identified as a factor in high blood pressure and heart disease. Exposure to Pb has declined dramatically in the last 10 years as a result of the reduction in Pb in gasoline and paint, and the elimination of Pb from soldered cans.

Hazardous Air Pollutants (HAPs). Hazardous air pollutants are air toxics for which Federal and state ambient air quality standards have not been established. However, the USEPA regulates individual and total HAPs through Maximum Achievable Control Technology (MACT), which determines standards, based upon the maximum degree of emission reduction determined to be achievable.

3.3.1.2 Clean Air Act Amendments

The Clean Air Act Amendments (CAAA) of 1990 place most of the responsibility to achieve compliance with NAAQS on individual states. To this end, USEPA requires each state to prepare a State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all NAAQS. Areas not in compliance with a standard can be declared *nonattainment* areas by USEPA or the appropriate state or local agency. In order to reach *attainment*, NAAQS may not be exceeded more than once per year. A *nonattainment* area can reach *attainment* when NAAQS have been met for a period of ten consecutive years. During this time period, the area is in *transitional attainment*, also termed *maintenance*.

3.3.1.3 State Ambient Air Quality Standards

The North Dakota Department of Health (NDDH), Division of Air Quality, has established the *North Dakota Ambient Air Quality Standards* (NDAAQS) for the USEPA criteria pollutants CO, NO_2, SO_2, PM_{10}, Pb, 8-hour O_3, and hydrogen sulfide (H_2S) (North Dakota Department of Health 2015a).

3.3.2 Existing Conditions

3.3.2.1 Climate

Fargo is located in a continental climate with warm summers and cold winters. Average annual temperature is 42.5 degrees Fahrenheit (°F). July is the warmest month, with an average temperature of 72.5°F, while February is the coldest month, with an average temperature of 7.7°F. Average annual precipitation is 21.2 inches. The wettest months of the year are May through August, where precipitation averages over 2.5 inches per month; the driest months of the year are December through February, all of which average 0.8 inches or less per month. The average annual snowfall for Fargo is 41.8 inches; snowfall season typically runs October through May, with January averaging the highest level of snowfall (High Plains Regional Climate Center 2016).

3.3.2.2 Statewide Air Quality

North Dakota was one of thirteen states designated as an *attainment* area for all criteria pollutants in 2015. During the past 23 years, attainment status has been designated for all criteria pollutants measured in the State, including CO, NO_2, SO_2, $PM_{2.5}$, PM_{10}, Pb, and both 1-hour and 8-hour O_3 (USEPA 2016a).

A total of 16 ambient air quality monitoring stations are located in North Dakota, including nine air quality monitoring sites operated by the NDDH, Division of Air Quality, eight private industry-operated source-specific monitoring sites, and one site operated by the National Park Service (NPS). The *Fargo Northwest* Station, operated by the Division of Air Quality, and located approximately 2 miles west of Hector IAP, monitors CO, NO_2, SO_2, $PM_{2.5}$, PM_{10}, and O_3 (North Dakota Department of Health 2015a).

3.3.2.3 Local Air Quality

Air Quality Control Regions (AQCRs) are outlined in 40 CFR 81, and are based on population and topographic features approximating an air basin. The potential influence of emissions on regional air quality would typically be confined to the air basin in which the emissions occur. Therefore, the area that may be influenced

by the Proposed Action is the Metropolitan Fargo-Moorhead Interstate AQCR, which includes all of Cass County in North Dakota and all of Clay County in Minnesota. USEPA's annual *Air Quality Report* for Cass County indicates that USEPA Air Quality Standards were attained for all criteria pollutants during the past 10 years (USEPA 2016a). In addition, NDDH, Division of Air Quality's *Air Quality Monitoring Data Summary* (North Dakota Department of Health 2015b) indicates that the County is in attainment for all pollutants subject to the NDAAQS and NAAQS. Table 3-3 and Figure 3-5 summarize the NAAQS, NDAAQS, and measured emission levels for Fargo in 2015.

3.3.2.4 Emissions at the 119 WG Installation

The 119 WG installation is located within Cass County, an *attainment area* for all criteria pollutants, and is under the jurisdiction of the NDDH, Division of Air Quality, which publishes statewide air quality and permitting regulation.

Under the CAAA, the Title V Operating Permit Program imposes requirements for air quality permitting on air emission sources. The 119 WG installation would be categorized as a major source under the Title V program if its potential emissions from stationary sources exceed 100 tons per year (tpy) of any of the criteria pollutants; or 10 or 25 tpy of any single or combination of HAPs, respectively. Also under the CAAA, the Aerospace National Emission Standards for Hazardous Air Pollutants (NESHAP) program specifies various provisions for regulated sources, including limits on HAP emissions, compliance demonstrations and performance testing, monitoring, record keeping, and reporting. The installation would be subject to the NESHAP program if potential emissions of any HAP equals or exceeds 10 tpy or any combination of HAPs equals or exceeds 25 tpy.

The 119 WG installation operates under a minor source permit (NDDH 2015c). Primary on-site stationary sources of emissions at the installation include (North Dakota ANG 2016):

- emergency generators; and,
- heating units.

Table 3-3. National Ambient Air Quality Standards, North Dakota Ambient Air Quality Standards, and Measured Emission Levels (2015) in Cass County, North Dakota

Pollutant	Averaging Time	Measured Levels	State Standards (Max. Permissible)	National Standards (Primary)
O_3	8 hour	0.060 ppm	0.075 ppm (147 µg/m³)	0.070 ppm (147 µg/m³)
	1 hour	0.065 ppm	N/A	0.12 ppm (235 µg/m³)
CO	8 hour	0.300 ppm	9.0 ppm (10 mg/m³)	9.0 ppm (10 mg/m³)
	1 hour	0.569 ppm	35 ppm (40 mg/m³)	35 ppm (40 mg/m³)
NO_2	Annual Arithmetic Mean	0.005 ppm	0.053 ppm (100 µg/m³)	0.053 ppm (100 µg/m³)
SO_2	Annual Average	0.000 ppm	N/A	0.030 ppm (80 µg/m³)
	24 hour	0.000 ppm	N/A	0.14 ppm (365 µg/m³)
	1 hour	0.003 ppm	0.075 ppm (196 µg/m³)	0.075 ppm (196 µg/m³)
PM_{10}	Annual Arithmetic Mean	27 µg/m³	50 µg/m³	50 µg/m³
	24 hour	108 µg/m³	150 µg/m³	150 µg/m³
$PM_{2.5}$	Annual Arithmetic Mean	7.9 µg/m³	12 µg/m³	12 µg/m3
	24 hour	19 µg/m³	35 µg/m³	35 µg/m³
Pb	Calendar Quarter	N/A	0.15 µg/m³	0.15 µg/m³
H_2S	Calendar Quarter	N/A	0.02 ppm (28 µg/m³)	N/A
	24 hour	N/A	0.10 ppm (140 µg/m³)	N/A
	1 hour	N/A	0.20 ppm (280 µg/m³)	N/A
	Instantaneous Concentration	N/A	10 ppm (14 mg/m³)	N/A

Notes:
µg/m³ – micrograms per cubic meter
mg/m³ – milligrams per cubic meter
ppm – parts per million
Source: North Dakota Department of Health 2015b; USEPA 2016b

Pollutant	Averaging Time	North Dakota Standards	Federal Standards		
		Concentration	Primary	Secondary	Method
Ozone (O_3)	8 Hour (2008)	0.075 ppm (147 $\mu g/m^3$)	0.070 ppm (1)	Same as Primary Standard	Ultraviolet Photometry
Respirable Particulate Matter (PM_{10})	24 Hour	150 $\mu g/m^3$	150 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	35 $\mu g/m^3$	35 $\mu g/m^3$	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 $\mu g/m^3$	12 $\mu g/m^3$	15 $\mu g/m^3$	
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m^3)	9 ppm	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	35 ppm (40 mg/m^3)	35 ppm		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 $\mu g/m^3$)	53 ppb (2)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	–	100 ppb	None	
Sulfur Dioxide (SO_2)	3 Hour	0.5 ppm (1,309 $\mu g/m^3$)	–	0.5 ppm	Spectrophotometry (Pararosaniline Method)
	1 Hour	0.075 ppm (196 $\mu g/m^3$)	75 ppb (3)	–	
Lead	Rolling 3-Month Average	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$ (4)	Same as Primary Standard	High Volume Sampler and Atomic Absorption

(1) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

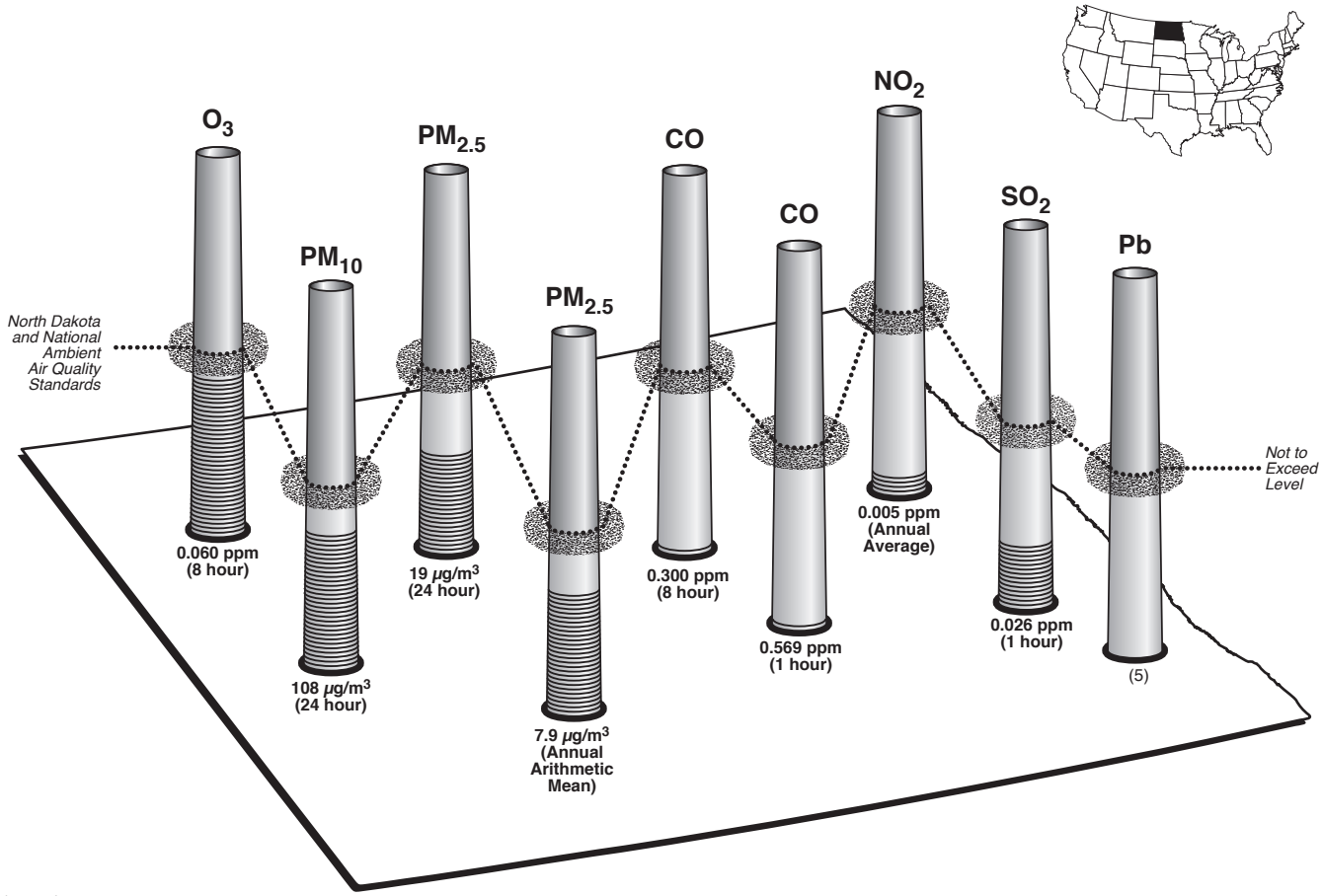
(2) The level of the annual NO2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) The previous SO2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO2 standards or is not meeting the requirements of a SIP call under the previous SO2 standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

(4) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 μg/m3 as a calendar quarter average) also remain in effect.

(5) Not monitored in Cass County.

ppm – parts per million by volume (micromoles of pollutant per mole of gas)
$\mu g/m^3$ – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter
(ppm*molecular weight)/0.0224 = $\mu g/m^3$



Sources: NDDH 2015a; USEPA 2016a.

EA

North Dakota and National Ambient Air Quality Standards and Measured Emission Levels (2014) in Cass County, North Dakota

FIGURE 3-5

The North Dakota ANG's 119 WG air emissions for criteria pollutants of both stationary and mobile sources in the year 2015 was presented within the unit's Air Emissions Inventory Report and depicted in Table 3-4 (North Dakota ANG 2016b). The data present emissions for CO, NO_x, SO_x, VOCs, $PM_{2.5,}$ PM_{10}, and HAPs.

Table 3-4. Emissions at the 119 WG Installation (2015)

	Annual Emissions (tons/year)				North Dakota Title V Permitting Threshold (potential tons/year)
	Actual			Potential	
Pollutant	Stationary	Mobile	Total	Stationary Only	
CO	1.1543	7.8727	9.0270	24.1787	100
NO_x	2.4132	2.7876	5.2008	43.4609	100
PM_{10}	0.2089	0.15823	0.3671	3.2307	100
SO_2	0.0943	0.1572	0.2515	6.5307	100
VOCs	1.1687	1.5272	2.6959	4.8311	100
HAPs	0.0629	0.0633	0.1262	2.7546	10 for a single HAP or 25 for all HAPs combined
$PM_{2.5}$*	0.2033	0.1463	0.3496	3.0209	N/A

Notes:
* There is no Title V threshold for $PM_{2.5}$ emissions
µg/m^3 – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter
ppm – parts per million
Source: North Dakota ANG 2016b.

3.4 NOISE

3.4.1 Definition of Resource

Noise is defined as unwanted sound or, more specifically, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise [FICON] 1992). Human response to noise can vary according to the type and characteristics of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day.

Due to the wide range in sound levels, sound is expressed in decibels (dB), a unit of measure based on a logarithmic scale. A 10 dB increase in noise level corresponds to a 100-percent increase (or doubling) in perceived loudness. As a general rule, a 3 dB change is necessary for noise increases to be noticeable to humans (Bies & Hansen 1988). Sound measurement is further refined by using an A-weighted decibel (dBA) scale that emphasizes the range of sound frequencies that are most audible to the human ear (i.e., between 1,000 and 8,000 cycles per second). Sound frequency is measured in terms of hertz (hz), and the normal human ear can detect sounds ranging from about 20 to 15,000 hz. However, because all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the 1000 to 4000 hz range, the very high and very low frequencies are adjusted to approximate the human ear's lower sensitivity to those frequencies. This is called "A-weighting" and is commonly used in measurement of community environmental noise. Unless otherwise noted, all decibel measurements presented in the following noise analysis are dBA.

Day-night sound level (DNL) is a noise metric that averages A-weighted sound levels over a 24-hour period, with an additional 10-dB penalty added to noise events occurring between 10:00 PM and 7:00 AM. This penalty is intended to compensate for generally lower background noise levels at night and the additional annoyance of nighttime noise events. DNL is the preferred noise metric of the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT), Federal Aviation Administration (FAA), USEPA, Veterans' Administration, and Department of Defense (DoD).

Analyses of aircraft noise exposure and compatible land uses around DoD facilities are normally accomplished using a group of computer-based programs, collectively called NOISEMAP (U.S. Air Force [USAF] 1992). NOISEMAP, through its program named BASEOPS, allows entry of runway coordinates, airfield information, flight tracks, flight profiles (engine thrust settings, altitudes, and speeds) along each flight track for each aircraft, numbers of flight operations, run-up coordinates, run-up profiles, and run-up operations. The FAA's Integrated Noise Model (INM) also allows entry of all of the mentioned parameters and is used to analyze aircraft at public/civilian airports. Given that Hector IAP is a public/civilian airport, civilian aircraft were modeled using INM and NOISEMAP was used to model military aircraft. Outputs of both models were combined to determine noise exposure at Hector IAP.

In airport noise analyses, noise contours are used to help determine compatibility of aircraft operations and local land uses. Although noise resulting from aircraft flight operations represents the greatest contribution to the overall noise environment near the airfield, other noise sources (e.g., highway traffic) may also influence total ambient noise levels. Other activities that may generate substantial amounts of noise at an airport include engine preflight run-ups and aircraft maintenance activities, industrial operations, and construction activities.

Although aircraft maintenance actions and industrial operations may generate large amounts of noise, they are typically confined to the airfield and industrial areas. Construction activities, on the other hand, may occur anywhere on the site and result in disturbance to on-site personnel or off-site noise-sensitive receptors (e.g., housing areas and schools). However, construction noise tends to be localized and temporary and may be reduced through use of special equipment or scheduling restrictions.

Noise levels from flight operations exceeding ambient background noise typically occur beneath main approach and departure corridors, or local air traffic patterns around the airfield, and in areas immediately adjacent to parking ramps and aircraft staging areas. As aircraft take off and gain altitude, their noise contribution drops.

Table 3-5 identifies noise levels associated with some common indoor and outdoor activities and settings. Table 3-5 also indicates the subjective human judgments of noise levels, specifically the perception of noise levels doubling or being halved. For reference purposes, a baseline noise level of 70 dB is described as moderately loud. As can be seen in the table illustrating the logarithmic dB scale, humans perceive an increase of 10 dB as a doubling of loudness, while an increase of 30 dB corresponds with an eight-fold increase in perceived loudness.

3.4.1.1 Noise in the Airfield Environment

The majority of noise pollution at the Hector IAP comes from daily aircraft operations. Aircraft operations are recorded as takeoffs, landings, or closed patterns. Closed patterns are when an aircraft approaches a runway as though planning to land, but then applies power and continues to fly.

3.4.2 Existing Conditions

3.4.2.1 Regional Setting

The noise environment of communities surrounding Hector IAP is characteristic of a low-density agricultural, commercial, and suburban environment–setting that typically experiences noise associated with vehicles on local highways or agricultural activities. According to FICON, quiet suburban communities have an outdoor noise level of 45 to 55 DNL (FICON 1992). Areas adjacent to the Hector IAP support primarily agricultural land uses. Much of the area surrounding the airport is lowly populated with noise levels of correspondingly low magnitude; however, aircraft activity is the dominant noise producer within the region.

Existing Noise Levels

Hector International Airport

Baseline noise contours associated with Hector IAP presented are based on noise modeling that was developed utilizing 2011 military operations and 2013 Terminal Area Forecast (TAF) of civilian aircraft operations (Table 3-6).

Table 3-5. Sound Levels of Typical Noise Sources and Noise Environments

	Over-all Level (Noise level, dB(A))		**Community** (Outdoor)	**Home or Industry** (Indoor)	**Loudness** (Human Judgement of Different Sound Levels)
	120-130	Uncomfortably Loud	Military Jet Aircraft Take-Off With After-Burner From Aircraft Carrier @ 50 ft. (130)	Oxygen Torch (121)	32 times as loud as 70 dB(A)
	110-119		Turbo Fan Aircraft @ Take-Off Power @ 200 ft. (118)	Riveting Machine (110) Rock and Roll Band (108-114)	16 times as loud as 70 dB(A)
	100-109		Boeing 707, DC-8 @ 6080 ft. Before Landing (106), Jet Flyover @ 1000 ft. (103), Bell J-2A Helicopter @ 100 ft. (100)		8 times as loud as 70 dB(A)
	90-99	Very Loud	Power Mower (96) Boeing 707, CD-8 @ 6080 ft. Before Landing (97) Motorcycle @ 25 ft. (90)	Newspaper Press (97)	4 times as loud as 70 dB(A)
	80-89		Car Wash @ 20 ft. (89) Propellor Plane Flyover @ 1000 ft. (88) Diesel Truck, 40 mph @ 50 ft. (84) Diesel Train, 45 mph @ 100 ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	2 times as loud as 70 dB(A)
	70-79	Moderately Loud	High Urban Ambient Sound (80) Passenger Car, 65 mph @ 25 ft. (77) Freeway @ 50 ft. From Pavement Edge @ 10 a.m. (76 +/- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner (70)	
	60-69		Air Conditioning Unit @ 100 ft. (60)	Cash Register @ 10 ft. (65-70)	1/2 as loud as 70 dB(A)
	50-59	Quiet	Large Transformers @ 100 ft. (50)		1/4 as loud as 70 dB(A)
	40-49		Bird Calls (44) Lower Limit of Urban Ambient Sound in daytime (40)		1/8 as loud as 70 dB(A)
		Just Audible	**dB(A) Scale Interrupted**		
	0-10	Threshold of Hearing			

Source: Branch & Beland 1970.

Table 3-6. Baseline Aircraft Operations at Hector International Airport

	Daily Operations	Annual Operations
Civilian	190.4	69,486
Military-Based	24.6	9,000
Military-Transient	4.4	1,606
Total	**219.4**	**80,092**

Sources: FAA 2011; North Dakota ANG 2007b, 2011b

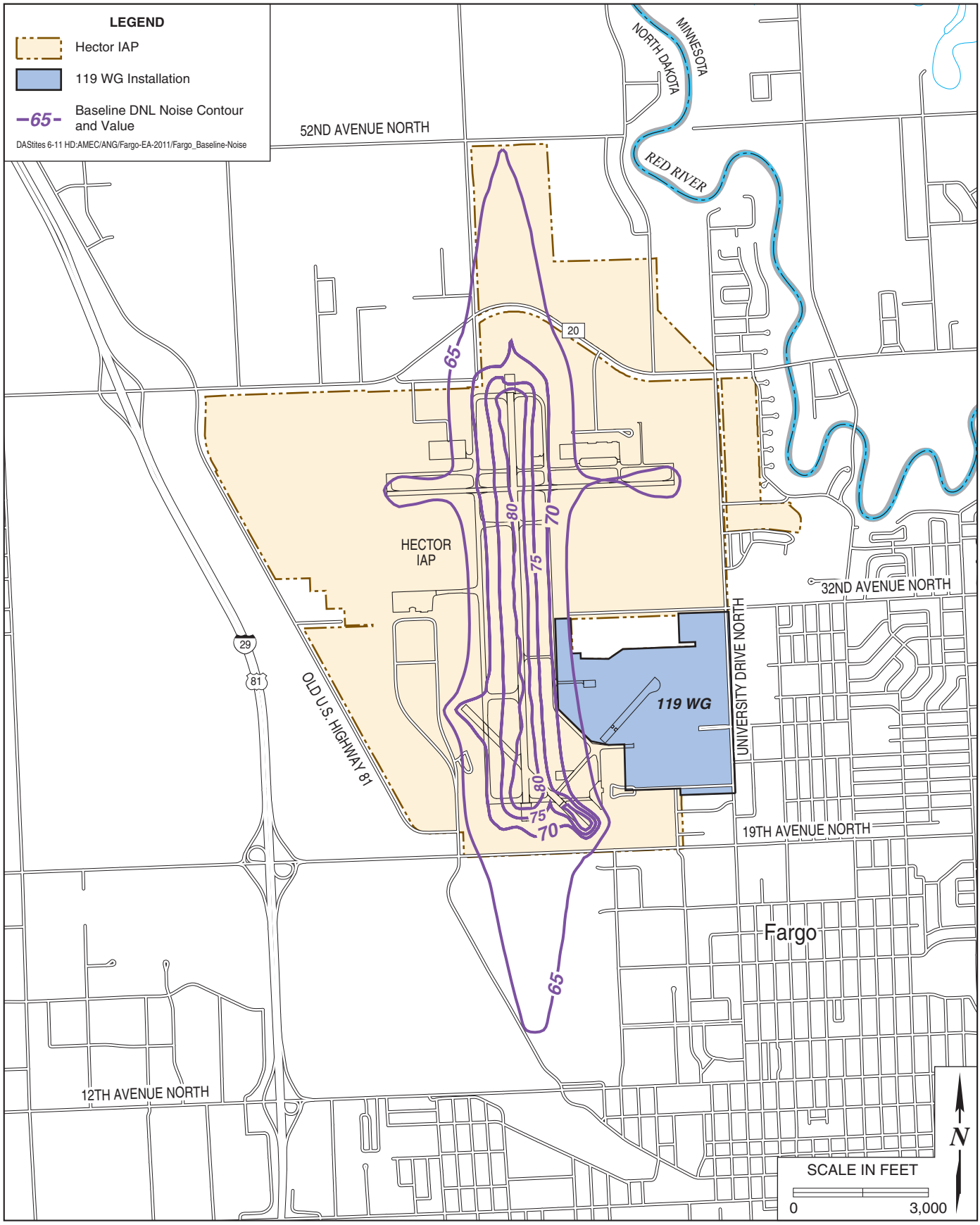
Military aircraft operations included the 119 WG's C-21 based operations, as well as transient C-12 fixed-wing aircraft and UH-1N and UH-60 rotary-wing aircraft (FAA 2011; North Dakota ANG 2007b, 2011b).

On average, there were approximately 219 aircraft operations per day. Military aircraft operations comprise approximately 13 percent of daily aircraft operations while general aviation (both transient and local) accounts for approximately 56 percent of daily operations. The remaining operations include 18 percent air taxi and 13 percent air carrier (FAA 2011; North Dakota ANG 2011b).

Noise contours associated with baseline airport operations above 65 DNL extend beyond the boundaries of Hector IAP. Table 3-7 presents a summary of noise exposure acreage associated with Hector IAP operations. As depicted in Figure 3-6, noise exposure above 75 DNL is entirely within the property of Hector IAP and exposure above 70 DNL beyond the airport property is confined to a roadway and associated right-of-way. Noise contours are concentrated around Runway 18/36 and Runway 09/27.

Table 3-7. Noise Exposure Acreage from Aircraft Operations at Hector International Airport

Noise Level	Total Acreage	Acreage Beyond Airport Boundary
65-69	566.0	141.3
70-74	181.4	1.3
75-79	127.9	0
80+	74.8	0
Total > 65	**950.1**	**142.6**



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Baseline DNL Noise Contours Associated with Aircraft Operations at Hector IAP and the 119 WG Installation

FIGURE 3-6

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

3.5 LAND USE

3.5.1 Definition of Resource

Land cover/land use can be separated into two primary categories: *natural* and *human modified*. *Natural* land cover includes woodlands, rangeland, swampland, and other open or undeveloped areas. *Human-modified* land use includes residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and generally other areas developed from a natural land cover condition. Land use is regulated by management plans, policies, regulations, and ordinances (i.e., zoning) that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

Several siting criteria have been established specific to land development and use at commercial and military airfields. To maintain safety, the USAF has established siting criteria in AFI 32-1026, *Planning and Design of Airfields*, and Air Force Manual 32-1013, *Airfield and Heliport Planning Criteria*, for land development of USAF military installations. These criteria include clear zones, obstruction zones relative to runways, and quantity-distance criteria relative to storage of munitions. While these criteria are related to safety, they are used to assist decision-makers and planners with appropriate siting of facilities on ANG installations. FAA airfield criteria are used at commercial airports and are generally the same as the USAF criteria. In addition, several regulations address security requirements for military bases and have implications on physical layout and design of installations.

3.5.2 Existing Conditions

3.5.2.1 Regional Land Use

The 119 WG installation is located in the City of Fargo, a major population center in Cass County, near the southeastern corner of North Dakota. Cass County is bound on the west by Barnes County, on the north by Steele and Traill counties, on the south by Ransom and Richland counties, and on the east by the State of Minnesota. Agriculture dominates Cass County, comprising over 93 percent of land use; rural areas comprise approximately 3 percent of land use, while small

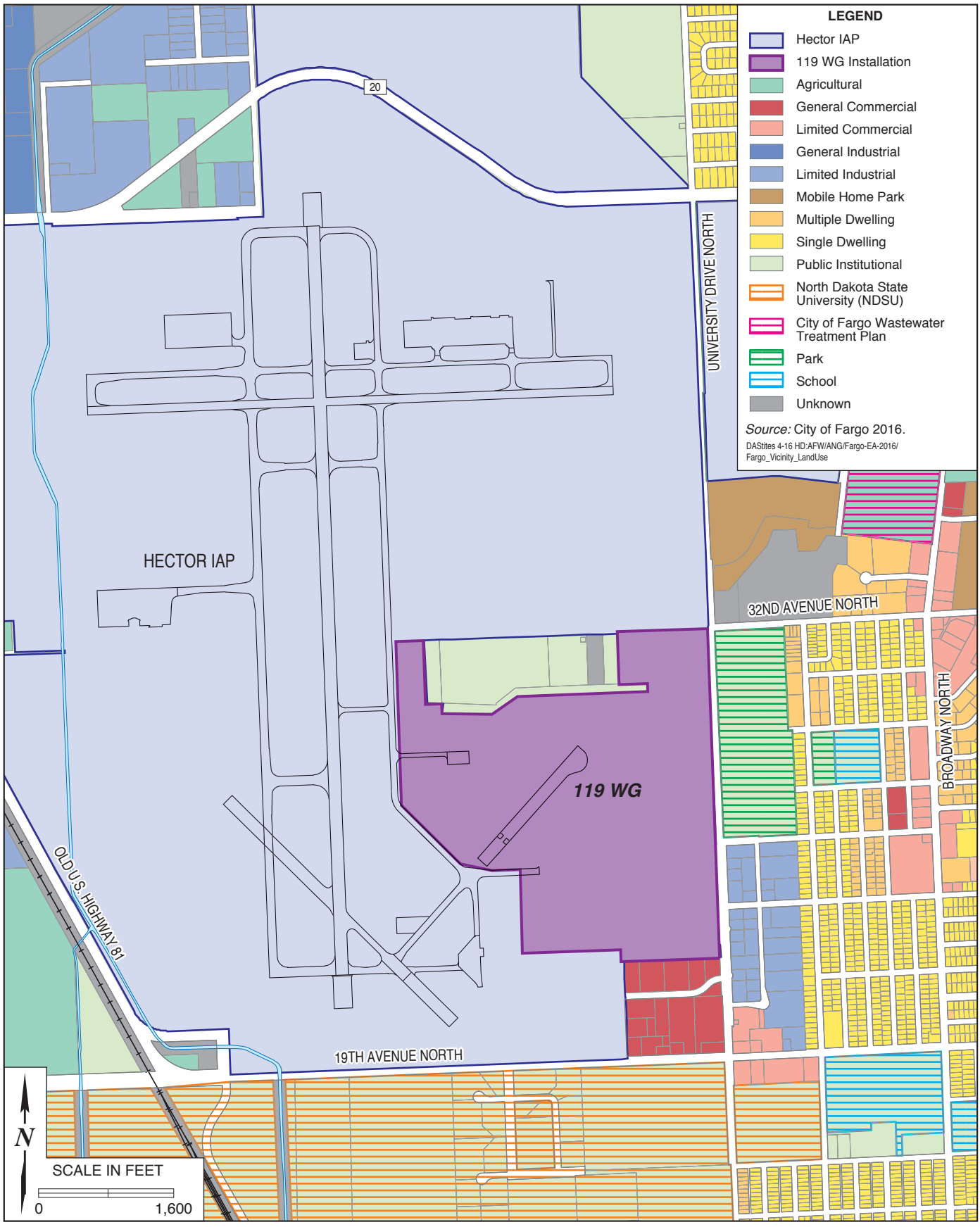
cities and metropolitan areas comprise less than 4 percent of land use (Cass County 2005).

3.5.2.2 Local Land Use

Hector IAP is located in northwestern Fargo, and the 119 WG installation is located at the southeast corner of airport property (Figure 3-7). Both facilities are located within the City of Fargo municipal boundary. The installation is surrounded by the airport to the north, west, and southwest. Adjacent land use south of the installation is comprised primarily of commercially-zoned parcels, including restaurants and retail establishments, and a vacant land immediately adjacent to the installation; agriculture and other research facilities associated with North Dakota State University (NDSU) are located farther to the south and southwest. Adjacent land use southeast of the installation includes various low-density industrial warehouses and residentially-zoned motels; single-family residences, NDSU student housing, and a high school farther to the southeast. Yunker Farm Park is located immediately east of the installation; farther east are single-family residences, and an elementary school and associated park. Vacant residentially-zoned land is located immediately northeast of the installation; farther northeast is a trailer park, various apartment complexes, and the City of Fargo wastewater treatment plant (City of Fargo 2016a).

<u>Local Land Use and Planning Policy</u>

Land use in the vicinity of Hector IAP and the 119 WG installation is regulated by the City of Fargo Planning and Development Department and by the City's Planning Commission. Existing development is subject to the City's *Land Development Code* (City of Fargo 2009), while plans for future growth are outlined in the City's *Comprehensive Policy Plan* (City of Fargo 1995)and *Growth Plan* (City of Fargo 2007). There are no specific City plans for Hector IAP, but the Comprehensive Plan contains a sub-area plan for NDSU and the 19th Avenue North corridor, both of which are located immediately south of the installation.



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Land Use in the Vicinity of Hector IAP and the 119 WG Installation

FIGURE 3-7

Hector International Airport

Land use and planning at Hector IAP is governed by the airport's *Master Plan* (Hector IAP 2002) which contains goals and policies related to current operations and future airport expansion opportunities, as well as the airport's relationship with city planning documents and regulations. Following commencement in 2014, the Municipal Airport Authority is in the process of preparing a Master Plan Update project.

3.5.2.3 Land Use and the Noise Environment

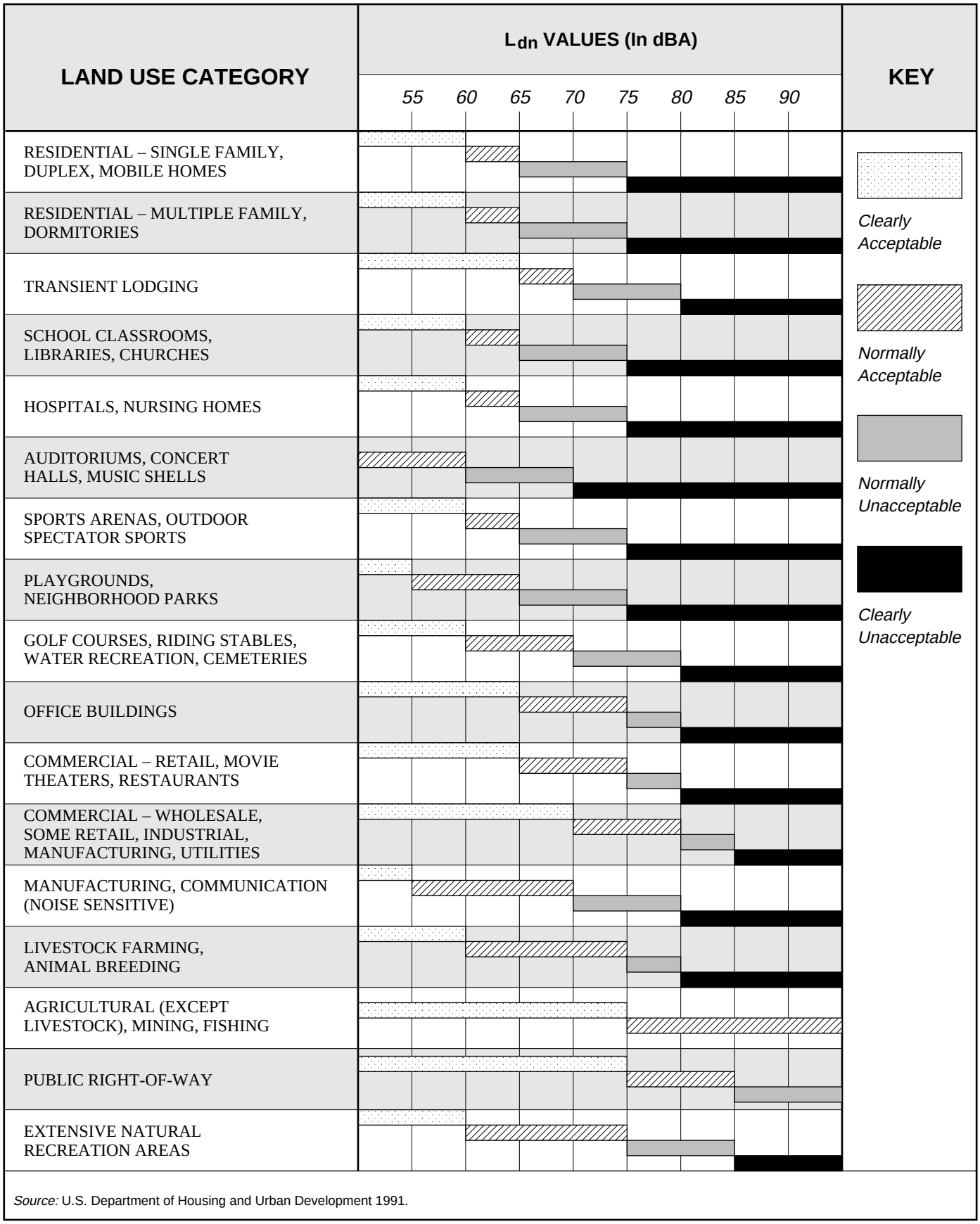
HUD uses land use guidelines established by FICON to determine acceptable levels of noise exposure for various land use categories (Figure 3-8). Land use activities most sensitive to ambient noise are residential, public services, commercial, and cultural and recreation. As described in Section 3.4, *Noise*, noise levels above 65 DNL extend beyond the airport boundary (see Figure 3-6). Approximately three residences to the northwest of the airfield are exposed to noise levels within the 65 to 70 DNL range. The main cantonment area of the 119 WG is below the 65 DNL noise contour. Existing 119 WG land uses are compatible with these noise levels.

3.5.2.4 Land Use at the 119 WG Installation

The 119 WG installation is located within Hector IAP, and occupies approximately 258 acres on the southeast side of the airport. Installation property is owned by the Municipal Airport Authority of the City of Fargo, which leases the property to the USAF. The North Dakota ANG is subsequently licensed by the USAF to use the installation property (National Guard Bureau 2009).

Land Use Plans

The short-, mid-, and long-range development of the 119 WG installation is outlined in the *North Dakota ANG Installation Development Plan* (North Dakota ANG 2010a). The purpose of the Installation Development Plan is to determine existing and future space and facility needs through examination of the 119 WG's



Source: U.S. Department of Housing and Urban Development 1991.

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Recommended Land Use for L_{dn}-Based Noise Zones

3-8

current and future missions and their relationship to development opportunities and potential restrains at the installation. The Installation Development Plan and other North Dakota ANG development plans must be compatible with policy and planning documents established by Hector IAP and the City of Fargo.

3.5.2.5 Land Use Activities

The 119 WG installation contains 47 buildings with a total area of 484,689 square feet. A variety of functional activities take place at the installation, as listed in Table 3-8. In general, compatible land use activities occur adjacent to one another, while potentially incompatible land use activities have been located in peripheral areas.

Table 3-8. Summary of Land Use Activities at the 119 WG Installation

Land Use Activity	Location
Aircraft/AGE Maintenance & Storage Facilities; Aprons/Taxiways	Southeast
Communications Facilities	Northeast
Fire Training & Rapid Runway Repair Areas	Central
Medical & Dining Facilities	Southeast
Munitions/Magazine Shops & Storage	Northwest
Petroleum/Liquid Fuels Storage & Pump Stations	Northeast
Vehicle/Base Engineering Maintenance & Storage Facilities	Northeast

Source: North Dakota ANG 2007b

3.6 GEOLOGICAL RESOURCES

3.6.1 Definition of Resource

Geological resources consist of surface and subsurface materials and their properties. Principal geologic factors affecting the ability to support structural development are seismic properties (i.e., potential for subsurface shifting, faulting, or crustal disturbance), soil stability, and topography. The term *soil*, in general, refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability for the ground to support man-made structures. Soils typically are described in terms of their complex type, slope, physical characteristics, and relative compatibility or constraining properties with regard to particular construction activities and types of land use. Topography is the change in elevation over the surface of a land area. An area's topography is influenced by many factors, including human activity, underlying geologic material, seismic activity, climatic conditions, and erosion. A discussion of topography typically encompasses a description of surface elevations, slope, and distinct physiographic features (e.g., mountains) and their influence on human activities.

3.6.2 Existing Conditions

3.6.2.1 Regional Setting

Geology

Cass County is located within the Western Lake section of the Central Lowland physiographic province of the U.S. (North Dakota ANG 2011a). The eastern three-fourths of the County is comprised of the Red River Valley, a flat plain formed by sedimentation from the glacial Lake Agassiz, which occupied the area during the late Pleistocene Epoch (15,000 to 10,000 years ago). The Valley's central portion contains flat lake bottom silt and clay deposits, while the edges are characterized by wave-eroded scarps and beaches marking former shorelines (Cass County Government 2005; North Dakota Geological Survey 2007).

The remainder of the County is made up of the Glaciated Plains, an area of gently sloping hills formed of sediment accumulated during Wisconsinan Era glaciation (70,000 to 10,000 years ago). The plains are characterized by loose accumulations of rock and sediment contrasted by rigid shorelines of former glacial lakes and meltwater channels (Cass County Government 2005; North Dakota Geological Survey 2007).

Topography

The Red River Valley portion of Cass County is characterized by flat lake bottom silt and clay deposits flanked at the western edge by scarps and beaches marking former shorelines. Elevation is intensely level, with most valley areas varying only from 900 to 950 feet above mean sea level (msl); some former shoreline areas rise as high as 1,050 feet above msl, while eastern portions of the County near the Red River are as low as 860 feet above msl (Cass County Government 2005; North Dakota Geological Survey 2007).

Topography of the Glaciated Plains portion of the County is more varied; this area is marked by sloping hills contrasted by rigid shorelines of former glacial lakes and meltwater channels. Elevation is varied, ranging from 1,050 to 1,250 above msl (Cass County Government 2005; North Dakota Geological Survey 2007).

Soils

The soils of Cass County roughly correspond to the physiographic divisions contained within the County. The flat plain portions of the Red River Valley are comprised mostly of soils from the Colvin, Fargo, and Hegne soil series. All three soils are considered fine textured sediments that are deep, poorly drained, and slowly to moderately permeable (Cass County Government 2005).

The former shoreline areas of the Red River Valley consist mostly of the Embden and Gardena Series soils; both are medium textured sediments that are deep, moderately well-drained, and moderately permeable. The Glacial Plains portion of Cass County is comprised largely of Barnes and Hamerly Series soils. Both soils are deep, moderately permeable fine to medium textured glacial tills; the Barnes

Series soils are considered well-drained, while soils of the Hamerly Series are somewhat poorly drained (Cass County Government 2005).

3.6.2.2 119 WG Installation

Geology

The geological strata under the vicinity of Hector IAP and the 119 WG installation is comprised of three distinct layers: granitic bedrock, glacial sediments, and Lake Agassiz sediments. The granitic bedrock layer is situated at depths of 200 to 300 feet below ground level (bgl); the bedrock originated from Pre-Cambrian Era (4.5 billion to 540 million years ago) volcanic deposits (North Dakota State University 2001).

Glacial deposits overlay the granitic bedrock; the deposits consist of Wisconsinan era (70,000 to 10,000 years ago) till varying in depth from 100 to 200 feet. Above the glacial deposits are two sublayers of Lake Agassiz sediments deposited during the late Pleistocene Epoch (15,000 to 10,000 years ago). The first sublayer, the Brenna/Argusville Formations, is comprised of clays situated at depths of 20 to 105 feet bgl; the second sublayer is the Sherack Formation, silty clays situated from the surface to depths of approximately 20 feet bgl (North Dakota State University 2001).

The two sublayers of Lake Agassiz sediment are inherently weak and cannot support larger load structures without possible slump, slippage, or foundation shifting. To strengthen building support, concrete caissons are often constructed between surficial structural foundations and the underlying glacial deposits situated at depths of 105 feet bgl (Cass County Government 2005; North Dakota State University 2001).

Topography

Based on USGS maps, the entire installation is located at between approximately 890 to 895 feet above msl. Surrounding topography is very level, with a majority of areas between 880 and 900 feet above msl; some areas near the Red River are as low as 865 feet above msl.

Soils

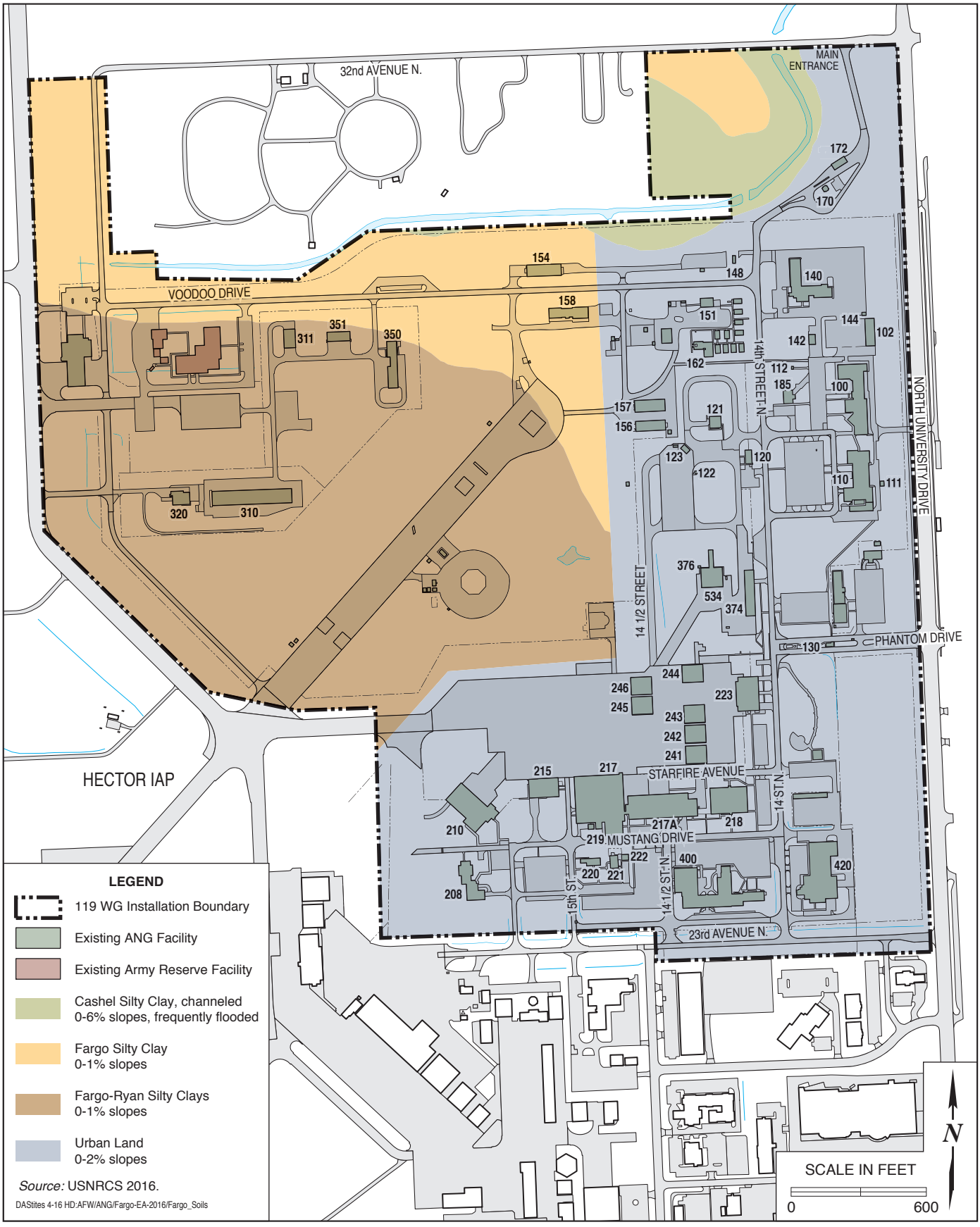
Based on surveys conducted by the U.S. National Resources Conservation Service (USNRCS), soils underlying the 119 WG installation include: *Cashel Silty Clay, Channeled*, 0 to 6 percent slopes; *Fargo-Ryan Silty Clay*, 0 to 1 percent slopes; *Fargo Silty Clay*, 0 to 1 percent slopes; and, *Urban Land Soils*, slopes undefined. The predominant naturally-occurring soil found at the installation is the Fargo-Ryan Silty Clay; these soils are generally not well suited for development due to their poor drainage. In contrast, the Urban Land Soils found in a majority of the southern and eastern portions of the installation are considered well-suited for development (U.S. Natural Resources Conservation Service 2016). Figure 3-9 shows the soil types at the installation.

Cashel Silty Clay, Channeled, 0 to 6 Percent Slopes. Cashel Silty Clay consists mostly of Cashel, Frequently Flooded soils. In general, Cashel Silty Clay soil frequently floods and is somewhat poorly drained, making it a constraint to intensive development. A small area of soil located in the northeast portion of the installation is classified as Cashel Silty Clay (U.S. Natural Resources Conservation Service 2016).

Fargo-Ryan Silty Clay, 0 to 1 Percent Slopes. Fargo-Ryan Silty Clay is the predominant naturally occurring soil found at the installation. The major components of Fargo-Ryan Silty Clay include a mixture of Fargo and Ryan soils. In general, Fargo-Ryan Silty Clay soil rarely floods, but it frequently ponds due to its poor drainage, thereby constraining its ability to support intensive development. A majority of the soils in the western portion of the installation consist of Fargo-Ryan Silty Clay (U.S. Natural Resources Conservation Service 2016).

Fargo Silty Clay, 0 to 1 Percent Slopes. Fargo Silty Clay is similar to Fargo-Ryan Silty Clay, but consists mostly of Fargo soils, with some minor components of Ryan and other soils. Fargo Silty Clay soil rarely floods, but frequently ponds due to poor drainage, which constrains the soil's ability to support intensive development. Small areas of soil in the northwest portion of the installation are classified as Fargo Silty Clay (U.S. Natural Resources Conservation Service 2016).

Urban Land Soils, Slopes Undefined. Urban Land Soils are the predominant soil type at the installation. The soil is a mixture of unidentified soils that are covered by development, which does not allow accurate sampling. It is assumed such soils were heavily modified and no longer resemble their original form and composition; they are capable of supporting intensive development. A majority of the soils located in the southern and eastern portions of the installation are classified as Urban Land Soils (U.S. Natural Resources Conservation Service 2016).



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Surface Soils at the 119 WG Installation

FIGURE 3-9

3.7 WATER RESOURCES

3.7.1 Definition of Resource

Water resources analyzed in this EA include surface water and groundwater resources. The quality and availability of surface and groundwater and potential for flooding are addressed in this section. Surface water resources comprise lakes, rivers, and streams and are important for a variety of reasons including ecological, economic, recreational, aesthetic, and human health. Groundwater comprises subsurface hydrologic resources and is an essential resource in many areas; groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and USEPA as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR 328.3 [b]; 1984). Wetlands provide a variety of functions including groundwater recharge and discharge; flood flow alteration; sediment stabilization; sediment and toxicant retention; nutrient removal and transformation; aquatic and terrestrial diversity and abundance; and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation). *Hydrophytic vegetation* is classified by the estimated probability of occurrence in wetland versus upland (non-wetland) areas throughout its distribution. *Hydric soils* are those that are saturated, flooded, or ponded for sufficient periods during the growing season and that develop anaerobic conditions in their upper horizons (i.e., layers). *Wetland hydrology* is determined by the frequency and duration of inundation and soil saturation; permanent or periodic water inundation or soil saturation is considered a significant force in wetland establishment and proliferation. Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and Executive Order 11990, *Protection of Wetlands.*

Other issues relevant to water resources include watershed areas affected by existing and potential runoff and hazards associated with 100-year floodplains. Floodplains are belts of low, level ground present on one or both sides of a stream channel and are subject to either periodic or infrequent inundation by flood water. Inundation dangers associated with floodplains have prompted Federal, state, and local legislation that largely limits development in these areas largely to recreation and preservation activities.

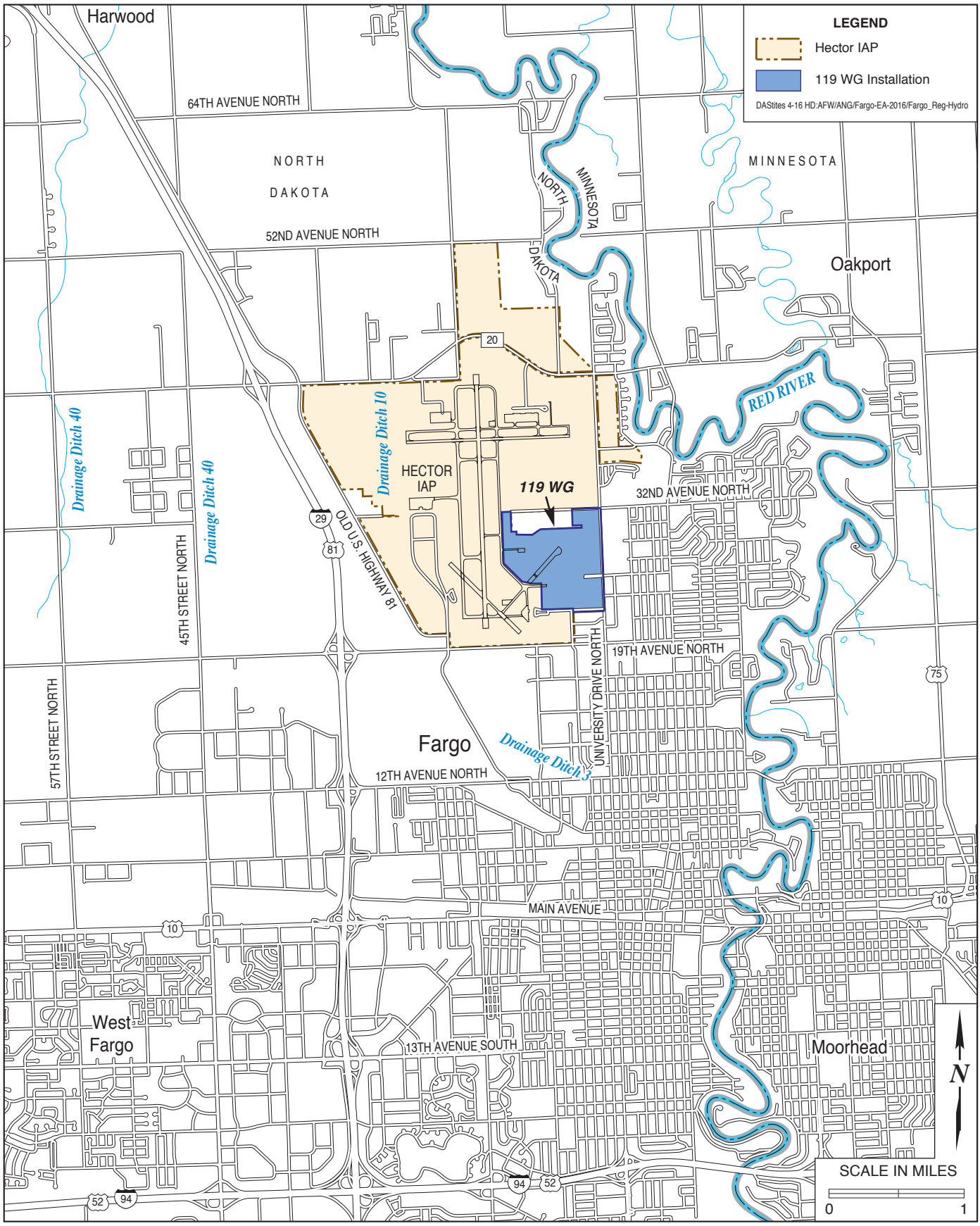
3.7.2 Existing Conditions

3.7.2.1 Regional Setting

Surface Water

All streams in Cass County flow into the Red River of the North (Red River). The Red River commences at the confluence of the Bois de Sioux and Otter Tail Rivers near the City of Wahpeton, North Dakota, located approximately 45 miles south of Fargo. The Red River proceeds north as the divisor between North Dakota and Minnesota, passing between Fargo and the nearby City of Moorhead, Minnesota; the river continues into the province of Manitoba, Canada, eventually terminating at Lake Winnipeg. The Red River and Lake Winnipeg are part of the Nelson River Watershed, a 400,000-square mile area of north- and east-trending rivers, which empty into the Hudson Bay; a majority of the watershed is located in central Canada, but it also comprises the northeast portion of North Dakota and northwest portion of Minnesota (Revenga et al. 1998).

The primary surface water feature in the vicinity of the 119 WG installation is the Red River, located approximately 1 mile northwest of installation property (Figure 3-10). A major unnamed drainage channel runs along the western perimeter of Hector IAP, eventually terminating at the Red River approximately 3 miles north of the installation. A modified creek channel runs along the northern perimeter of the installation, also eventually terminating at the Red River approximately 1 mile northwest of installation property. In addition, there are six City of Fargo overflow sewage treatment lagoons located approximately 3 miles northwest of the installation (Chamber of Commerce of Fargo-Moorhead 2016; City of Fargo 2016b).



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Surface Water Features in the Vicinity of Hector IAP and the 119 WG

FIGURE 3-10

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Groundwater

Cass County is underlain by three large aquifers: the Page Aquifer, the Sheyenne Delta Aquifer, and the West Fargo Aquifer System (WFAS). The WFAS is comprised of nine smaller aquifer units, all of which underlay western portions of the Fargo metropolitan area. The aquifers exist in glacial till deposits located beneath 60 to 90 feet of highly impermeable clay sediments from the former Lake Agassiz. The clay sediments limit aquifer recharge, but their impermeability also reduces the likelihood of groundwater contamination (Cass County Government 2005).

Wetlands

Wetlands represent approximately 5 percent of the land area in North Dakota. A majority of the State's wetlands are *prairie potholes*, which provide key nesting and feeding habitats for migratory waterfowl (U.S. Geological Survey 1997). National Wetlands Inventory (NWI) maps indicate that a majority of wetlands in Cass County are classified as *freshwater emergent* (USFWS 2016a).

3.7.2.2 119 WG Installation

Surface Water

There are no natural drainage systems at the 119 WG installation (refer to Figure 3-10). Surface water features at the installation are limited to an intermittent ditch running along the western perimeter and a jurisdictional modified creek channel running along the northern perimeter. Other on-installation drainages include a series of storm sewers, culverts, and open drainage ditches (National Guard Bureau 2009). All on-installation drainages eventually flow into the Red River (North Dakota ANG 2010a).

The NDDH has issued a *National Pollutant Discharge Elimination System* (NPDES) general storm water permit for industrial storm water at the 119 WG installation. The installation also operates under a *Storm Water Pollution Prevention Plan* (SWPPP) which provides engineering and management strategy designed to improve the quality of storm water runoff from the installation and thereby

improve the quality of receiving waters (North Dakota Department of Health 2015c).

Groundwater

Two WFAS aquifer units – the Fargo and West Fargo Aquifers – are present in the vicinity of Hector IAP and the 119 WG installation. The aquifers exist in glacial till deposits located beneath 60 to 90 feet of highly impermeable clay sediments (North Dakota ANG 1999). The sediments limit groundwater recharge, but also reduce the likelihood of groundwater contamination (Cass County Government 2005). The availability of groundwater is limited in the vicinity of the 119 WG installation; as a result, there are no groundwater wells located within 3 miles of installation property boundaries (North Dakota Department of Health 2015b).

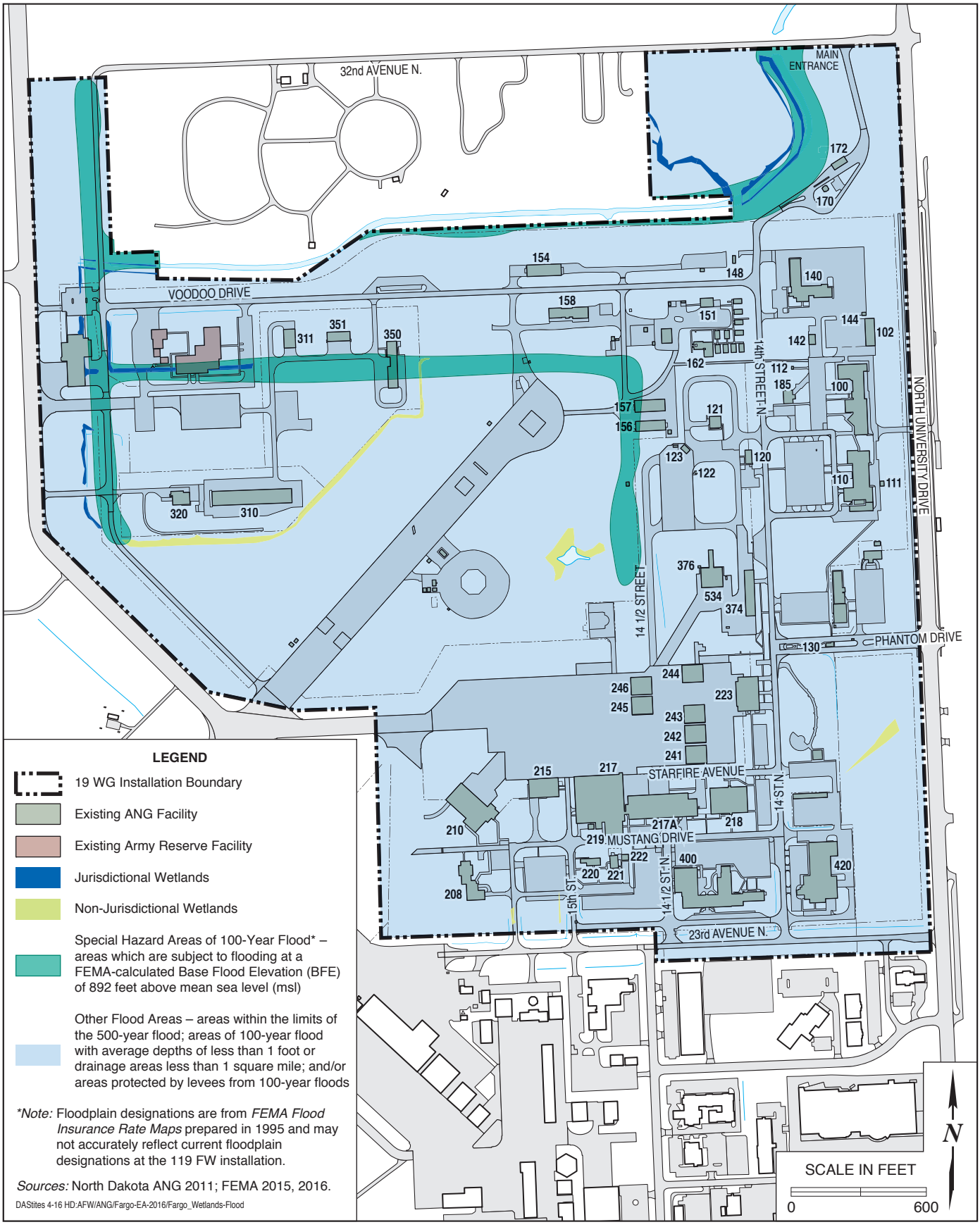
Wetlands

According to a wetland delineation conducted in 2009, a total of eight wetlands were identified at the 119 WG installation (Figure 3-11). Three wetlands, totaling 1.63 acres, were determined likely to be jurisdictional under Section 404 of the Federal Clean Water Act. Five wetlands, totaling 1.61 acres, did not appear to have surficial connections to other wetlands or surface water resources, and are presumed to be isolated and are therefore non-jurisdictional. Wetland hydrology in the majority of the 119 WG installation was assumed to be both surface- and groundwater-driven (North Dakota ANG 2009b).

One jurisdictional perennial stream was mapped in the northern part of the installation. Surface water connections were primarily identified as culverts, which connect flow between the manmade channels designed to convey surface runoff from adjacent areas (North Dakota ANG 2009b)

Floodplains

Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA) indicate the presence of floodplains at the 119 WG installation (refer to Figure 3-11). A small portion of floodplain areas are classified as *Zone AE*



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Wetlands and Floodplains at the 119 WG Installation

FIGURE 3-11

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Special Hazard Areas of 100-Year Flood and are subject to flooding at a FEMA-calculated Base Flood Elevation (BFE) of 892 feet above msl (FEMA 2016). A total of about 15.99 acres of installation property are classified as *Zone AE* floodplains, including modified drainage areas located to the east and north of Former Runway 03/21, and a drainage ditch, which runs parallel to the installation's western perimeter. In addition, the modified creek channel, which runs along the installation's northern perimeter, is classified as Zone AE (FEMA 2016).

The remainder of the installation is classified by FEMA as a *Zone X Other Flood Area* (FEMA 2016). *Zone X* floodplains are defined as areas within the limits of the 500-year flood; areas of 100-year flood with average depths of less than 1 foot or drainage areas less than 1 square mile; and/or, areas protected by levees from 100-year floods (FEMA 2015).

3.8 BIOLOGICAL RESOURCES

3.8.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur. Sensitive biological resources are defined as those plant and animal species listed as threatened or endangered, or proposed as such, by the USFWS or North Dakota Game and Fish Department (NDGFD). The *Federal Endangered Species Act* (ESA) of 1973 protects listed species against killing, harming, harassment, or any action that may damage their habitat. Federal Species of Concern are not protected by law; however, these species could become listed and protected at any time.

Migratory birds, as listed in 50 CFR 10.13, are ecologically and economically important to the U.S. Recreational activities, including bird watching, studying, feeding, and hunting, are practiced by many Americans. In 2001, Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued to focus attention of Federal agencies on the environmental effects to migratory bird species and, where feasible, implement policies and programs, which support the conservation and protection of migratory birds.

3.8.2 Existing Conditions

3.8.2.1 Regional Setting

The landscape of Cass County consists mostly of agricultural crops, with limited natural areas of grassland-dominated prairies; there are few wooded areas or trees. The eastern three-fourths of the County are comprised of the flat Red River Valley, while the remainder consists of the Glaciated Plains, an area of gently sloping hills. The County is part of the Interior Plains physiographic region of the North American continent (Cass County Government 2005).

Vegetation

Cass County was once covered almost completely by long prairie grass. The grass provided a habitat for numerous wildlife species, and its deep roots largely

prevented erosion and runoff. Removal of the grass and replacement with agricultural crops largely altered the County's natural landscape; today, only limited areas of natural grasslands remain (Cass County Government 2005). Present grassland vegetation is characteristic of a mixed-grass prairie and is composed of prairie dropseed grass, big and little bluestem grasses, switchgrass, slender wheatgrass, porcupine grass, fescue and meadow sedge grasses, blue-eyed grass, mat muhly grass, western prairie-fringed orchid, meadow anemone, wild licorice, prairie blazing star, tall goldenrod, black-eyed susan, white sage, and prairie cinquefoil (North Dakota Game and Fish Department 2015).

Wildlife

Cass County's once abundant prairie grasses supported a vast number of wildlife species, including wolves, prairie dogs, elk, black and grizzly bears, and bison; these species disappeared from the County as grasslands were removed. Cass County is located in the Mississippi Flyway, a semi-annual corridor used by birds to migrate between breeding grounds in the north and wintering grounds to the south. The County's vegetation, marshlands, and wetlands provide an ideal habitat during the migration (Cass County Government 2005).

Threatened and Endangered Species

Threatened and endangered species are federally protected plants and animals that are in danger of becoming extinct without protection. These species may be rare because of specialized habitat needs or habitat destruction. The ESA protects listed species against killing, harming, harassment, or any action that may damage their habitat. There are currently three federally-endangered species (Whooping Crane, Gray Wolf, and Poweshiek Skipperling), and three federally-threatened listed species (Western Prairie Fringed Orchid, Dakota Skipper and Northern Long-Eared Bat) in Cass County by the USFWS (USFWS 2016b).

The NDGFD developed a *State Wildlife Action Plan (SWAP)* in 2015 to address the protection of species considered of special ecological value to North Dakota. The SWAP focuses on 115 species commonly found in the State. Each species is prioritized based upon the amount of support it receives from USFWS and other conservation efforts, with the greatest priority granted to those species receiving

the least outside support. Species are also prioritized based upon their likelihood of occurrence in North Dakota. Species classified as SWAP *Level I* are considered by the NDGFD as of the highest conservation priority due to their high rate of occurrence in North Dakota, their declining status, and/or lack of support from other agencies. A total of 36 Level I species are known to contain primary habitat ranges within North Dakota, including 19 bird, four amphibian and reptile, four fish, two invertebrate, two mollusk and four mammalian species (North Dakota Game and Fish Department 2015). Table 3-9 summarizes the SWAP Level I species of conservation priority.

3.8.2.2 Hector IAP and the 119 WG Installation

The 119 WG installation is situated on approximately 258 acres of Hector IAP property. Development of the installation and airport, and nearby agricultural activities, has removed much of the historic, native vegetative cover and replaced it with non-native landscaping.

Vegetation

Most of the native vegetation at Hector IAP and the 119 WG installation has been removed and replanted with non-native grass species such as wheatgrass, broom grass, and alfalfa. The airport and installation are frequently mowed for weed control, appearance, and prevention of bird attraction (North Dakota ANG 1999).

Wildlife

There is virtually no habitat suitable for wildlife at Hector IAP or the installation due to the high level of previous habitat disturbance on these properties. No riparian areas or other significant wildlife habitat occur at Hector IAP or the installation; the vast majority of land area is comprised of manicured landscaping or short grass. Wildlife species found at the installation are mostly limited to those which have adapted to high levels of human activity and disturbance, including small birds such as the cowbird, American kestrel, and Western meadowlark, as well as small mammals such as the pocket gopher, white-tailed jackrabbit, and red fox (North Dakota ANG 1999).

Table 3-9. North Dakota Game and Fish Department State Wildlife Action Plan Level I Species of Conservation Priority 2015

Common Name	Scientific Name
Birds	
American Bittern	*Botaurus lentiginosus*
Baird's Sparrow	*Ammodramus bairdii*
Black Tern	*Chlidonias niger*
Black-billed Cuckoo	*Coccyzus erythropthalmus*
Chestnut-collared Longspur	*Calcarius ornatus*
Ferruginous Hawk	*Buteo regalis*
Franklin's Gull	*Larus pipixcan*
Grasshopper Sparrow	*Ammodramus savannarum*
Greater Sage Grouse	*Centrocercus urophasianus*
Horned Grebe	*Podiceps auritus*
Lark Bunting	*Calamospiza melanocorys*
Long-billed Curlew	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*
Red-headed Woodpecker	*Melanerpes ertythropthalmus*
Sprague's Pipit	*Anthus spragueii*
Swainson's Hawk	*Buteo swainsoni*
Wilson's Phalarope	*Phalaropus tricolor*
Yellow Rail	*Coturnicops noveboracensis*
Amphibians and Reptiles	
Canadian Toad	*Bufo hemiophrys*
Plains Spadefoot	*Spea bombifrons*
Smooth Green Snake	*Liochlorophis vernalis*
Western Hognose Snake	*Heterodon nasicus*
Fish	
Blue Sucker	*Cycleptus elongates*
Northern Pearl Dace	*Margariscus nachtriebi*
Sicklefin Chub	*Marcrhybopsis meeki*
Sturgeon Chub	*Marcrhybopsis gelida*
Mollusks	
Creek Heelsplitter	*Lasmigona compressa*
Pink Papershell	*Potamilus ohiensis*
Invertebrates	
Monarch Butterfly	*Dnus plexippus*
Regal Fritillary	*Speyeria idalia*

Table 3-9. North Dakota Game and Fish Department State Wildlife Action Plan Level I Species of Conservation Priority 2015 (Continued)

Common Name	Scientific Name
Mammals	
Big Brown Bat	*Eptesicus fuscus*
Black Tailed Prairie Dog	*Cynomys ludovicianius*
Little Brown Bat	*Myotis lucifugus*
Northern Long-Eared Bat	*Myotis septentrionalis*
Townsend's Big-eared Bat	*Corynorhinus townsendii*

Source: North Dakota Game and Fish Department 2015

Threatened and Endangered Species

There are currently three species listed under the ESA are known to occur in Cass County: the whooping crane (*Grus americana*), the gray wolf (*Canis lupus*) and Northern Long-Eared Bat (*Myotis septentrionalis)* (USFWS 2015, 2016b). No suitable habitat for either of the species occurs at the 119 WG installation (National Guard Bureau 2009). Several USFWS-listed migratory bird species have the potential to occur in the installation vicinity as transient (i.e., migrating) visitors; however, none are known to occur in the area or have been observed on installation property (North Dakota ANG 1999).

3.9 TRANSPORTATION AND CIRCULATION

3.9.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a road and highway network. Primary roads are principal arterials, such as major interstates, designed to move traffic and not necessarily to provide access to all adjacent areas. Secondary roads are arterials such as rural routes and major surface streets, which provide access to residential and commercial areas, hospitals, and schools.

3.9.2 Existing Conditions

3.9.2.1 Regional and Local Circulation

Hector IAP is located in the City of Fargo in Cass County, North Dakota, adjacent to the eastern border of the State. Fargo is served by Interstate Highway (I)-29, which begins at the Canadian border south of Winnipeg, Manitoba, travels through the western portion of Fargo, and continues south through North and South Dakota, Iowa, and Missouri, with an eventual terminus near Kansas City. I-94 commences in Billings, Montana, travels through the southern portion of Fargo, and continues east through Minnesota and Wisconsin, with an eventually terminus in the City of Milwaukee.

U.S. Federal Highway (US)-10 serves the area; the highway begins in central Fargo, and travels east through Minnesota, Wisconsin, and over Lake Michigan (via ferry service), with an eventual terminus in central Michigan. US-81 is a primary north-south route, which serves the area; the highway begins at the Canadian border, travels through central Fargo, and continues south through North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas, with an eventual terminus near the City of Fort Worth. US-75 also serves the area; the highway begins at the Canadian border, travels just east of Fargo in the City of Moorhead, Minnesota, and continues south through Iowa, Nebraska, Kansas, Oklahoma, and Texas, with an eventual terminus near the City of Dallas.

Mass transit in the Fargo metropolitan region is provided by airline, rail, and motor transportation systems. Hector IAP served nearly 860,000 passengers in 2015, with four airlines providing regularly-scheduled commercial service (Hector IAP 2016a). Amtrak provides passenger rail service via a train station located in Fargo's Central Business District (Amtrak 2016). Fargo-Moorhead Metro Area Transit (MAT) serves the area with over a dozen bus routes (Fargo-Moorhead MAT 2015).

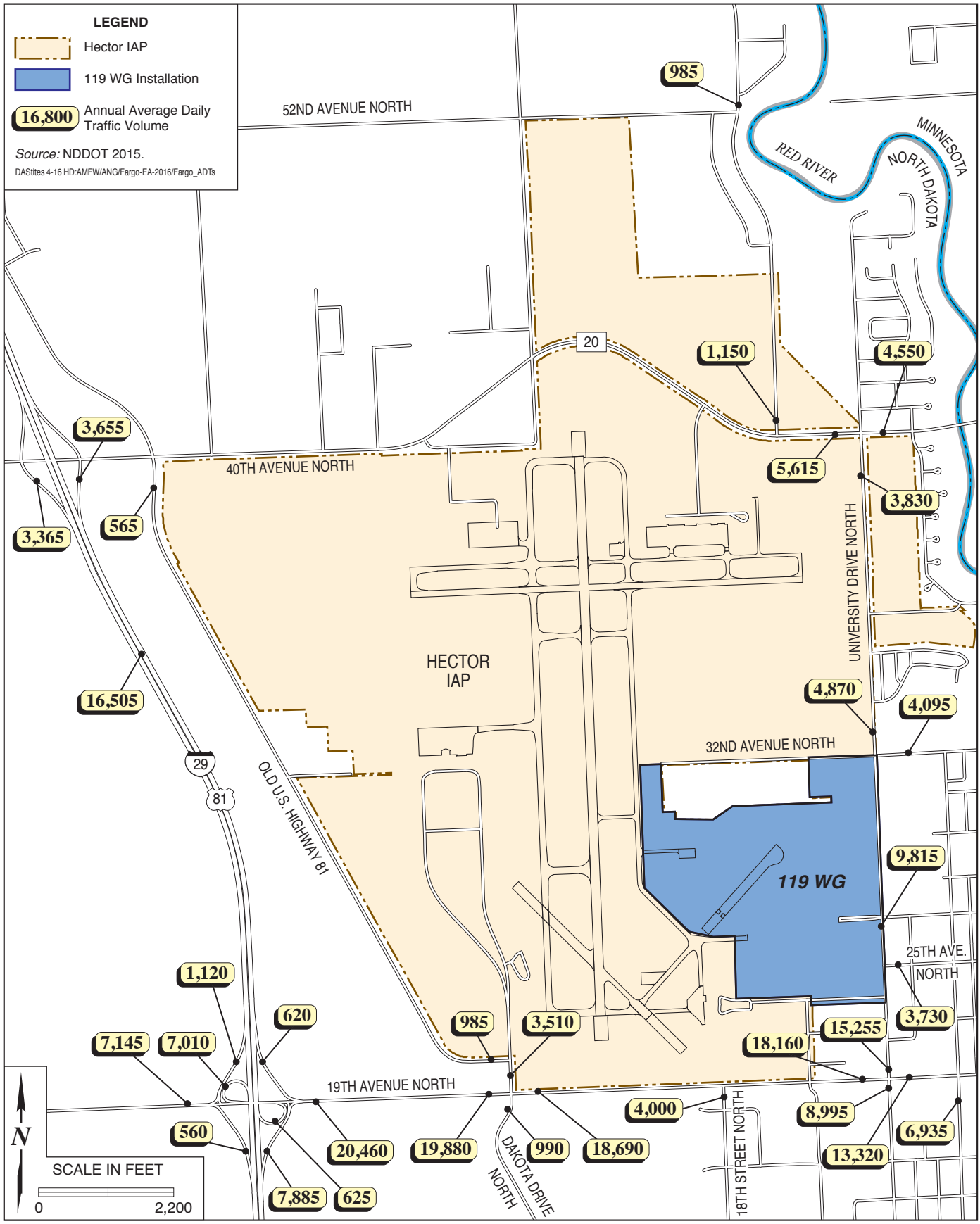
Regional access to Hector IAP is provided by a number of roadways. I-29 travels approximately 1 mile west of the airport; two major east-west thoroughfares, 19th Avenue North and 40th Avenue North, are respectively connected to I-29 via Exits 67 and 69. University Drive North is a major north-south thoroughfare, which begins in central Fargo, travels east of the airport, and terminates at 40th Avenue North. Access to the Hector IAP passenger terminal is provided via Dakota Drive North, which intersects with 19th Avenue North. Access to general aviation and U.S. Customs facilities is provided via 23rd Avenue North and 16th Street North, which intersect with University Drive North and 19th Avenue North, respectively. Access to airport cargo facilities is provided via a number of access points along 40th Avenue North, and 32nd Avenue North, which intersects with University Drive North.

The regional transportation network and the estimated annual average daily traffic (ADT) volumes for 2015 near Hector IAP are presented in Figure 3-12.

3.9.2.2 Circulation at the 119 WG

Access

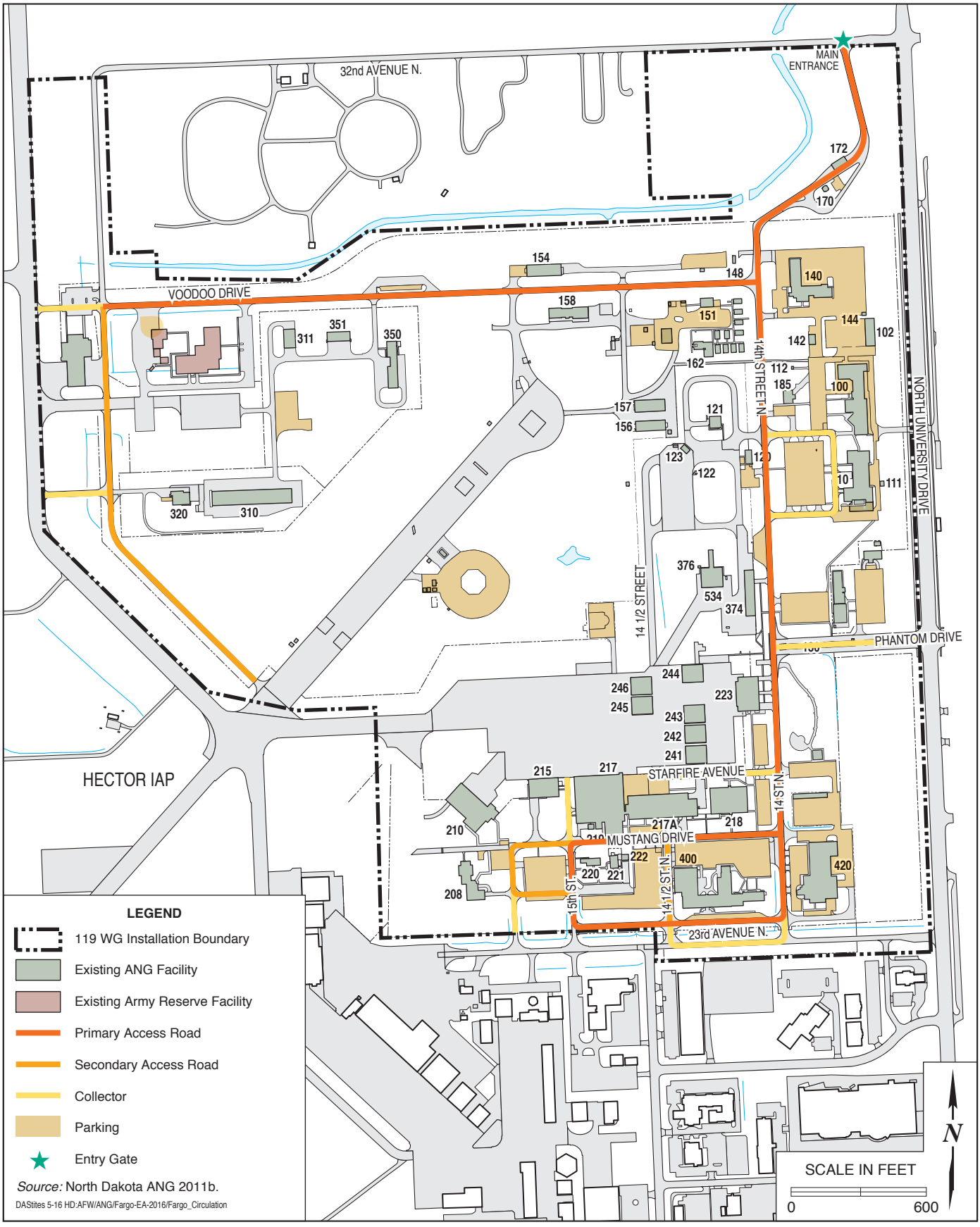
Access to the 119 WG installation is via the main gate at the northern perimeter of the installation; the gate is located along 32nd Avenue North, just west of the North University Drive intersection (Figure 3-13). North University Drive intersects with 19th Avenue North and 40th Avenue North, both of which connect to I-29. According to the North Dakota Department of Transportation (NDDOT), ADT volumes for 2015 along North University Drive near the installation ranged from 4,870 to 9,815 (refer to Figure 3-12) (NDDOT 2015).



EA

Local Transportation Network and Annual Average Daily Traffic Volumes (2015) in the Vicinity of Hector IAP and the 119 WG Installation

FIGURE 3-12



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Access, Circulation, and Parking at the 119 WG Installation

FIGURE 3-13

Circulation

14th Street North provides primary north-south circulation from the 119 WG installation's main gate throughout the installation. Voodoo Drive runs along the installation's northern perimeter, providing access to northwest portion of the installation. Mustang Drive provides east-wide circulation in the southern portion of the installation, while 23rd Avenue North travels along the installation's southern perimeter. A number of secondary streets provide access amongst installation facilities and parking areas, including 15th Street North (southwest portion of the installation), 14 ½ Street North (southern and central portions), Starfire Avenue (southern portion), Phantom Drive (central portion), and an unnamed road running along the western perimeter of installation property (refer to Figure 3-13).

On-Installation Parking

The USAF has established guidelines intended to ensure that adequate parking is available at USAF and ANG facilities. According to these standards, the ratio of available parking spaces for authorized UTA personnel should be no less than 0.75.

There are currently 14 parking lots at the 119 WG installation, which comprise over 880 privately-owned vehicle (POV) parking spaces (North Dakota ANG 2010a). A majority of parking areas are located in the southern portion of the installation, in the vicinity of Buildings 217 (Maintenance Hangar), 218 (Squadron Operations), and 400 (Dining Hall/Maintenance Facility); additional parking is concentrated near Building 100 (Base Engineering Maintenance Shop), Building 120 (Petroleum Operations Building), Building 350 (Conventional Munitions Shop), and at the intersection of 14th Street North and Phantom Drive (refer to Figure 3-13). Based on current staff levels, the parking ratio equates to 2.38 during average daily personnel of 369, and 1.00 during total authorized guard strength of 875, both considerably greater than the recommended 0.75 ratio.

3.10 VISUAL RESOURCES

3.10.1 Definition of Resource

Visual resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area. These features form the overall impressions that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of a landscape.

The significance of a change in visual character is influenced by social considerations including public value placed on the resource, public awareness of the area, and general community concern for visual resources in the area. These social considerations are addressed as visual sensitivity and are defined as the degree of public interest in a visual resource and concern over potential adverse changes in the quality of that resource.

3.10.2 Existing Conditions

3.10.2.1 Regional Visual Character

The North Dakota ANG at Hector IAP is located in northern Fargo, North Dakota. The City of Fargo adjoins with its twin City of Moorhead, Minnesota, as well as adjacent West Fargo, North Dakota and Dilworth, Minnesota, to form the center of the largest metropolitan area in the region. The region is characterized by level, open terrain primarily composed of rural agricultural land. There are no major distinguishing landscape features except the Red River, located approximately 1.5-miles east of the facility, which forms the border between North Dakota and Minnesota. The region outside of the Fargo metropolitan area is sparsely populated with individual farmhouses and small areas of single-family residential development, as well as several riparian corridors and isolated stands of trees. Directly to the north, northwest, and west of the facility are large expanses of land dedicated to row crops, pastures, and other fields; commercial and residential land use to the east; and NDSU to the south.

There are no designated scenic roads or vistas, or other highly sensitive visual resources in the vicinity of the installation.

3.10.2.2 Visual Resources at the 119 WG Installation

The 119 WG installation is located on approximately 258 acres on the southeast side of Hector IAP. Topography at the installation is level, between 890 to 895 feet above msl. The visual environment at the 119 WG installation is characteristic of a military facility; most structures are one- to two-story buildings constructed primarily of brick and brick-tone cement materials. Most of the base and airport area is paved, with grass buffers between the buildings. Buildings include hangars, operations buildings, and warehouses. Large expanses of grass also exist as open space adjacent to airport runways, taxiways, and runway access roads. Landscaping has been implemented in some areas of the base using ornamental tree species and additional street and foundation plantings. Overall, the base and neighboring airport are typical of the region and do not constitute unique or sensitive viewsheds.

3.11 CULTURAL RESOURCES

3.11.1 Definition of Resource

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas where prehistoric or historic activity measurably altered the environment or deposits of physical remains (e.g., arrowheads, bottles) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S.; however, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

The principal Federal law addressing cultural resources is the National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code [USC] Section 470), and its implementing regulations (36 CFR 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties; assessing the effects of Federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Office (SHPO).

The term "historic properties" refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties need not be formally listed on the NRHP. Section 106 does not require the preservation of

historic properties, but ensures that the decisions of Federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties. The Proposed Action is an undertaking as defined by 36 CFR 800.3 and is subject to requirements outlined in Section 106.

The *Department of Defense, American Indian and Alaska Native Policy* governs the department's interactions with federally recognized tribes. The policy outlines DoD trust obligations, communication procedures with tribes on a government-to-government basis, consultation protocols, and actions to recognize and respect the significance that tribes ascribe to certain natural resources and properties of traditional cultural or religious importance. The policy requires consultation with federally recognized tribes for proposed activities that could significantly affect tribal resources or interests.

3.11.2 Existing Conditions

3.11.2.1 Regional History

Present-day North and South Dakota, western Minnesota, and northern Iowa and Nebraska were originally occupied by the Sioux Native American peoples. Southeast North Dakota, including what is now Cass County, was occupied by the Sioux's Sisseton and Wahpeton bands. Initial contact with European settlers commenced in the mid-1700s as fur traders migrated across the North American continent. A number of treaties were formulated amongst European settlers and the Sisseton and Wahpeton bands in the early- and mid-1800s, including the 1851 *Treaty of the Traverse de Sioux, which* led to a mass movement of the Sioux peoples to reservations lands. The present-day Sisseton and Wahpeton reservation is located in northeast South Dakota, approximately 80 miles south of Cass County (Cass County Government 2005).

Cass County was originally part of Pembina County, an expansive portion of the former Dakota Territory carved out in 1867 by the territory's legislature. Fur trader Peter Goodman settled in the geography of present-day Cass County at about the same time, and pioneers quickly flocked to the area due to the water and transportation resources provided by the Red and Sheyenne Rivers. By 1871,

railroads expanded into the area, and Fargo, the future Cass County seat, was founded. Pembina County soon split into a number of smaller counties, and Cass County was officially organized in 1873 (Cass County Government 2005).

Cass County and the City of Fargo developed rapidly during the next century. The County's fertile soils and accessible rail and water transportation network allowed for the expansion of the agricultural industry, as well as the founding of the North Dakota State Agricultural College (now NDSU). Construction of I-29 and I-94 in the 1960s further enhanced the local and regional transportation network. Recently, the County has seen rapid growth in the banking, retail, and technology industries (Cass County Government 2005).

National Register of Historic Places

The region surrounding Hector IAP and the 119 WG installation contains a number of sites of historic or prehistoric significance. A majority of the sites are historic residential or commercial buildings or districts associated with the first 50 years of development in the City of Fargo. Table 3-10 lists the properties located in Fargo that are listed on the NRHP (U.S. NPS 2013). There are no NRHP eligible properties located at Hector IAP.

3.11.2.2 History of Hector IAP

In 1927, Martin Hector leased land located at the northwest corner of Fargo to the City for development of an airport; the land was given outright to the City in 1931. Passenger airline service began the same year and was substantially expanded in 1956 with the opening of a new terminal and administration building, located adjacent to the southwest perimeter of the installation. The current passenger terminal was completed in 1986, and the former building was converted to administrative uses. The airport was designated as an international port in 1982, and the U.S. Customs field office opened in 1985 (Hector IAP 2016b).

Table 3-10. National Register of Historic Places Listed Properties Located Near Hector IAP and the 119 WG Installation

Location	Name	NRHP Listing Date
City of Fargo	Armour Creamery Building	02-09-2007
City of Fargo	Barrington Apartments	07-27-1989
City of Fargo	Cass County Court House, Jail, and Sheriff's House	12-22-1983
City of Fargo	Cole Hotel	05-09-1983
City of Fargo	DeLendrecie's Department Store	10-22-1979
City of Fargo	Dibley House	11-25-1980
City of Fargo	Downtown Fargo District	10-13-1983
City of Fargo	Fargo City Detention Hospital	04-07-1987
City of Fargo	Fargo Oaks Grove Residential Historic District	10-31-2011
City of Fargo	Fargo South Residential District	09-19-1983
City of Fargo	Fargo Theatre Building	10-21-1982
City of Fargo	Floyd Block	05-12-1983
City of Fargo	Grand Lodge of North Dakota	08-24-1979
City of Fargo	Great Northern Freight Warehouse	11-21-1990
City of Fargo	James Holes House	04-07-1987
City of Fargo	Knerr Block	05-12-1983
City of Fargo	Lewis House	10-18-1979
City of Fargo	Masonic Block	08-03-1979
City of Fargo	McHench Building	05-12-1983
City of Fargo	North Dakota State University District	10-06-1986
City of Fargo	North Side Fargo Builder's Residential Historic District	04-07-1987
City of Fargo	North Side Fargo High Style Residential Historic District	04-07-1987
City of Fargo	Northern Pacific Railway Depot	02-13-1975
City of Fargo	Pence Automobile Company Warehouse	01-07-1994
City of Fargo	Powers Hotel	05-12-1983
City of Fargo	Research Plot 2 (NDSU Campus)	10-08-1991
City of Fargo	Research Plot 30 (NDSU Campus)	10-08-1991
City of Fargo	Union Storage & Transfer Cold Storage Warehouse	02-09-2007
City of Fargo	Webster and Cole Building	05-12-1983

Source: (U.S. NPS 2013).

3.11.2.3 Cultural Resources at the 119 WG Installation

History of the 119 WG Installation

The North Dakota ANG was established in 1947 as a deactivated World War II flying unit at Hector Airport in Fargo, North Dakota. The first facilities were constructed in 1947 to accommodate the 178th Fighter Squadron (178 FS) and assigned P-51D fighter aircraft; the 178 FS was briefly transferred to California during the Korean War, but returned to Fargo in 1953. In 1954, the 178 FS was assigned to the Air Defense Command and reorganized in 1956 into the 119th Fighter Interceptor Group (119 FIG), which included the 178th Fighter Interceptor Squadron as a subordinate unit. Various facilities and other improvements were constructed at the installation during the mid to late 1950s, including Buildings 217 (Maintenance Hangar) and 400 (Dining Hall/Medical Facility), as well as extensions of runway and taxiway areas (North Dakota ANG 2007c).

In 1963, the installation gained munitions capacity, and Buildings 310 (Storage Igloo) and 320 (Conventional Munitions Shop) were constructed. Barracks were constructed in 1966, and incremental facilities expansions continued through the late 1960s and early 1970s. In 1973, the 119 FIG reorganized as the 119 Fighter Wing (119 FW), and Building 218 (Squadron Operations) was constructed in 1974. Several additional buildings were added at the installation in the 1980s, and, in 1990, the 119 FW mission became an Air Defense Fighter Unit armed with F-16A/B jets. The 119 FW converted to a General Purpose mission in 1999 (North Dakota ANG 2007c).

Windstorms in 1999 led to the destruction and subsequent demolition of some of the original 1947 installation facilities, including the original hangar. Various construction and demolition projects during the early 2000s brought significant changes to the installation's built environment. In 2007, per Base Realignment and Closure (BRAC) Commission recommendations, the 119 FW officially retired its F-16 mission. The unit current operates a post-BRAC inventory of four MQ-1 aircraft (North Dakota ANG 2007c).

Cultural Resources Investigations

A Phase I intensive archaeological and architectural survey was conducted at the 119 WG installation in 2005 and 2006. Background data collection included a records search at the North Dakota SHPO in November 2005, as well as review of 119 WG installation records and interviews of installation personnel in May 2006. A detailed archaeological investigation of the installation occurred in May 2006, consisting of surface pedestrian surveying and the excavation of shovel test pits (stps). An installation architectural inventory was also conducted in May 2006. Archaeological and architectural survey findings are documented in *Cultural Resources Survey at Hector Field, Fargo, North Dakota* (North Dakota ANG 2007c), as further discussed below.

A previous cultural resources investigation was conducted on a small portion of installation property in 2005 (Christensen 2005); the investigation did not record any archaeological sites or other resources of historical significance.

Archaeological Resources

No prehistoric or historic cultural resources were encountered at the installation during the 2006 investigation. In total, 159 stps were excavated on installation property, the majority of which showed evidence of previous soil disturbance. No prehistoric or historic cultural materials were recovered in any of the stps. Further, surface pedestrian surveying did not detect any evidence of prehistoric or historic cultural materials. Consequently, the *Cultural Resources Survey* (North Dakota ANG 2007c)recommends that no further archaeological work in needed at the 119 WG installation, and there is a very low potential for cultural resources to occur on installation property.

Architectural Resources

The 2006 architectural survey found that no buildings at the 119 WG installation meet general NRHP-eligibility criteria or are eligible Cold War Assets, and the installation does not represent or contain a NRHP Historic District. The survey focused on 12 installation buildings constructed from 1954 to 1989 (Table 3-11).

Table 3-11. Architectural Resources Evaluated at the 119 WG Installation

Building	Function	Date Constructed	Determination	Rationale
Evaluated as Potentially Eligible for NRHP Listing				
215	Fire Crash/Rescue Station	1955	Not Eligible	Does not meet NRHP criteria; loss of integrity
217	Maintenance Hangar	1955	Not Eligible	Does not meet NRHP criteria; loss of integrity
400	Dining Hall/Medical Facility (formerly Headquarters Complex)	1959	Not Eligible	Does not meet NRHP criteria; loss of integrity
420	Base Supply & Equipment Warehouse	1959	Not Eligible	Does not meet NRHP criteria; loss of integrity
Evaluated as Potentially Eligible Cold War Assets				
100	Base Engineering Maintenance Shop	1987	Not Eligible	Does not meet NRHP criteria; loss of integrity
102	Base Engineering Storage Shed	1983	Not Eligible	Does not meet NRHP criteria
218	Squadron Operations	1974	Not Eligible	Does not meet NRHP criteria
223	Aircraft Corrosion Control	1980	Not Eligible	Does not meet NRHP criteria
310	Storage Igloo	1963	Not Eligible	Does not meet NRHP criteria
320	Conventional Munitions Shop	1963	Not Eligible	Does not meet NRHP criteria
374	AGE Shop Storage Facility	1989	Not Eligible	Does not meet NRHP criteria

Source: North Dakota ANG 2011.

Four of the structures were constructed over 50 years ago and were therefore evaluated under general NRHP-eligibility criteria. Substantial alterations (i.e., additions to the original footprint, interior modifications, etc.) were made to all of the evaluated structures, and none are intact to the degree necessary to represent historical significance. Due to the loss of original integrity, none of the structures were deemed eligible for NRHP listing (North Dakota ANG 2007c).

The remaining seven structures were constructed less than 50 years ago and were therefore evaluated as Cold War Assets under NRHP Criterion Consideration G. Because substantial alterations were made to many of the evaluated structures, and none are intact to the degree necessary to represent historical significance, none were deemed as eligible Cold War Assets (North Dakota ANG 2007c).

Additionally, the entire 119 WG installation was evaluated as a potential NRHP Historic District. A number of potentially historical architectural resources at the installation were previously demolished, including a hangar constructed in 1947 and a row of six alert buildings constructed in the 1960s. Due to the loss of these buildings and the significant degree of architectural alteration (i.e., construction of new buildings, etc.), the installation has lost its original historical integrity and therefore does not represent or contain a NRHP Historic District (North Dakota ANG 2007c).

3.12 SOCIOECONOMICS

3.12.1 Definition of Resource

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Human population is affected by regional birth and death rates as well as net in- or out-migration. Economic activity typically comprises employment, personal income, and industrial growth. Impacts on these two fundamental socioeconomic indicators can also influence other components such as housing availability and public services provision.

Socioeconomic data shown in this section are presented at the county, state, and national level to analyze baseline socioeconomic conditions in the context of regional, state, and national trends. Data has been collected from previously published documents issued by Federal, state, and local agencies (e.g., U.S. Census Bureau) and from state and national databases (e.g., U.S. Bureau of Economic Analysis' [BEA] *Regional Economic Information System*).

3.12.2 Existing Conditions

Hector IAP and the 119 WG installation are located within the City of Fargo in Cass County, North Dakota. For the purposes of this study, the geographic area examined with regard to socioeconomics includes Cass County and, where appropriate, the City of Fargo.

3.12.2.1 Population

Cass County is one of 53 counties in North Dakota and ranks 10th in total land area. Cass County is North Dakota's most populous county, with a 2014 population of 167,005 (22.5 percent of North Dakota's total population). Fargo is the most populated City in North Dakota, with a 2014 population of 115,863; approximately 69.3 percent of Cass County residents live within the City. Table 3-12 summarizes local, state, and national population trends for 2000, 2010 and 2014.

Table 3-12. Population Overview: 2000-2014

Jurisdiction	Estimated 2014	Census 2010	Census 2000	Total % Change (2000-2014)
United States	318,857,056	308,745,538	281,421,906	13.3%
North Dakota	739,482	672,591	642,200	15.1%
Cass County	167,005	149,778	123,138	35.6%
Fargo	115,863	105,549	90,599	27.8%

Sources: North Dakota ANG 2011; U.S. Census Bureau 2015

3.12.2.2 Job Growth and Unemployment

Employment

Table 3-13 presents the distribution of jobs by employment sector in Cass County for 2000, 2010 and 2014. In 2000, *services* was the greatest employment sector (with 33,600 jobs, or 32.6 percent of all jobs), growing by 41.3 percent from 1990 to 2000. *Retail trade* was the second greatest employment sector (18.2 percent of all jobs), up 41.3 percent from 1990 to 2000. *Government and government enterprises* remained the third-largest employment sector (11.2 percent of all jobs), gaining 11.9 percent between 1990 and 2000. Together, the top three employment sectors accounted for 62.1 percent of all jobs in Cass County in 2000. (U.S. Department of Commerce-Bureau of Economic Analysis 2014)

In 2010, the top three employment sectors slightly varied. *Services* remained the top employment sector (with 49,448 jobs, or 40.6 percent of all jobs), growing by 47.1 percent from 2000 to 2010. *Government and government enterprises* moved up as the second greatest employment sector (11.9 percent of all jobs), growing by 25.7 percent from 2000-2010. *Retail Trade* dropped to the third-largest employment sector with 14,083 (11.4 percent of all jobs), shedding 24.9 percent of jobs between 2000 and 2010 (U.S. Department of Commerce-Bureau of Economic Analysis 2014).

In 2014, the top three employment sectors remained the same. *Services* remained the top employment sector (with 56,544 jobs, or 40.3 percent of all jobs), growing by 14.3 percent from 2010 to 2014. *Government and government enterprises* remained the second largest employment sector with 15,671 jobs and *Retail Trade* remained the third largest employment sector with 15,397 jobs. Together, the top three employment sectors accounted for approximately 62.3 percent of all jobs in Cass County in 2014 (U.S. Department of Commerce-Bureau of Economic Analysis 2014).

Table 3-13. Jobs by Employment Sector in Cass County (2000, 2010 and 2014)

Employment Sector	2000	2010	2014	Total Change (2000 - 2014)	
Total Employment[1]	102,923	121,582	140,240	36.2%	37,320
Farm	1,299	1,048	1,192	-9.1%	-106
Non-Farm	101,624	120,534	123,377	21.4%	21,753
Ag. Services,[2] Forestry, Fisheries	(D)	(D)	214	214%	214
Mining	(D)	(D)	253	253%	253
Construction	6,273	7,107	9,306	48.3%	3,033
Manufacturing	7,508	8,018	9,594	27.7%	2,086
Transportation & Public Utilities	5,718	4,117	5,183	-9.3%	-535
Wholesale Trade	7,970	7,074	8,477	6.3%	507
Retail Trade	18,775	14,083	15,397	-17.9%	-3,378
Finance, Insurance, Real Estate	9,325	8,332	10,323	10.7%	998
Services[3]	33,600	49,448	56,544	68.2%	22,944
Govt. And Govt. Enterprises[4]	11,544	14,513	15,671	35.7%	4,127
Federal Civilian	2,121	2,319	2,263	6.6%	142
Military	1,032	1,113	1,104	-2.7%	-28
State and Local Government	8,391	11,081	12,304	46.6%	3,913

(D) Data not shown to avoid disclosure of confidential information.
[1] *Total Employment* for 2000 and 2010 includes (D) values.
[2] *Ag Services* does not include Farm employment.
[3] *Services* includes Information employment and excludes Public Administration employment.
[4] *Government and Government Enterprises* includes subcategories listed below entry (*Federal Civilian*, *Military*, and *State and Local Government*).
Sources: U.S. Department of Commerce-Bureau of Economic Analysis 2014.

Employment in the government and government enterprises sector comprises *state and local government*, *military*, and *federal civilian* jobs. Overall employment in this sector increased by 4,127 jobs (35.7 percent) from 11,544 jobs in 2000 to 15,671 jobs in 2014. The *state and local government* job sector experienced a gain of 3,913 jobs (46.6 percent) between 2000 and 2014 and the *federal civilian* experienced an increase of 142 jobs (6.6 percent) between 2000 and 2014. However, *military* job sector experienced a loss of 28 jobs (-2.7 percent) between 2000 and 2014. Of the 15,671 total government sector jobs in Cass County in 2014, 78.5 percent represented *state and local government* jobs, 15.1 percent were *federal civilian* jobs, and 6.4 percent were *military* jobs (U.S. Department of Commerce-Bureau of Economic Analysis 2014).

Employment Levels

Overall, County employment levels have increased robustly over the past 14 years, experiencing a cumulative gain of 37,320 jobs (a 36.2 percent increase) between 2000 and 2014 (Table 3-14). In contrast, the County's *military* sector and *retail trade* sector experienced respective losses of 28 jobs (a 2.7 percent decrease) and 3,378 jobs (a 17.9 percent decrease) during the same period. Overall job growth in Cass County between 2000 and 2014 was lesser than the State of North Dakota and the nation (36.2 and 73.3 percent overall job growth, respectively) during the same period (U.S. Department of Commerce-Bureau of Economic Analysis 2014).

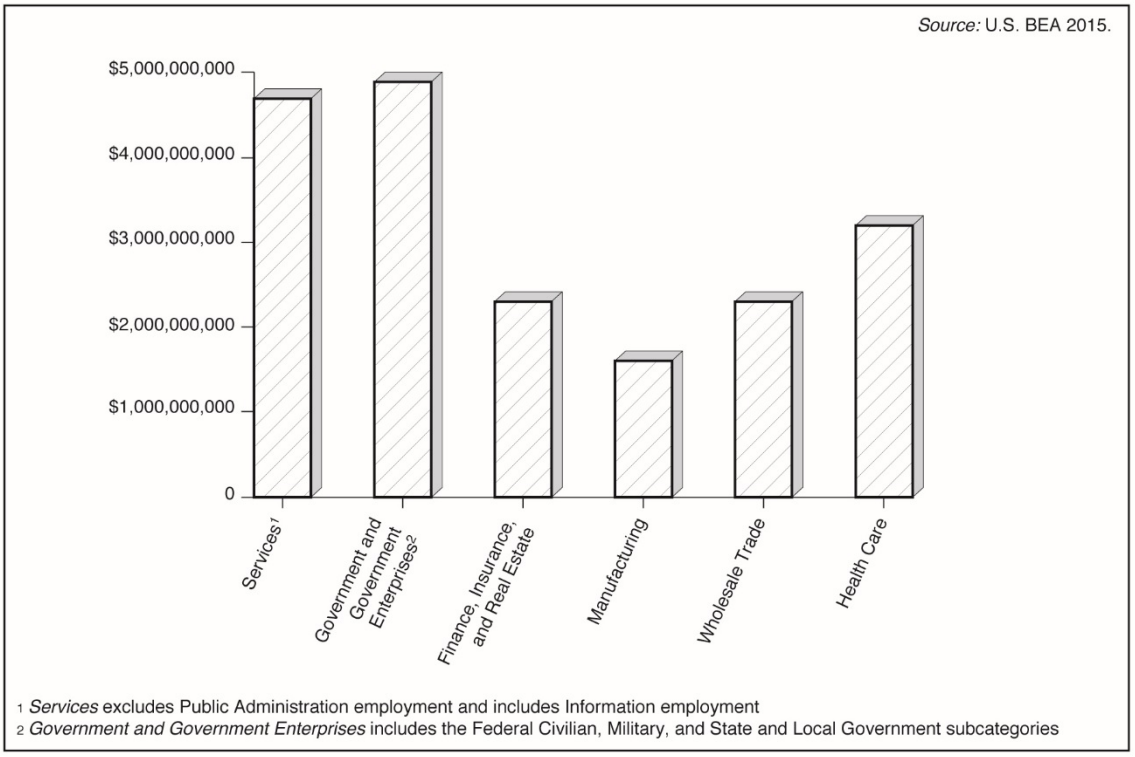
Table 3-14. Economic Indicators, Cass County, State of North Dakota, and the United States (2000, 2010 and 2014), in 2014 Dollars

	2000[1]	2010	2014	Average Annual Change	Total Change 2000-2014
Cass County					
Total Jobs	102,923	121,582	140,240	3.6%	36.2%
Civilian Jobs	101,891	120,469	139,136	3.0%	36.5%
Military Jobs	1,032	1,113	1,104	-0.19%	-2.7%
Military Jobs/Total Jobs	1.0%	0.9%	0.7%	-0.2%	-30.0%
Average Earnings per Job	$44,691	$51,479	$54,393	1.5%	22.1%
Civilian Earnings per Job	$44,906	$51,507	$54,546	1.5%	21.4%
Military Earnings per Job	$23,347	$48,418	$35,068	3.5%	50.2%
Per Capita Personal Income	$40,573	$41,787	$45,675	0.89%	12.5%
North Dakota					
Total Jobs	447,380	500,092	600,923	2.4%	34.3%
Average Earnings per Job	$37,840	$57,934	$68,889	1.9%	78.4%
Per Capita Personal Income	$34,489	$46,645	$55,802	4.4%	61.7%
United States					
Total Jobs[2]	166,758.8	134,846	144,005	0.9%	-13%
Average Earnings per Job	$48,740	$54,521	$66,041	2.5%	35.4%
Per Capita Personal Income	$37,292	$28,297	$28,889	-1.6%	-22.5%

[1]Values for 2000 and 2010 are adjusted to 2014 dollars (U.S. BLS 2016).
[2]Total U.S. jobs expressed in thousands.
Sources: U.S. BLS 2016; U.S. Department of Commerce-Bureau of Economic Analysis 2014

Earnings

Total earnings for Cass County in 2014 were approximately $41.2 billion. Greatest earnings in 2014 were reported in the *government and government enterprises* ($4.9 billion), *services* ($4.7 billion), *wholesale trade* ($2.3 billion), *finance-insurance-real estate* ($2.3 billion), and *manufacturing* ($1.6 billion) employment sectors. Included within the government and government enterprises sector are the *state and local government*, *federal civilian*, and *military* categories, which reported 2014 earnings of $3.4 billion, $778 million, and $705 million, respectively (U.S. Department of Commerce-Bureau of Economic Analysis 2014). The 2014 annual earnings per industrial sector in Cass County are depicted in Figure 3-14.



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Annual Earnings Per Industrial Sector
Cass County, North Dakota (2014)

FIGURE 3-14

Per capita personal income in Cass County in 2014 was $45,675, 22.1 percent lower than per capita personal income for North Dakota ($55,802) and 36.7 percent higher than the national average ($28,889) (refer to Table 3-14). 2014 per capita

personal income in Cass County increased moderately (12.5 percent) from the 2000 level (adjusted to 2014 dollars), which was lower than the growth rate for North Dakota (61.7 percent), but substantially higher than the national rate (-22.5 percent) for the same period (U.S. BLS 2016a; U.S. Department of Commerce-Bureau of Economic Analysis 2014).

Unemployment

In March 2015, the unemployment rate in Cass County was 2.2 percent (not seasonally adjusted), similar to the State of North Dakota (3.1 percent, seasonally adjusted), but significantly lower than the national unemployment rate (9.3 percent, seasonally adjusted) during the same period (U.S. BLS 2016b). The 2015 annualized unemployment rate (not seasonally adjusted) for Cass County was 2.8 percent; the total labor force was 95,023 with 92,932 persons employed and 2,091 unemployed (U.S. BLS 2016b). Table 3-15 presents the annualized non-seasonally adjusted labor and employment rates for Cass County for the past 15 years:

Table 3-15. Labor and Employment in Cass County, North Dakota *

	Unemployment Rate	Labor Force	Employed	Unemployed
2000	2.1%	76,088	74,498	1,590
2001	2.0%	76,975	75,433	1,542
2002	2.7%	77,177	75,109	2,068
2003	2.9%	78,441	76,200	2,241
2004	2.7%	80,600	78,396	2,204
2005	2.7%	82,392	80,139	2,253
2006	2.6%	84,192	82,037	2,155
2007	2.6%	86,736	84,496	2,240
2008	2.7%	87,332	84,961	2,371
2009	4.2%	86,749	83,148	3,601
2010	3.5%	88,824	85,680	3,144
2011	3.3%	89,629	86,697	2,923
2012	2.9%	89,574	86,940	2,634
2013	2.7%	91,467	88,954	2,513
2014	2.4%	92,918	90,656	2,262
2015	2.2%	95,023	92,932	2,091

*Data not seasonally adjusted.
Source: (U.S. BLS 2016b)

3.12.2.3 119 WG Installation

Installation Employment

The 119 WG installation currently has a total full-time and part-time work force of 1,109 personnel (Table 3-16), which is comprised of 182 *full-time technicians*, 875 *weekend traditional guardsmen*, and 187 *active guard reserve/active duty personnel* (North Dakota ANG 2011a).

Table 3-16. Employment at the 119 WG Installation

Personnel Classification	Number of Personnel
Full-Time Personnel	
Technicians	182
Part-Time Personnel	
Weekend Traditional Guardsmen	875
Active Guard Reserve/Active Duty Personnel	187
Total	**1,244**

Note: Data are current as of 2 March 2011.
Source: (North Dakota ANG 2011a).

Installation Expenditures

Total 119 WG installation expenditures were approximately $43 million for financial year (FY) 2010 (Table 3-17); this included approximately $26.2 million for *operational spending (excluding payroll)*, about $14.9 million for *civilian payroll*, and about $1.7 million for *military personnel spending* (North Dakota ANG 2011a).

Table 3-17. Expenditures at the 119 WG Installation (2010)

Personnel Classification	Expenditures by Personnel Type
Operational Spending (Excluding Payroll)	$26,297,627
Civilian Payroll	$14,916,401
Military Personnel Spending	$1,686,683
Total	**$42,900,711**

Note: Data are for FY 2010.
Source: (North Dakota ANG 2011a).

3.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

3.13.1 Definition of Resource

In 1994, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* was issued to focus attention of Federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed.

Because children may suffer disproportionately from environmental health risks and safety risks, Executive Order 13045, *Protection of Children From Environmental Health and Safety Risks,* was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure that Federal agencies' policies, programs, activities, and standards address environmental health risks and safety risks to children.

Data used for the environmental justice and protection of children analysis were collected from the 2010 *Census of Population and Housing*; although this data is now 6 years old, it represents the most complete, detailed, and accurate statistics available addressing population distribution and income. Further, there are no indications that regional trends that have occurred since 2010 that have significantly altered general population characteristics.

3.13.2 Existing Conditions

3.13.2.1 Minority and Low-Income Populations

In order to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, ethnicity and poverty statuses in the vicinity of Hector IAP and the 119 WG installation were examined and compared to city, county, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action.

Minority Populations

As of 2010, the percentage of minority[1] residents in Cass County (8.3 percent of the total population) is the lowest among the four geographic areas examined in this analysis (Figure 3-15). By comparison, minority residents make up a slightly higher percentage of the total population in the City of Fargo (9.8 percent) and the State of North Dakota (11.1 percent). The nation had the highest percentage of minority residents (36.3 percent of the total population) (U.S. Census Bureau 2015).

Low-Income Populations

Based on data contained in the 2010 *Census of Population and Housing*, the percentage of Cass County's population living below the poverty level in 2010 was 11.3 percent, the lowest percentage of the four geographic areas examined in this analysis (refer to Figure 3-15). Slightly higher poverty levels were reported for the City of Fargo (15.4 percent), the State of North Dakota (11.5 percent), and the nation (14.8 percent) (U.S. Census Bureau 2015).

3.13.2.2 Protection of Children from Environmental Health and Safety Risks

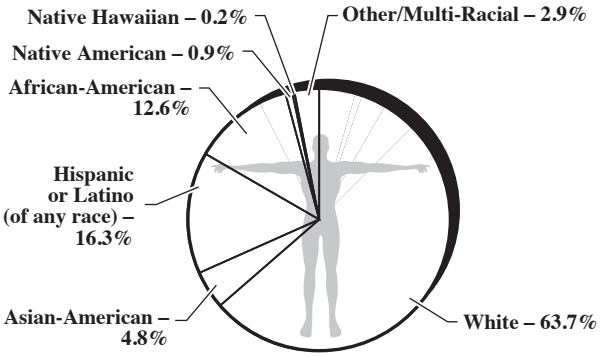
In order to comply with Executive Order 13045 (*Protection of Children from Environmental Health and Safety Risks*) the number of children under age 18 in the vicinity of Hector IAP and the 119 WG installation was examined and compared to city, county, state, and national levels. Additionally, locations near the base where populations of children may be concentrated (e.g., child care centers, schools, parks) were identified. The purpose of this analysis is to address potential disproportionate health and safety risks to children, which may result from implementation of the Proposed Action.

[1] *Minorities* are comprised of persons of African-American, Native American, Asian, Pacific Islander, or Native Hawaiian descent; persons of two or more races; persons of races other than those defined by the U.S. Census Bureau; and, persons of Hispanic/Latino decent of any racial background, including White/European.

Note: Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable.

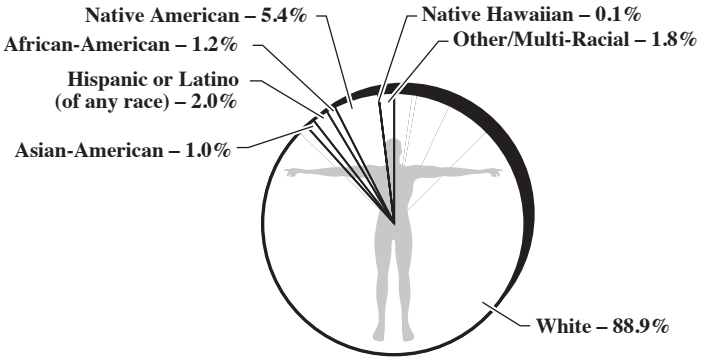
Source: U.S. Census Bureau 2015.

United States (2010)



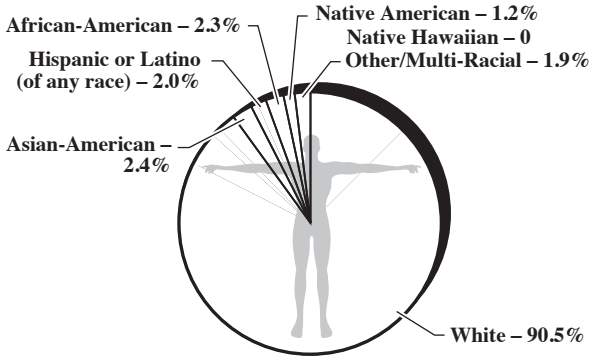
Population 308,745,538
Total Minority 112,074,604 (36.3%)

State of North Dakota (2010)



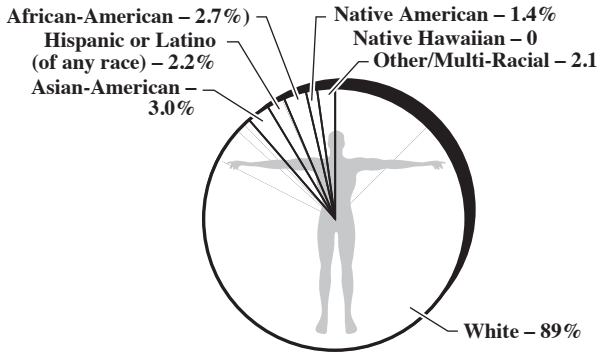
Population 672,591
Total Minority 67,259 (11.1 %)

Cass County (2010)



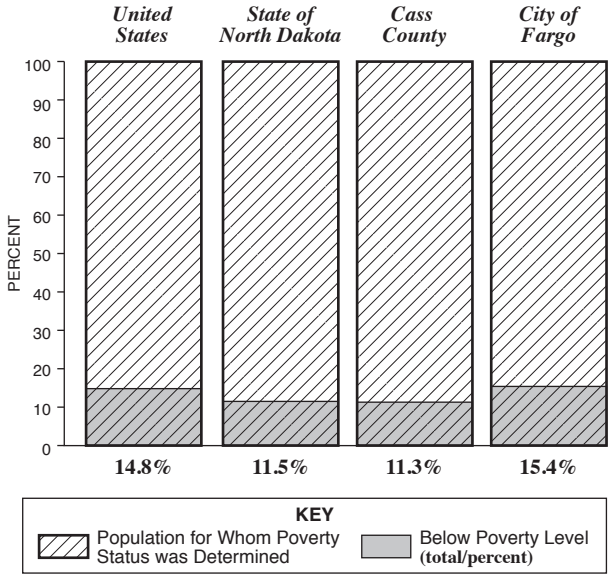
Population 149,778
12,431 (8.3%)

City of Fargo (2010)

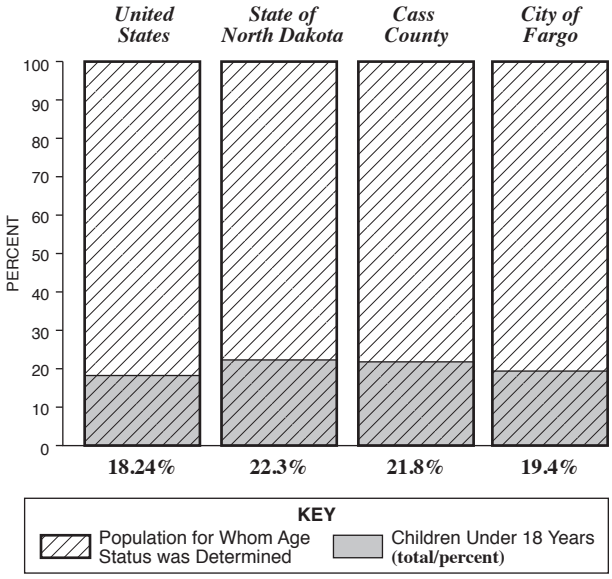


Population: 105,549
Total Minority: (9,816)

Poverty Status



Age Distribution



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Environmental Justice Data

FIGURE 3-15

Age Distribution

In 2010, the percentage of the total population represented by children under age 18 in the City of Fargo (19.4 percent of the total population) is the lowest among the four geographic areas examined in this analysis (refer to Figure 3-15). By comparison, children under 18 make up a slightly higher percentage of the total population in Cass County (21.8 percent), the State of North Dakota (22.3 percent), and the nation (24.0 percent of the total population) (U.S. Census Bureau 2015).

Schools and Daycare Centers

The City of Fargo is served by the Fargo Public School District No. 1 (FPS). The district contains 22 educational facilities, including 15 elementary schools (grades K-5), three middle schools (grades 6-8), three high schools (grades 9-12), and one alternative high school (grades 9-12). Districtwide enrollment during the 2014-2015 academic year totaled approximately 11,192 students (Fargo Public Schools 2015).

A total of eight public schools are located within 2 miles of the 119 WG installation (Fargo Public Schools 2015). In addition, one private elementary school, two private kindergarten/preschool, and 16 preschools/daycare centers are located within 2 miles of the installation (Great Schools 2016). Table 3-18 summarizes all schools and daycare centers, both public and private, located within 2 miles of the installation.

Parks, Recreational Facilities, and Other Gathering Places

A number of parks and recreational facilities are located within 2 miles of the installation, including 21 Fargo city parks, six Fargo city recreational facilities, and one city park located in the nearby City of Moorhead, Minnesota (City of Fargo 2012; City of Moorhead 2016). The Northport Branch of the Fargo Public Library is also located approximately 0.5 miles east of the installation (City of Fargo 2016c).

Table 3-18. Schools and Daycare Centers within 2 Miles of the 119 WG Installation

Facility Name	Affiliation	Grades	Enrollment[1]	Distance (mi)
Horace Mann/Roosevelt Elementary School	Public	K-5	348	1.75 - SE
Longfellow Elementary School	Public	K-5	363	1.25 - East
Madison Elementary School	Public	K-5	160	1.75 - SW
McKinley Elementary School	Public	K-5	170	0.25 - East
Washington Elementary School	Public	K-5	376	0.75 - SE
Ben Franklin Middle School	Public	6-8	683	1.0 - SE
North Senior High School	Public	9-12	942	0.75 - SE
Woodrow Wilson Alternative High School	Public	9-12	151	2.0 - South
A Child's World	Private	Pre-K/K	24	1.75 South
Bakken's Family Daycare	Private	Pre-K	12	1.5 - South
Baumgartner's Family Daycare	Private	Pre-K	12	1.75 - South
Bartley's 19th Ave Child Care	Private	Pre-K	18	1.0 East
Bridgetown Daycare	Private	Pre-K	60	2.0 - SE
Bright Horizons Daycare/Preschool	Private	Pre-K	65	0.125 - East
Byar's Family Daycare	Private	Pre-K	12	0.5 - SE
Fairfield's Family Daycare	Private	Pre-K	12	0.5 - SE
Flynn Childcare Center	Private	Pre-K	18	1.0 - East
Froliche Kind North Preschool	Private	Pre-K	26	0.5 - SE
Hope Preschool	Private	Pre-K	30	0.5 - East
Happy Days	Private	Pre-K	72	0.5 - East
Kid Korner	Private	Pre-K	7	1.75 - SW
Learning Patch	Private	Pre-K	64	1.75 - SW
Messiah Preschool	Private	Pre-K	30	1.0 - East
NDSU Wellness Center	Private	Pre-K	32	1.0 - South
Trollwood Tots Development Learning Center	Private	Pre-K	20	0.5 - East
Meritcare Child Development Center	Private	Pre-K/K	43	2.0 - SE
Holy Spirit Elementary School	Private	Pre-K to 5	175	1.0 - SE

[1] *Enrollment* figures are from February 2016 for FPS schools and from the 2015-16 academic year for all others.
K - kindergarten
mi - miles
SE - southeast
SW - southwest
Sources: (Fargo Public Schools 2015, 2016; Great Schools 2016)

In addition, the Fargodome multipurpose event center is located approximately 0.25 miles south of the installation. The event center houses sporting events (i.e., NDSU football games) and other gatherings (e.g., concerts) with respective capacities of over 19,000 and 25,000 (Fargodome 2016). While the number of children at each event varies, some occasions, such as the annual North and South Senior High School graduations, attract a large number of children (North Dakota ANG 2011a). Table 3-19 summarizes the locations within 2 miles of the installation where significant numbers of children may potentially gather.

Table 3-19. Parks, Recreational Facilities, and Other Gathering Places within 2 Miles of the 119 WG Installation

Facility Name	Facility Type	Distance (mi)
5th Avenue Mini-Park	Traditional Park	2.0 - south
Airport Park (located at Hector IAP)	Traditional Park	0.5 - west
Elephant-Percy Godwin Park	Traditional Park	1.0 - east
Friendship Park	Traditional Park	1.0 - east
Holm Park	Traditional Park	1.5 - east
Horace Mann Park	Traditional Park	1.75 - SE
Longfellow Park	Traditional Park	1.0 - east
McKinley Park	Traditional Park	0.25 - east
Mickelson Park	Traditional Park	1.5 - SE
North Broadway Park	Traditional Park	0.5 - north
North Oaks Park	Traditional Park	1.25 - east
Oak Grove Park	Traditional Park	1.0 - east
Oxbow Park	Traditional Park	1.0 - east
Roosevelt Park	Traditional Park	1.25 - SE
Trefoil Park	Traditional Park	1.5 - SE
Trollwood Park	Traditional Park	1.0 - NE
Unicorn Park	Traditional Park	1.75 - SW
Veterans Administration Hospital Park	Traditional Park	1.0 - east
Voil Park	Traditional Park	1.5 - east
Washington Park	Traditional Park	0.75 - SE
Yunker Farm Park	Traditional/Dog Park	<0.125 - east
Fargo North Athletic Complex	Recreational Facility	0.75 - SE
Johnson American Legion Soccer Complex	Recreational Facility	1.5 - south
Madison Pool Park	Recreational Facility	1.75 - SW
North Side Recreational Pool	Recreational Facility	0.75 - SE
Pepsi Soccer Complex	Recreational Facility	0.75 - west
The Coliseum[1]	Recreational Facility	0.75 - SE
M.B. Johnson Park (located in Moorhead, MN)	Traditional Park	1.75 - east
Fargo Public Library (Northport Branch)	Public Library	0.5 - east
Fargodome	Multipurpose Event Center	0.25 - south

mi - miles
NE - northeast
SE - southeast
SW - southwest
Sources: (City of Fargo 2012; City of Moorhead 2016)
[1] *The Coliseum* is an ice skating rink open November through February.

3.14 HAZARDOUS MATERIALS AND WASTES

3.14.1 Definition of Resource

Hazardous materials are defined as substances that pose a substantial threat to human health or the environment including carcinogenic, toxic, corrosive, combustible, explosive, flammable, or reactive chemicals (29 CFR 1920.1200). Hazardous wastes are defined as any liquid, solid, contained gas, or sludge waste with properties that are dangerous or potentially harmful to human health or the environment. In regulatory terms, a Resource Conservation and Recovery Act (RCRA) hazardous waste is any waste that appears on the list of non-specific source wastes, source-specific wastes, or discarded chemical commercial products, or any waste that exhibits characteristics of ignitability, corrosivity, reactivity, or toxicity.

Issues associated with hazardous materials and wastes typically center around underground storage tanks (USTs); aboveground storage tanks (ASTs); and the storage, transport, and use of pesticides, bulk fuel, and petroleum, oil, and lubricants (POL). When such resources are improperly used they can threaten the health and well-being of wildlife species, botanical habitats, soil systems, water resources, and people.

To protect habitats and people from inadvertent and potentially harmful releases of hazardous substances, DoD has dictated that all facilities develop and implement *Hazardous Waste Management Plans* and *Spill Prevention and Response Plans*. Also, DoD has developed the Environmental Restoration Program (ERP), intended to facilitate thorough investigation and cleanup of contaminated sites located at military installations. These plans and programs, in addition to established legislation (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and RCRA) effectively form the "safety net" intended to protect the ecosystems on which most living organisms depend.

3.14.2 Existing Conditions

3.14.2.1 Hazardous Materials Storage

Hazardous materials and petroleum substances at the 119 WG installation are primarily used to support activities associated with maintaining and flying aircraft, maintaining and using ground support equipment, and fueling and defueling vehicles and aircraft. These activities require the storing and use of jet fuel (JP-8), diesel fuel, motor vehicle gasoline (MOGAS), hydrazine, and heating oil. These hazardous, universal, and petroleum wastes primarily include used rags, batteries, light bulbs, antifreeze, oil, filters, fuel, and paint. Current procedures involving hazardous materials are conducted in accordance with the 119 WG Spill Prevention and Response Plan (2005).

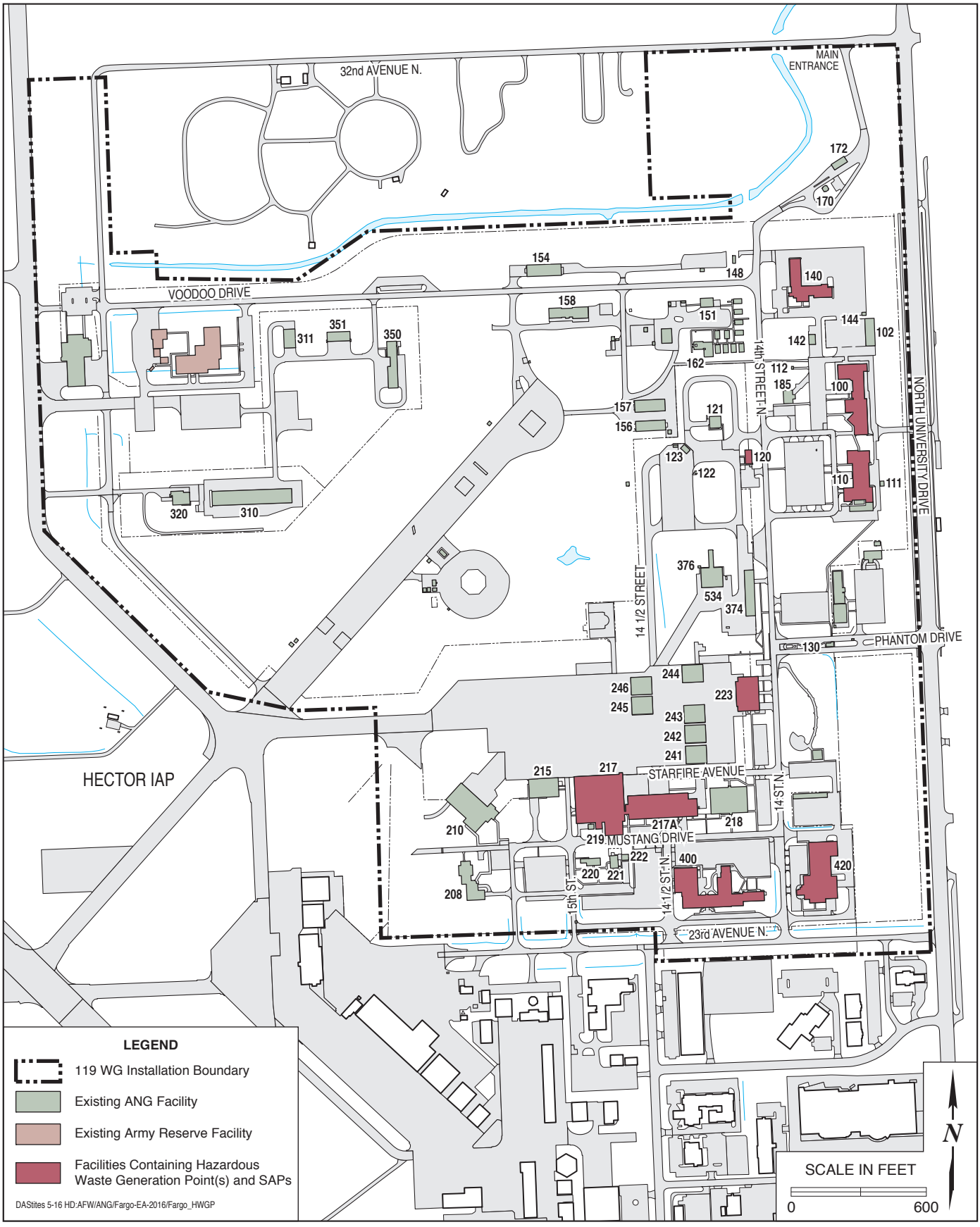
3.14.2.2 Hazardous Waste Generation and Accumulation

Hazardous waste at the 119 WG installation is primarily generated by activities associated with aircraft fueling, aircraft maintenance, aerospace ground equipment (AGE) maintenance, ground vehicle maintenance, fueling of ground vehicles, and facilities maintenance. The operations related to aircraft maintenance include activities such as corrosion control, nondestructive inspection (NDI), fuel cell maintenance, engine maintenance, hydraulics, washing, and wheel and tire maintenance. The AGE and ground vehicle maintenance operations include fluid changes (e.g., oil, transmission, and antifreeze); filter changes (e.g., gas, oil, and air); brake repair; lube, grease, and repair of the axle and drive trains; body repair; welding; minor painting; and washing. Facility maintenance operations include structural maintenance and repairs, painting, chemical treatment (e.g., pesticides, fertilizers, and herbicides), mowing, and utility maintenance. The only painting of aircraft and vehicles is touch-up for corrosion control. The painting of entire vehicles is no longer performed at the 119 WG installation (North Dakota ANG 2008b).

Under RCRA, the base is permitted as a Small-Quantity Generator of hazardous wastes by the State of North Dakota Department of Environmental Protection and maintains EPA Identification (ID) Number ND3570090032 (North Dakota ANG 2010b). The 119 WG Hazardous Waste Management Plan (North Dakota ANG

2010b) outlines the management of hazardous waste at the installation, including record keeping, sampling and analysis practices, training, and specific procedures for preparing for and responding to inadvertent releases of hazardous materials. Hazardous waste generation points (HWGPs) are located in buildings throughout at the 119 WG installation, as summarized in Table 3-20 and shown in Figure 3-16.

Hazardous waste is accumulated at Satellite Accumulation Points (SAPs) located throughout the installation (refer to Figure 3-16); storage is typically in 55-gallon drums or in smaller cans or containers. The maximum volume of hazardous waste permitted at each is 55 gallons or 1 quart of acutely hazardous waste. Once either of these limits is exceeded, regulations require that excess waste must be moved to the designated Hazardous Waste Central Accumulation Point (CAP) to be transported off-base. One 180-day CAP is located at Building 420 (Supply and Equipment Warehouse) (North Dakota ANG 2010a).To store hazardous waste on base, a permitted storage facility with a Part B permit, issued from either the EPA or an authorized state agency, must be obtained. The 119 WG does not maintain a permit and does not operate a permitted storage facility. It is the policy of the 119 WG to ship hazardous waste off-site as expeditiously as possible (North Dakota ANG 2010a). Hazardous wastes are accumulated and disposed of in a variety of ways. Used oil is not considered a hazardous waste in the State of North Dakota, so used JP-8 and waste oils are sold to a private contractor for recovery. Most other wastes are recycled as universal waste (e.g., antifreeze, fluorescent light bulbs, mercury thermostats and switches, and nickel-cadmium, silver oxide, mercury, and lithium batteries). As part of a hazardous waste minimization program, used solvents and paint thinners are recycled by a private contractor. Most wastes are disposed of through the Defense Reutilization and Marketing Office (DRMO) (North Dakota ANG 2010a).



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Facilities Containing Hazardous Waste Generation Point(s) and SAPs at 119 WG/North Dakota ANG

FIGURE 3-16

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Table 3-20. Hazardous Waste Stream Inventory at the 119 WG

Location (Building)	Hazardous Waste Generation
Building 100 - Base Engineering Maintenance Shop	Batteries; fluorescent, mercury, sodium vapor, metal halide, and incandescent bulbs; solvent-contaminated solids; mercury thermostats; refrigerant oil; mercury barrier switches; used oil (motor oil, hydraulic fluid, grease); fuel filters, pads and absorbents; chemical agent detector kits; chemical agent skin decontamination kits; chemical mask filters
Building 110 - Communications Facility	Batteries; circuit cards, pins, connectors; solvent-contaminated rags
Building 120 - Petroleum Operations Building	Fuel system filters; fuel-contaminated pads/filters; OWS sludge; waste fuel/product recovery tank residue; batteries
Building 217 - Maintenance Hangar	Solder excess; batteries; solvent; hydraulic fluid; waste testing oil mixture; lead tape, lead packs for X-rays; penetrant line chemicals; X-ray developer; blacklight bulbs; solvent tank filters; adhesives; used oil (aircraft engine oil, hydraulic fluid); pads and absorbents (oil and hydraulic fluid-soaked)
Building 217A - Maintenance Hangar	Lubricating fluid; welding rod scrap; solvent-contaminated solids (sealant residue, composite repair residue); paint-related waste; paint-contaminated solids; waste paint liquid from aerosol puncturer; solvent-contaminated solids; solder excess; batteries; solvent tank filters; solvent; fuel filters; fuel-soaked pads and absorbents
Building 223 - Aircraft Corrosion Control	Paint-related waste; paint-contaminated solids; waste paint; bead blast media; waste paint gun cleaner; liquid paint waste; oil fall paint booth sludge; solvent-contaminated solids; used JP-8 fuel; fuel-soaked pads and absorbents; batteries
Building 140 - Vehicle Maintenance Shop	Solvent tank filters; solvent; used oil (brake fluid, motor oil, hydraulic fluid, grease); batteries; refrigerant recovery system filters; OWS sludge; fuel filters; oil filters; wheel weights; specialty; jet wash sludge; jet wash water
Building 400 - Dining Hall/ Medical Facility	Expired pharmaceuticals; medical waste
Building 420 - Base Supply & Equipment Warehouse	Expired shelf life materials

Notes: OWS – oil/water separator, POL – petroleum, oil, lubricants.
Source: North Dakota ANG 2010a.

3.14.2.3 Fuel Storage Tanks and Oil Water Separators

Storage Tanks

Aboveground fuel storage at the 119 WG installation consists of 28 ASTs. The Bulk POL Tank Farm Storage Area JP-8 Tanks 1 and 2 have capacities of approximately 108,000 gallons each. Table 3-21 presents a summary of POL ASTs currently located at the 119 WG installation. One former 1,000-gallon JP-8 UST was removed in 2007. No remaining USTs exist at the installation. All ASTs are managed in accordance with the North Dakota RCRA program and Federal requirements.

Oil/Water Separators

Oil/water separators (OWSs) are used to separate oils, fuels, sand, and grease from wastewater and to prevent contaminants from entering the sanitary sewer and storm water drainage systems. There are five OWSs located at the 119 WG installation, which are utilized for the accumulation of small discharges of waste oil at wash racks and maintenance areas. Two of the OWSs discharge into the sanitary sewer, while three discharge into the storm water drainage system (North Dakota ANG 2008c). The separators are cleaned periodically, and any hazardous residues are disposed of in accordance with Federal and state requirements. OWSs currently located at the 119 WG installation are summarized in Table 3-22.

Other Storage Equipment

In addition to storage tanks and OWSs, the 119 WG contains both fixed and mobile/portable fuel containers and operational equipment filled with oil or petroleum substances (Tables 3-23 and 3-24, respectively). Portable equipment is comprised of AGE, most of which store JP-8. The installation additionally has portable generators that run on diesel fuel and assorted AGE diesel fuel-containing equipment (North Dakota ANG 2015).

Table 3-21. Summary of Aboveground POL Storage Tanks at the 119 WG Installation

Container ID No.	Location	Container Type	Product Stored	Container Capacity (gal)	Container/ Piping Material	Double-Wall Tank
100-H1	Civil Engineering	AST	Heating Oil	1,000	Steel/Steel	Yes
110-H1	Composite Support Complex	AST	Heating Oil	2,000	Steel/Steel	Yes
120-O1	POL Office	AST	MOGAS	5,000	Steel/Steel	Yes
120-O2	POL Office	AST	Diesel Fuel	5,000	Steel/Steel	Yes
121-O1	POL Pump	AST	Waste Fuel	500	Steel/NA	Yes
122-O1	POL Tank Farm	AST	JP-8 Jet Fuel	108,000	Steel/Steel	No
122-O2	POL Tank Farm	AST	JP-8 Jet Fuel	108,000	Steel/Steel	No
140-H1	Vehicle Maintenance	AST	Heating Oil	2,000	Steel/Steel, Copper	Yes
140-O1	Vehicle Maintenance	AST	Used Oil	1,000	Steel/NA	Yes
148-G1	RTS for Generators	Integral belly type tank for fixed generator	Diesel Fuel	3,300	Steel/NA	Yes
148-O2	RTS for Generators	AST	Diesel Fuel	10,000	Steel/Steel	Yes
148-O3	RTS for Generators	AST	Diesel Fuel	6,000	Steel/Steel	Yes
148-O4	RTS for Generators	AST	Diesel Fuel	450	Steel/Steel and Rubber Hose	Yes
150-O1	RTS Troop Camp	AST	Diesel Fuel	2,000	Steel/Steel	Yes
210-H1	Weapons Release	AST	Heating Oil	2,000	Steel/Steel	Yes
215-H1	Fire Station	AST, plus Main Supply Tank for Fixed Generator	Heating Oil	1,000	Steel/Steel and Copper	Yes
217A-H1	Fuels Maintenance Annex	AST	Heating Oil	1,000	Steel/Steel and Copper	Yes
217A-O1	Fuels Maintenance Annex	AST	Used Fuel and Oil	560	Steel/Steel	Yes
217-H1	Maintenance	AST	Heating Oil	4,000	Steel/Steel and Copper	Yes
218-H1	Fuels Maintenance Annex	AST	Heating Oil	2,000	Steel/Steel	Yes
223-H1	Fuels Maintenance	AST	Heating Oil	2,000	Steel/Steel	Yes

Table 3-21. Summary of Aboveground POL Storage Tanks at the 119 WG Installation (Continued)

Container ID No.	Location	Container Type	Product Stored	Container Capacity (gal)	Container/ Piping Material	Double-Wall Tank
223-O1	Fuels Maintenance	AST	JP-8 Jet Fuel	1,000	Steel/Steel	Yes
360-H1	N/A	AST	Heating Oil (Empty)	4,000	Steel/NA	Yes
400-H1	119 WG Headquarter	AST	Heating Oil	2,000	Steel/Steel and Copper	Yes
420-H1	Supply Complex	AST	Heating Oil	5,000	Steel/Steel	Yes
534-O1	Hush House Pad	AST	10-10 Engine Oil	265	Steel/Steel and Rubber Hose	No

AST – aboveground storage tank
JP-8 – jet fuel
RTS – Regional Training Site
MOGAS – motor gasoline
N/A – not available
POL – petroleum, oil, and lubricants
Source: North Dakota ANG 2005, 2015.

Table 3-22. Summary of Oil/Water Separators at the 119 WG Installation

Location	Product Recovered	Capacity (gal)	Control Device Material	Double-Wall Tank	Discharge Destination
Building 100 – Civil Engineering	Used Oil	350	Steel	Yes	Sanitary Sewer
Building 120 - Petroleum Operations Building	JP-8 Jet Fuel	10,000	Steel	Yes	Storm Sewer
Building 140 - Vehicle Maintenance	Used Oil	550	Steel	Yes	Sanitary Sewer
Building 217A - Fuels Maintenance Annex	Used Oil	260	Steel	Yes	Sanitary Sewer
Building 223 - Fuels Maintenance	Used Oil	1,800	Steel	Yes	Sanitary Sewer
Building 534 – Hush House	Used Oil	350	Steel	Yes	Sanitary Sewer

JP-8 – jet fuel.
Source: North Dakota ANG 2005, 2010a.

Table 3-23. Summary of Mobile/Portable POL Containers at the 119 WG Installation

Container ID No.	Location	Container Type	Product Stored	Container Capacity (gal)	Container Material	Double-Wall Tank
100-M	Civil Engineering	Tote	Used Oil, Hydraulic Oil	320	Steel	No
122-M1	POL Area	Tank Truck R-11	JP-8 Jet Fuel	4 @ 6,000	Steel	No
140-M1	Vehicle Maintenance Complex	Tote	Motor Oil, Hydraulic Oil, ATF	5 @ 85	Steel	No
223-M1	Fuels Management	Mobile Tank	JP-8 Jet Fuel	80	Steel	No
534-M1	Hush House Pad	Mobile Tank	JP-8 Jet Fuel	2,500	Steel	No
534-M2	Hush House Pad	Bowser	JP-8 Jet Fuel	2 @ 220	Steel	No

JP-8 – jet fuel
POL – petroleum, oil, and lubricants
Source: North Dakota ANG 2005, 2015.

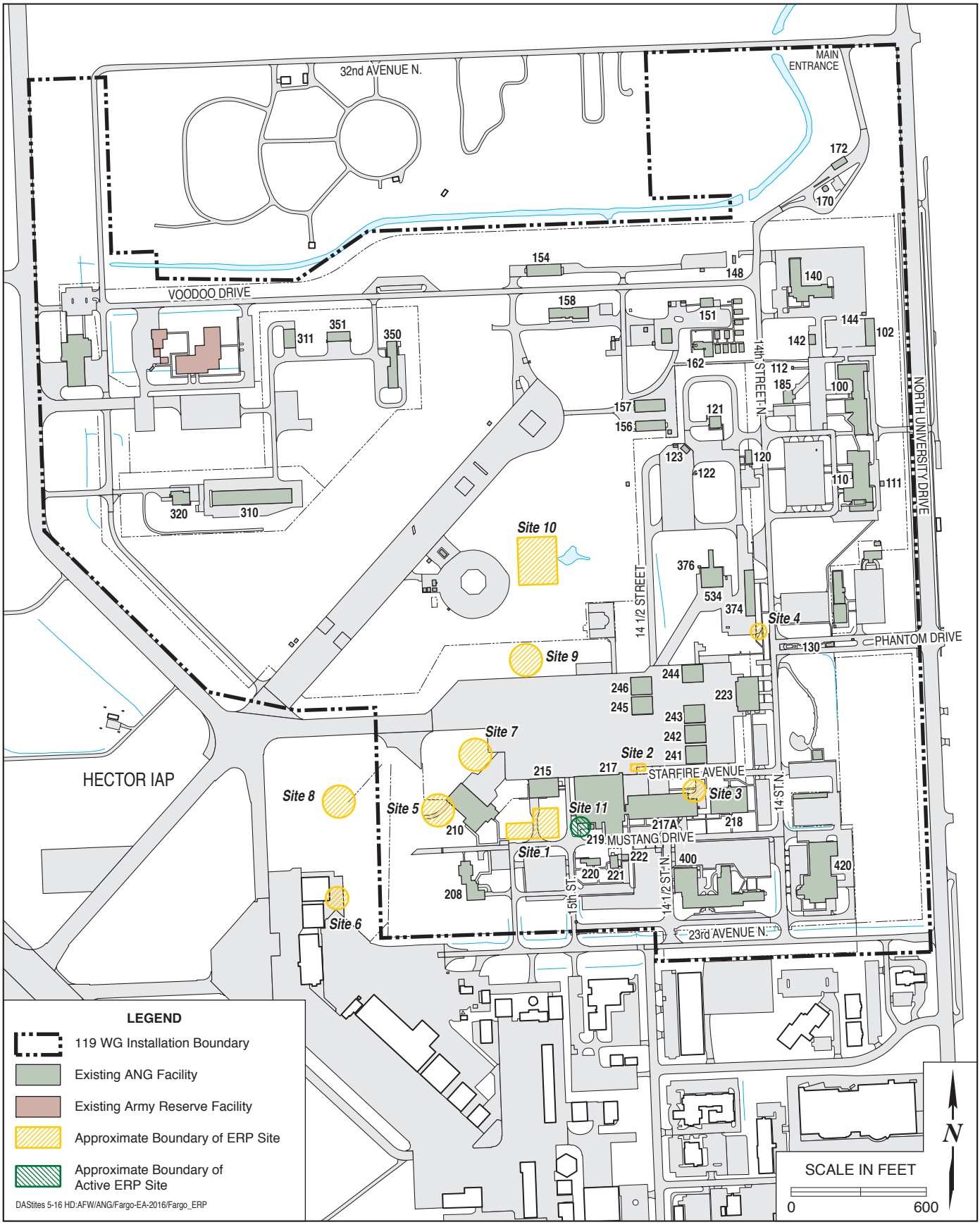
Table 3-24. Summary of Fixed Operating Equipment at the 119 WG Installation

Container ID No.	Location	Container Type	Product Stored	Container Capacity (gal)	Container Material	Double-Wall Tank
148-G2	RTS for Generators	Integral tank for mobile generator	Diesel Fuel	3 @ 200	Steel	No
374-OE	AGE Complex	AGE Equipment	Diesel Fuel	Multiple @ 150	Steel	No

AGE – aerospace ground equipment
RTS - Regional Training Site
Source: North Dakota ANG 2005, 2015.

3.14.2.4 Environmental Restoration Program

The U.S. DoD ERP is designed to identify, evaluate, and remediate sites where activities may threaten public health, welfare, or the environment. A total of 11 ERP sites have been identified, as summarized in Table 3-25 and shown in Figure 3-17. No further action has been recommended for 10 sites. A Record of Decision (ROD) was published for ERP Site 11 in 2010 and remedial actions are currently ongoing, as described below (North Dakota ANG 2002, 2008d, 2010c).



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ERP Sites at 119 WG/North Dakota ANG

FIGURE 3-17

No warranty is made by the State/Territory/National Guard Bureau as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data. This map is a "living document," in that it is intended to change as new data become available and are incorporated into the Enterprise GIS database.

Table 3-25. Summary of ERP Sites at the 119 WG Installation

ERP Site	Site Name	Years of Operation	Material Disposed Of	Relative Risk	Status
1	Grassy area adjacent to pump house	1981-1987	300-500 gallons of JP-4	Little or no potential threat to human health	NFRAP recommended in 1992; NFA 2002.
2	Storage area adjacent to Building 231	1959-1984	Waste hydraulic oils	TPH and 1,2,4-TMB above action levels. However, site is capped.	Underwent RRI for remediation in 1996; NFRAP recommended in 1999; NFA 2002.
3	Area adjacent to annex on Building 217A	1974-1992	Waste oils (<80 gallons)	Little or no potential threat to human health	NFRAP recommended in 1999.
4	Area adjacent to AGE Building	1977-1987	Waste oils (<70 gallons)	Beryllium and arsenic detected above action levels	NFRAP recommended in 1992.
5	Storage area between Buildings 206 and 214	1981-present	Waste POL (approximately 75 gallons)	Contamination below action levels	NFRAP recommended in 1999.
6	Area adjacent to hangar (Northwest Orient Fuel Facility)	Unknown-1981	500 gallons/ year jet fuel from offsite location	TPH, 1,2,4-TMB, and 1,3,5-TMB above action levels	Transferred responsibility to owner of property; NFRAP recommended in 1999; recommended close-out with contamination in-place 2002.
7	Area adjacent to motor pool	Unknown	Waste oil (little to none)	Little or no potential threat to human health	NFRAP recommended in 1999; NFA 2002.
8	Refueler parking apron	1948-present	JP-4	Little or no potential threat to human health	NFRAP recommended in 1999; NFA 2002.
9	Refueler parking apron	1948-present	JP-4	Little or no potential threat to human health	NFRAP recommended in 1999; NFA 2002
10	Former fire training area and runoff ditch	Late 1950s-1989	1,200-2,000 gallons/year JP-4	Soil poses an elevated (but limited) risk to human health and the environment	Interim remedial action for remediation in 1996; NFRAP recommended in 1999.

Table 3-25. Summary of ERP Sites at the 119 WG Installation (Continued)

ERP Site	Site Name	Years of Operation	Material Disposed Of	Relative Risk	Status
11	LUST at Building 217 and Heating Oil UST	Unknown-1999	Petroleum products and chlorinated solvents	Isolated petroleum-related compounds in soil above action levels; petroleum-related and chlorinated solvent compounds in groundwater above action levels	Removed leaking UST, received certificate of closure (equivalent to NFRAP) in 1999; Sampling in 2002; SIs in 2004, 2005; RIs in 2006, 2008; FS in 2009; ROD in 2010.

AGE – aerospace ground equipment
LUST - leaking underground storage tank
NFA – No Further Action
NFRAP – No Further Remedial Action Planned
POL – petroleum, oil, and lubricants
ROD – Record of Decision
RRI – Rapid Response Initiative
RI – Remedial Investigation
SI – Site Investigation
TMB - trimethylbenzene
TPH - total petroleum hydrocarbons
UST - underground storage tank
Source: North Dakota ANG 2002, 2010c.

ERP Site 11: LUST at Building 217 and Heating Oil AST. A leaking underground storage tank (LUST) at Building 217 was removed and a Certificate of Closure was received from the State, an action equivalent to a No Further Remedial Action Planned (NFRAP) Decision Document (North Dakota ANG 2002).

ERP Site 11 also includes a former heating oil AST located near the southwest corner of Building 217 (Maintenance Hangar). The area around the AST was reportedly stained due to spillage during tank refilling activities. The AST was removed and replaced in the mid-1990s. The ERP site is approximately 130 feet wide by 90 feet long and is covered by maintained lawn, concrete sidewalks, asphalt roadways, and various buildings. During project closeout of the site in 2002, total petroleum hydrocarbons (TPH) and 1,2,4-trimethylbenzene (TMB) were detected in soil samples at levels exceeding the regulatory criteria.

Additional investigation was recommended to delineate the vertical and horizontal extent of fuel-related soil contamination and to assess potential impacts to groundwater (North Dakota ANG 2008e).

Site Investigations (SIs) performed in 2004 and 2005 evaluated potential soil and groundwater contamination at the site. Results indicated that groundwater

contamination in the form of petroleum-related products and chlorinated solvents exist at the site. Remedial Investigation (RI) was recommended to delineate the extent of contaminated media (North Dakota ANG 2009c).

RIs performed in 2006 and 2008 consisted of groundwater profiles in an attempt to determine the vertical extent of the trichloroethylene (TCE) plumes located at the site under Building 217. Vertical profiling indicated that the TCE contamination extends to a depth of 50 feet below ground surface (bgs) downgradient from the source area. The highest chlorinated solvent concentrations in groundwater were detected at a depth of 12 to 16 feet bgs along a sanitary sewer line within the hangar footprint. It was determined that floor drains located in a room off the main hangar floor that feed into the sanitary sewer lines were likely the source of the TCE contamination. Overall, chlorinated solvent compounds were detected at relatively low concentrations in soils and were determined not to represent a significant continuing source of contamination to groundwater. Based on the results of the RIs, the vertical and horizontal extent of contamination were adequately defined and the data collected were determined sufficient to develop and select the most feasible alternative for future remedies at the site (North Dakota ANG 2009c).

A Feasibility Study (FS) was prepared in 2009 to examine site characteristics and remediation goals and to evaluate alternative technologies to identify the most effective approach to permanently and reduce the threat to public health, welfare, and the environment. The Final FS recommends an enhanced bioremediation alternative for implementation at ERP Site 11, which meets remedial action objectives and provides the best balance of technical implementability, protection of human health and the environment, and costs needed to implement the remedial action (North Dakota ANG 2009c).

Based on the findings of the Final FS and in accordance with the ROD, Site 11 is undergoing monitoring and remediation via institutional controls, groundwater monitored natural attenuation, enhanced anaerobic bioremediation, and groundwater monitoring (North Dakota ANG 2010c). No unauthorized uses will be allowed to occur on the site, including prohibition of the use of groundwater. Enhanced anaerobic bioremediation is being implemented for the accessible areas of the TCE plume. In addition, groundwater sampling will be conducted

semiannually for the first 10 years of the remedy, annually for the next 20 years, and then once every 5 years until maximum contaminant levels are achieved (North Dakota ANG 2010c).

3.14.2.5 Hazardous Building Materials

Asbestos

AFI 32-1052 (1994 March 22) establishes requirements and assigns responsibilities to incorporate facility asbestos management principles and practices. Installations must remove asbestos-containing material (ACM) likely to release airborne asbestos fibers that cannot be reliably maintained, repaired, or isolated. All facilities must be monitored closely to ensure ACM does not become airborne. In addition, each installation must develop a written management and operating plan to carry out the objectives of facility asbestos management. Prior to property disposal, all available information on the existence, extent, and condition of ACM shall be disclosed in the appropriate documentation and provided to the appropriate parties.

Several site-specific asbestos surveys have been performed at the 119 WG installation since 1989. In addition, in 1990, an Asbestos Operations Plan was completed for the 119 WG installation to ensure that the health and welfare of all base personnel is protected from potentially harmful effects of ACM. The plan also included a survey of installation facilities. Results from asbestos surveys performed at the installation are summarized in Table 3-26.

Lead

No comprehensive survey to assess the presence of lead-based paint has been performed at the 119 WG installation. Most of the installation buildings are painted and the paint appeared to be in good condition. However, buildings built prior to 1978 are tested for lead paint by North Dakota ANG personnel prior to demolition or renovation (North Dakota ANG 2002). In addition, the installation's small arms firing range is approved by the State Health Department for use of lead-contaminated soil (North Dakota ANG 2002).

Table 3-26. Summary of Asbestos Surveys at the 119 WG Installation

Building	Year Built	Asbestos Information			Asbestos Details
		Surveyed	Present	Suspected	
100 - Base Engineering Maintenance Shop	1987	Yes	No	No	12- by 12- inch light brown floor tile and black mastic sampled and determined non-ACM
102 - Base Engineering Storage Shed	1983	Yes	No	No	Determined asbestos free during survey
110 - Communications Facility	1992	Yes	No	No	Determined asbestos free during survey
120 - Petroleum Operations Building	1993	Yes	No	No	Determined asbestos free during survey
121 - Liquid Fuels Pump Station	1993	Yes	No	No	Determined asbestos free during survey
122 - Vehicle Refueling Shop	1993	Yes	No	No	Determined asbestos free during survey
123 – Liquid Oxygen Storage	1993	Yes	No	No	Determined asbestos free during survey
130 - Traffic Check House	1993	Yes	No	No	Determined asbestos free during survey
140 - Vehicle Maintenance Shop	1994	Yes	No	No	Determined asbestos free during survey
144 - Vehicle Maintenance Shop	1994	Yes	No	No	Determined asbestos free during survey
151 - Sanitary Latrine	1995	Yes	No	No	Determined asbestos free during survey
205 - Former Base Supply (Demolished)	1957	Yes	Yes	No	Thermal insulation on cold water lines; black mastic on 12- by 12-inch brown floor tile
214 - Fuel Cell Maintenance Storage	1981	Yes	No	No	Determined asbestos free during survey
215 - Fire Crash/ Rescue Station	1955	Yes	Yes	No	Muddled thermal insulation on domestic water fittings (pipes abated)
217 - Maintenance Hangar	1955	Yes	Yes	No	Thermal insulation, transite door; thermal and mudded insulation of floor heating system lines; caulking on metal siding; thermal insulation on heating converter tank, transite panels
217A - Maintenance Annex	1955	Yes	Yes	No	Thermal insulation, tan floor tile

Table 3-26. Summary of Asbestos Surveys at the 119 WG Installation (Continued)

Building	Year Built	Asbestos Information			Asbestos Details
		Surveyed	Present	Suspected	
218 - Squadron Operations	1974	Yes	Yes	No	Thermal insulation; black mastic under 12- by 12-inch brown floor tile
223 - Aircraft Terminal Operations/Deployment Processing	1980	Yes	No	No	Determined asbestos free during survey
226 - South SP Gatehouse	1983	Yes	No	No	12-by 12-inch tan floor tile and black mastic sampled- non-ACM
300- Main Ramp Cold Storage	1958	Yes	Yes	No	Mudded thermal insulation on hot water heating fittings
310 - Storage Igloo	1963	Yes	No	No	Determined asbestos free during survey
311 - Magazine Storage	1993	Yes	No	No	Determined asbestos free during survey
320 - Conventional Munitions Shop	1963	Yes	Yes	No	Mudded thermal insulation on domestic water fittings; black mastic under 12- by 12-inch gray floor tile
331 - Alert Gate Shack	1979	Yes	No	No	Determined asbestos free during survey
350 - Conventional Munitions Shop	1993	Yes	No	No	Determined asbestos free during survey
351 - Conventional Munitions Shop	1993	Yes	No	No	Determined asbestos free during survey
360 - Alert Billets	1969	Yes	Yes	No	Black mastic under 12-by 12-inch white floor tile
365 - Alert Aircraft Hangar (Barn 1)	1969	Yes	Yes	No	All heating system fittings
366 - Alert Aircraft Hangar (Barn 2)	1969	Yes	Yes	No	All heating system fittings
367 - Alert Aircraft Hangar (Barn 3)	1969	Yes	Yes	No	All heating system fittings
368 - Alert Aircraft Hangar (Barn 4)	1969	Yes	Yes	No	All heating system fittings
374 - AGE Shop Storage Facility	1989	Yes	No	No	Determined asbestos free during survey

Table 3-26. Summary of Asbestos Surveys at the 119 WG Installation (Continued)

Building	Year Built	Asbestos Information			Asbestos Details
		Surveyed	Present	Suspected	
400 - Dining Hall/ Medical Facility	1959	Yes	Yes	No	Thermal insulation (pipes abated), duct jacket insulation (abated); lines and fittings in the tunnel and overhead; black mastic under the 12- by 12-inch light tan floor tile
420 - Base Supply and Equipment Warehouse	1959	Yes	No	Yes	Survey could not be conducted due to renovation
80002- West (Old) Hangar (Demolished)	1948	Yes	Yes	No	Thermal insulation, floor tile (removed during demolition)

AGE – aerospace ground equipment
Source: North Dakota ANG 2005, 2009c.

Herbicides and Pesticide

Herbicides, pesticides, insecticides, and fertilizers used at the 119 WG are managed under the installation's Integrated Pest Management Plan (North Dakota ANG 2010d). Pests identified at the installation include rats and mice, mosquitoes, bees, hornets and wasps, and ants. All pest management activities are coordinated by the Integrated Pest Management Coordinator via contract. Pesticides are applied according to standard use and in compliance with all applicable Federal laws and regulations. Only approved pesticides identified in the Integrated Pest Management Plan (e.g., Round-up) may be used at the installation and only State-certified, licensed contractors are hired to apply pesticides. Pesticides are stored in a SeaLand Container located outside Building 100 (Base Engineering Maintenance Shop) and Building 420 (Base Supply & Equipment Warehouse) at the installation (North Dakota ANG 2010d).

SECTION 4
ENVIRONMENTAL CONSEQUENCES

Environmental impacts which would result from implementation of the Proposed Action at Hector International Airport (IAP) by the 119th Wing (119 WG) of the North Dakota Air National Guard (ANG) are evaluated in this section. Analyses are presented by resource area, as described in Section 3, *Affected Environment*.

4.1 AIRSPACE MANAGEMENT

4.1.1 Approach to Analysis

The significance of potential impacts to airspace management depends on the degree to which the proposed aircraft robust would affect the airspace environment. Significant impacts could result if the Proposed Action would: 1) impose major restrictions on air commerce opportunities; 2) significantly limit airspace access to a large number of users; or 3) require modifications to air traffic control (ATC) systems.

4.1.2 Impacts

4.1.2.1 Proposed Action

Implementation of the proposed beddown of the launch and recovery element (LRE) of the MQ-9 Reaper remotely piloted aircraft (RPA) at Hector IAP would result in an average of 44 additional daily aircraft operations, an annual increase of approximately 10,208 operations. These MQ-9 daily operations would include two departures and arrivals and up to 20 closed patterns. Further, the unit would conduct the majority of training missions (approximately 90 percent) within Restricted Area (R-) 5403 Sections A through F (A-F), with less frequent operations within R-4301 at Camp Ripley. The 119 WG would access R-5403 from Hector IAP at a flight level of 18,000 feet above mean sea level (MSL).

Proposed Local Operations

Upon implementation of the Proposed Action, the frequency of aircraft activity conducted by the 119 WG at Hector IAP would increase; however, no change to

the configuration (i.e., size, shape, or location) of Hector IAP's Class D airspace is proposed or would be required to support implementation of the proposed beddown and LRE of the MQ-9. While total daily airspace operations at Hector IAP (including civilian aircraft activity) would increase from 204 to 248 operations per day (22 percent increase), this increase would not exceed the air traffic capacity of Hector IAP. Further, there would be only 18 training days per month (Table 4-1). In addition, implementation of the Proposed Action would not require modification of the ATC system at Hector IAP. No ATC facilities used by the 119 WG would be adversely impacted by implementation of the Proposed Action and no significant impacts to airspace management would occur.

Table 4-1. Proposed Action and Baseline Aircraft Operations at Hector International Airport

	Baseline Daily Operations	Proposed Action Daily Operations	Baseline Annual Operations	Proposed Action Annual Operations
Civilian	198.9	198.9	72,616	72,616
Military-Based	0.0	44.0 (+44.0)	0.0	10,208
Military-Transient	5.5	5.5	2,038	2,038
Total	**204.4**	**248.4 (+44.0)**	**74,654**	**84,862 (+10,208)**

Sources: FAA 2016; North Dakota ANG 2016.

The MQ-9 aircraft would utilize a short taxi route at Hector IAP, using Taxiways Bravo and Delta. The MQ-9 aircraft would utilize Runway 14/32 the majority of the time (approximately 75 percent) and to a lesser extent, Runway 09/27, based on wind direction. After takeoff from Hector IAP, the aircraft would follow standard published departure patterns. Similarly, the aircraft would follow standard arrival patterns into Hector IAP. In addition to departure and arrival operations, the MQ-9 aircraft would also utilize Hector IAP Terminal Airspace for limited closed pattern operations. The MQ-9 aircraft would follow a standard circuit, avoiding housing areas and other potential sensitive land uses.

The Proposed Action would not require any modification to the current terminal airspace structure or operational procedures, or any changes to the departure and arrival route structure of any airport or the Victor Routes (V-) used to transition between airports. The RPA would be expected to fly standard instrument

departures and arrivals as directed by Hector IAP ATC and in the same manner as other aircraft using the airport. Other airports in the area would not be directly affected by the Proposed Action. MQ-9 aircraft would transition to and from Class D airspace in the same manner as other aircraft using Hector IAP. MQ-9 aircraft completing local patterns would remain within the Hector IAP Class D airspace. While V-561 bisects the proposed access corridor between Hector IAP and R-5403, V-561 has an elevation block of 1,200 feet MSL to 17,999 feet MSL and the 119 WG operated MQ-9 would access R-5403 at an altitude above 18,000 feet MSL, thus air traffic on V-561 would not be affected.

All flight operations would continue to be conducted in accordance with procedures established by the Federal Aviation Administration (FAA) and in applicable U.S. Air Force (USAF) regulations and orders with the safety of its pilots and people in the surrounding communities as the primary concern. Strict control and use of established safety procedures would minimize the potential for safety risks (see Section 4.2, *Safety*).

Proposed MQ-9 aircraft operations would have no significant impact on the use and management of the Hector IAP airspace or the airspace surrounding public and private airports in the region. As a result, impacts to airports under the Proposed Action would not be significant.

Proposed Travel Corridor and R-5403 Operations

MQ-9 aircraft operations at Hector IAP would be conducted under a Federal Aviation Administration (FAA) Certificate of Authorization (COA) where authorization to fly is granted for a specific platform, for a specific mission, in a given piece of airspace. Currently, the FAA utilizes a COA as the means of authorizing RPA operations in the National Airspace System (NAS).

To enable NAS access, the 119 WG proposes to utilize a Ground-Based Sense and Avoid (GBSAA) system tied to Fargo ATC radar to provide traffic deconfliction in the climb to 18,000 feet MSL or above and transit via a stereo flight planned route to R-5403.Additionally, Fargo Air Traffic Control (ATC) radar and Minneapolis Air Route Traffic Control Center (ARTCC) would provide normal Instrument

Flight Rules (IFR) separation service to the MQ-9 aircraft to include traffic calls that will allow the aircrew to cue the camera to the traffic.

The majority of proposed MQ-9 Reaper RPA training activities would be conducted in R-5403, located approximately 60 nautical miles (NM) northwest of Hector IAP. This Special Use Airspace (SUA) measures approximately 30 NM by 40 NM, with its floor starting at 8,000 feet MSL and extending to a ceiling of 17,999 feet MSL. R-5403 A-F is currently used by the 119 WG for MQ-1 RPA operations conducted out of Grand Forks Air Force Base (AFB).

Two MQ-9 aircraft would operate simultaneously in R-5403 and would be deconflicted by altitude. The type of training missions and number of daily sorties (i.e., two [2]) would not change under the Proposed Action; however, flight time within R-5403 would increase.

All MQ-9 aircraft operations in R-5403 would be conducted as specified in 14 Code of Federal Regulations (CFR) § 91.133 and in accordance with the 119 WG Letter of Agreement (LOA). The GCS would have direct radio communications with Minneapolis ARTCC and any assigned ATC agency for MQ-9 aircraft flight operations.

With regard to the MQ-9 RPA departing Hector IAP and transitioning airspace to complete training within R-5403, impacts to local, transitioning, and training airspace would be less than significant.

4.1.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown four MQ-9 RPA aircraft and complete the associated LRE at Grand Forks AFB. This would result in conditions similar to those described under the baseline setting at Grand Forks AFB where the 119 WG currently has MQ-1 and completes associated LRE training. In addition, implementation of this alternative would not require modification of the ATC system at Grand Forks AFB. As with the Proposed Action, no airspace areas or ATC facilities used by the 119 WG would be adversely impacted and no significant impacts to airspace management would occur.

4.1.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the proposed beddown of the MQ-9 Reaper and LRE mission at Hector IAP would not be implemented. With the 119 WG anticipating the cessation of MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Therefore, conditions at Hector IAP would remain as described in *Section 3.1, Airspace Management* and no impacts to airspace management would occur.

4.2 SAFETY

4.2.1 Approach to Analysis

If implementation of the Proposed Action would substantially increase risks associated with aircraft mishap potential or flight safety relevant to the public or the environment, it would represent a significant impact. For example, if an action involved an increase in aircraft operations such that mishap potential would increase significantly, air safety would be compromised and impacts would be significant.

Further, if implementation of the Proposed Action would result in incompatible land use with regard to safety criteria such as Runway Protection Zones (RPZs), quantity-distance (QD) arcs, or Anti-Terrorism/Force Protection (AT/FP) standards, impacts would be significant.

4.2.2 Impacts

4.2.2.1 Proposed Action

Ground Safety

Under the Proposed Action, there would be no change to ground safety procedures and activities at Hector IAP. All actions would be accomplished by technically qualified personnel and would be conducted in accordance with applicable USAF safety requirements, approved technical data, and standards. The fire and crash response capability currently provided at Hector IAP would be sufficient to meet all requirements.

To support the MQ-9 Reaper LRE mission, two Ground Data Terminals (GDTs) would be placed on Building 217. The proposed GDTs would be located outside of RPZs and CZs and would not pose any additional safety risk to aircraft or ground personnel. Unified Facilities Criteria (UFC) 3-260-01, *Airfield and Heliport Planning and Design Criteria*, limits locations and heights of objects and facilities around and in the immediate vicinity of an airfield to minimize hazards to airfield and flight operations. The proposed antennae location at the 119 WG installation

would conform to UFC requirements. During renovation, BMPs would be employed, and strict adherence to all applicable standard industrial safety requirements and procedures would further minimize the relatively low risk associated with this activity. Thus, impacts to Ground Safety would not be significant.

Mishap Potential and Bird-Aircraft Strike Hazard

The Proposed Action would not result in any changes to the number annual 119 WG RPA operations; however, the type of RPA would change from an MQ-1 to an MQ-9. The 119 WG has not had any MQ-1 mishaps (e.g., Class A, Class B, etc.) since the inception of the unit's mission in 2008 (North Dakota ANG 2016a). MQ-9 RPA have flown more than 468,000 hours in 13 years for the USAF, with a mishap rate of 4.79 and 1.28 for both Class A and Class B, respectively (Taranto 2013, USAF 2014b). The Class A and Class B mishap rates for the proposed MQ-9 is less than that for the MQ-1, currently operated by the 119 WG (i.e., MQ-1, 7.58 and 1.66/MQ-9, 4.79 and l.28) (Taranto 2013). MQ-9 operations would adhere to all established flight safety guidelines and protocol. Further, no conflict with the unit's Bird-Aircraft Strike Hazard (BASH) Plan (2004) would result from implementation of the Proposed Action. Therefore, with regard to aircraft mishaps and bird-aircraft strikes, no significant impacts would result from implementation of the Proposed Action.

Air to Ground Laser Operations

Under the Proposed Action, the 119 WG would include laser target training during training sorties within R-5403 A-F from once a month up to 6 to 8 times per month. Laser activation would only take place when the 119 WG's MQ-9s are within R-5403 and when prior coordination has taken place with Camp Grafton personnel. During the 119 WG's training sorties, where two RPAs are active in R-5403, each MQ-9 would activate laser firing multiple times.

The 119 WG has a Laser Safety Plan developed in cooperation with the Air Force Research Laboratory. This plan states the conditions that are required in order for the plane to be allowed to fire its laser. There would be no footprint on the ground from this laser. A minimum 300 meter (m) buffer around each target would be met

with an additional 300 m buffer implemented whenever possible. Initially, 119 WG personnel would provide on the ground coordination when a laser operation takes place to provide additional confirmation that the laser operation would be conducted as required in the Laser Safety Plan. All laser operations would be coordinated with Camp Grafton personnel.

Thus, impacts to Safety resulting from 119 WG laser operations associated with the Proposed Action would not be significant.

Lost Link Procedure

Operators use C-Band and Ku-Band links to communicate with and operate the MQ-9 aircraft. However, all RPAs are preprogrammed with a flight profile that the aircraft flies in the rare instance when it is no longer under control of a GCS, a status referred to as Lost Link (LL). Lost Link Procedures (LLPs) are defined as a point, or sequence of points where the aircraft would proceed and hold at a specified altitude for a specified period of time, in the event the command and control link to the aircraft is lost. The aircraft would loiter at the LLP location until the communication link with the aircraft is restored or the specified time elapses. If the time period elapses without reestablishing GCS control, the aircraft would proceed as pre-programmed either to another LLP location in an attempt to regain the communication link, or to the Flight Termination Point (FTP). The LL orbit and FTP are carefully considered and mapped to ensure that they are not established over populated areas or where populations would gather.

The LL orbit would be a new pattern that would be flown as a result of beddown of the MQ-9 Reaper LRE at Hector IAP. If LL were to occur on final approach to, or climb-out from, the runway, the RPA would climb at a runway heading for 2.5 NM and climb to 2,400 feet MSL. Once at 2,400 feet MSL, the aircraft would turn in the shortest direction toward the LL orbit. If LL were to occur at 2,400 feet MSL within the Hector IAP traffic pattern, the RPA would immediately turn in the shortest direction toward the LL orbit. In the event that the C-Band and Ku-Band links are lost with the aircraft between R-5403 and Hector IAP, the MQ-9 would remain within the lateral confines of the scheduled airspace, and climb or descend to the last altitude assigned and hold for 30 minutes while attempts are made to reestablish the communication link. If the link is not established after 30 minutes,

the RPA would then fly the published LL route back through the corridor at the previously cleared altitude to the LL orbit location, where it would hold at the LL orbit location at the assigned altitude for 30 minutes, after which time it would descend to the LL orbit at 2,400 feet MSL and hold until either link is re-established or fuel is exhausted. Thus, should a LL situation arise, given the safety procedures outlined to ground the RPA and the locations of both the LL orbit and FTP away from populated areas, safety impacts would be less than significant.

Runway Protection Zones

Wither regard to airfield safety zones (i.e., RPZ, CZs) established at Hector IAP, facilities currently located at and adjacent to the 119 WG comprise compatible land use activities. The Proposed Action would not result in a change in shape or shift in location of established RPZs or CZs and no incompatible land use would be established within these safety zones. Therefore, no conflict with regard to airfield safety zones would result from implementation of the Proposed Action.

Explosives Safety

Munitions are stored at the 119 WG installation in secured facilities and all explosives safety criteria are met for storage and handling. Implementation of the Proposed Action is not anticipated to result in any potential impacts associated with explosives. Further, no incompatible land use activities are proposed to be established within established QD arcs. Consequently, no impacts with regard to explosives safety would occur due to implementation of the Proposed Action.

Anti-Terrorism/Force Protection (AT/FP)

Implementation of the Proposed Action would not include any new construction or demolition projects within 119 WG installation boundaries. All proposed renovation would occur within Building 210 and Building 223 and would not be subject to AT/FP standards related to setbacks and facilities construction. As a result, no violations of AT/FP standards under the Proposed Action would occur at the 119 WG installation.

4.2.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Implementation of Alternative 1 would entail the beddown of four MQ-9 RPA and associated LRE at Grand Forks AFB. Alternative 1 would not result in an increase in operating hours, only a change to the RPA airframe maintained and operated by the 119 WG. Under Alternative 1, no incompatible land use activities would be established within safety zones or QD arcs at Grand Forks AFB. All existing AT/FP standards would be upheld; therefore, as with the Proposed Action, Alternative 1 would not result in significant impacts to safety conditions at the 119 WG installation. Selection of this alternative would also not result in any significant safety impacts to at Grand Forks AFB, as the 119 WG currently completes MQ-1 operations at this location.

4.2.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the North Dakota ANG would not implement the Proposed Action, and proposed aircraft beddown, LRE, and building renovations would not occur. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Therefore, Safety conditions would remain as described in Section 3.2, *Safety*.

4.3 AIR QUALITY

4.3.1 Approach to Analysis

Section 176 (c) of the Clean Air Act (CAA) provides a framework for ensuring that Federal actions conform to appropriate implementation plans. Before any Federal agency engages in, supports, licenses, permits, or approves any activity, that agency has a responsibility to ensure that such actions would conform to the applicable implementation plan through the U.S. Environmental Protection Agency (USEPA) General Conformity Rule. In the case of the Proposed Action, conformity with the North Dakota State Implementation Plan (SIP) would be required. The 1990 Amendments to the CAA define the purpose of a SIP as eliminating or reducing the severity and number of violations of National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of these standards.

Direct and indirect emissions of criteria pollutants, or their precursors, associated with the Proposed Action must be calculated for all non-exempt emission sources, including mobile and stationary, as well as construction-phase emissions.

An air quality impact would be significant if it: 1) increases concentrations of ambient criteria pollutants or ozone precursors to levels exceeding NAAQS; 2) increases concentrations of pollutants already at nonattainment levels; 3) leads to establishment of a new nonattainment area by the USEPA or the Governor of North Dakota, or 4) delays the achievement of attainment in accordance with North Dakota's SIP.

With respect to the General Conformity Rule, effects on air quality would be considered significant if the Proposed Action would result in an increase of the Air Quality Control Region's (AQCR) emissions inventory by 10 percent or more, or if such emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment or maintenance pollutants.

4.3.2 Impacts

4.3.2.1 Proposed Action

Operational Emissions

Sources of air pollutants associated with the Proposed Action include emissions associated with MQ-9 flight operations as described in Section 2.2.1. The baseline emissions for the MQ-9 training at Hector IAP are zero, since no training with this airframe currently occurs at the installation. Using the description of flight operations in Section 2.2, operational emissions were calculated based on the estimated number of landing and take-off events and closed patterns for the MQ-9. The emissions produced above the standard mixing height (3,000 feet above ground level [AGL]) do not typically affect air quality. Therefore, emissions associated with MQ-9 training activities above this altitude are not quantified in this analysis.

Table 4-2 summarizes the approximate pollutant emission rates for the MQ-1 Predator and the MQ-9 Reaper, as well as the annual air emissions for the MQ-9 under the Proposed Action. As shown in Table 4-2, pollutant emission rates for the MQ-9 Reaper are greater than those of the MQ-1 Predator, with the exception of carbon monoxide (CO) emissions, in which the MQ-9 produces substantially less CO emissions. As shown under calculated total emissions, annual operations for the MQ-9 LRE at Hector IAP under the Proposed Action would result in net emission increases that are measurably below 10 percent of the AQCR's emissions inventory for all pollutants and would therefore not trigger the requirement for a Conformity Determination under the General Conformity Rule. Therefore, long-term operational emissions would be considered less than significant.

Table 4-2. Pollutant Emission Rates for MQ-1 and MQ-9 Aircraft

Aircraft	Pollutant Emission Rates (lbs/LTO)				
	CO	VOC	NO_x	SO_x	PM_{10}
MQ-1	17.21	0.28	0.02	0.00	0.02
MQ-9	2.50	1.59	0.56	0.05	0.09
Annual Aircraft Cycles (MQ-9)	**Total Emissions (tpy)**				
	CO	VOC	NO_x	SO_x	PM_{10}
5,104	6.38	4.07	1.43	0.11	0.22
2014 Annual Emissions Inventory Report Values	**Ten Percent of Total Annual Emissions (tons)**				
	CO	VOC	NO_x	SO_x	PM_{10}
	1754.4	577.8	5659.5	5845.7	317.6

Notes: The emissions produced above the standard mixing height (3,000 feet AGL) have a negligible effect on ground level concentrations and could not directly result in a violation of the NAAQS in a local area (FAA 2000). Therefore, MQ-9 training activities above this altitude have not been quantified in this analysis.
Aircraft Cycle: One landing/takeoff cycle is one composed of one landing and one takeoff; one closed pattern cycle is composed of one complete closed pattern.
Source: North Dakota ANG 2016b; North Dakota Department of Health 2015b.

On the basis of potential total emissions generated by stationary sources, the 119 WG installation is not considered a major source subject to CAA Title V status under USEPA regulations, and currently operates under a minor source permit (North Dakota ANG 2016b). According to the most recent air emissions inventory, total emissions from sources at the 119 WG are well below significance levels for all criteria pollutants (North Dakota ANG 2016b). The Proposed Action would replace the 119 WG's current inventory of two MQ-1 Predator RPA with four MQ-9 Reaper RPA. Operational emissions from mobile sources associated with the unit would be lower than the most recent available air emissions inventory due to the decrease in vehicle trips to and from Grand Forks AFB associated with current 119 WG MQ-1 operations. Locally, total emissions associated with aircraft operations at Hector IAP would increase from the addition MQ-9 flying and maintenance operations. New maintenance activities at the 119 WG for the MQ-9 would include the following; Pneudraulics, Non-Destructive Inspection (NDI) activities, Jet Engine Inspection and Maintenance, Fuel System Maintenance, Weapons and Release Systems maintenance, and Aircraft Ground Equipment (AGE) operation and maintenance. These activities would be limited to buildings 210, 217, 217A, 223, and 350, with the processes being similar to the previous operations at Hector IAP for the F-16 and C-21 airframes. Emissions associated with the Proposed Action would comprise less than 10 percent of annual pollutant

inventory emissions and the 119 WG would not be required to obtain a Title V permit. Long-term emissions associated with the Proposed Action would be negligible; resulting in less than significant impacts to air quality.

Construction Emissions

As described in Section 2.2.2, implementation of the Proposed Action would require facility construction and infrastructure improvements to enable the beddown of the proposed MQ-9 Reaper and LRE operations at Hector IAP. During a 2016 Site Action Task Force (SATAF) determination evaluating the site, no necessary construction or infrastructure improvements were identified. The SATAF identified two buildings that would require interior renovation to support the Proposed Action. However, building renovations would not result in the generation of criteria air pollutions in quantities that would significantly affect regional air quality and impacts are considered less than significant.

4.3.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown the MQ-9, and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 operations. No construction or demolition would occur under Alternative 1. Consequently, operational emissions associated with MQ-9 LRE would resemble emissions associated with existing MQ-1 LRE, and would therefore be less than significant.

4.3.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the North Dakota ANG would not implement the Proposed Action, and proposed aircraft beddown and construction projects would not occur. As the 119 WG is anticipating the elimination of MQ-1 Predator operation in April of 2016, the unit would no longer have an RPA mission. Subsequently, air quality conditions as described in Section 3.3, *Air Quality*.

4.4 NOISE

4.4.1 Approach to Analysis

Noise impact analyses typically evaluate potential changes to existing noise environments that are instigated by implementation of a Proposed Action. These potential changes may be beneficial if they reduce the number of sensitive receptors exposed to unacceptable noise levels. Conversely, changes may be significant if they result in increased exposure to unacceptable noise levels. An increase in noise levels due to introduction of a new noise source can create an impact on the surrounding environment. Noise associated with a Proposed Action is compared with existing noise to determine the magnitude of potential impacts.

The ANG considers a noise impact to be significant if analysis shows that the Proposed Action would cause noise sensitive areas to experience an increase in noise of 1.5 decibel (dB) or more at or above 65 day-night average A-weighted sound level (DNL) noise exposure when compared to the No-Action Alternative for the same time frame. As a general rule, a 3-dB change is necessary for noise increases to be noticeable to humans (Bies and Hansen 1988).

4.4.2 Impacts

4.4.2.1 Proposed Action

Construction-Related Impacts

Implementation of the Proposed Action would have minor, temporary effects on the noise environment in the vicinity of proposed buildings 210 and 223 for renovations and Building 217 for the addition of two GDTs. There would be no use of heavy equipment for site preparation and development (e.g., vegetation removal, grading, and backfill) and only light construction vehicles (delivery trucks) would be making trips on-site. However, noise associated with these light-duty truck trips would be typical of construction activities, short-term, and restriction of construction activity would be confined to normal working hours (i.e., between 7:00 AM and 5:00 PM). Therefore, implementation of the Proposed

Action would not significantly impact sensitive receptors at or adjacent to Hector IAP.

Operations-Related Impacts

Implementation of the Proposed Action would result in the beddown of four MQ-9 RPA and 10,208 annual operations. Approximately, 44 daily MQ-9 RPA operations would occur at Hector IAP under the Proposed Action, which would result in a negligible increase in noise exposure, given the MQ-9's small operational noise footprint, similar to that of a fixed-pitch single-engine aircraft (e.g., Cessna) and no sensitive receptors would experience an increase of 1.5 dB or greater; therefore, implementation of the Proposed Action would result in less than significant impacts to aircraft-related noise exposure.

The one facility proposed for modification is currently located within a noise environment dominated by aircraft activity; therefore, it would not be considered noise-sensitive in nature and the existing noise environment would not have a significant impact on proposed facility renovation.

Further, operational activities conducted at the proposed facilities would not generate noise above ambient levels. Therefore, implementation of the Proposed Action would not have significant impacts to noise.

4.4.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown four MQ-9 RPA and complete the LRE at Grand Forks AFB. Implementation of Alternative 1, would result in similar noise levels to existing 119 WG MQ-1 aircraft operations at Grand Forks AFB. Implementation of this alternative would not result in changes to the size and shape of existing noise contours at Grand Forks AFB, and no sensitive receptors above 65 DNL would experience an increase of 1.5 dB or greater. Thus, operational noise impacts would remain less than significant.

4.4.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the proposed beddown of the MQ-9 Reaper and LRE mission at Hector IAP would not be implemented. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Under the No-Action Alternative, noise levels would remain as described in Section 3.4, *Noise*, and no significant impacts would occur.

4.5 LAND USE

4.5.1 Approach to Analysis

Determination of land use impacts is based on the degree of land use sensitivity in the area. In general, the ANG considers a land use impact to be significant if it would: 1) be inconsistent or non-compliant with applicable land use plans or policies; 2) preclude an existing land use of concern from continuing to exist; 3) preclude continued use of an area; or 4) be incompatible with adjacent or vicinity land use to the extent that public health or safety is endangered.

The analysis of potential impacts to land use includes: 1) identification and description of land use areas that may be affected by implementation of a Proposed Action; 2) examination of the Proposed Action and its potential effects on land use; 3) assessment of the compatibility of a Proposed Action with existing zoning; and 4) assessment of the significance of potential impacts to land use based on the criteria described above.

4.5.2 Impacts

4.5.2.1 Proposed Action

The ANG considers a land use impact to be significant if analysis shows that proposed facilities under the Proposed Action would be inconsistent or non-complaint with applicable land use plans or policies or would result in unacceptably high noise levels to sensitive receptors.

No new facility construction, infrastructure developments, or land use changes would be required to support implementation of the Proposed Action at this time. Therefore, no impacts to either on- or off-site land use would occur under the Proposed Action.

As described in Section 4.4, *Noise*, implementation of the Proposed Action would generate negligible long-term noise levels from an additional 44 MQ-9 LRE daily operations that would be compatible with land use guidelines for sensitive receptors in the vicinity of Hector IAP. Although noise levels would negligibly

increase when compared to baseline conditions, no new incompatible land use would be introduced through implementation of the Proposed Action; therefore, the Proposed Action would not have any significant impacts on land use.

4.5.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would operate the MQ-9 Reaper and beddown of the RPA would occur at Grand Forks AFB, similar to the existing 119 WG operations for the MQ-1 LRE RPA. MQ-9 LRE maintenance personnel and operators would be required to continue to commute to and from the Grand Forks AFB. Under Alternative 1, operational noise levels (i.e., aircraft and vehicle) would be similar to existing conditions. Noise levels associated with RPA LRE operations would continue to remain compatible with vicinity land use and no new incompatible land use would be introduced. Therefore, land use impacts associated with implementation of Alternative 1 would be less than significant.

4.5.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the 119 WG would not implement the Proposed Action. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Under the No-Action Alternative, land use would remain as described in Section 3.5, *Land Use*, and no significant impacts would occur.

4.6 GEOLOGICAL RESOURCES

4.6.1 Approach to Analysis

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating impacts of an action on geological resources. Generally, such impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development.

Analysis of potential impacts to geological resources typically includes: 1) identification and description of resources that could potentially be affected; 2) examination of the action and the potential effects this action may have on the resource; 3) assessment of the significance of potential impacts; and 4) provision of mitigation measures in the event that potentially significant impacts are identified.

4.6.2 Impacts

4.6.2.1 Proposed Action

Geology

Implementation of the Proposed Action would not require construction or improvements to existing infrastructure at the installation. However, during a 2016 SATAF inspection of the site, the SATAF identified interior renovations to buildings 210 and 223 necessary to support the increased size of the MQ-9 Reaper aircraft. Proposed renovations would be contained entirely inside the building and would not have significant impacts on sensitive or regional geologic or physiographic features.

Topography

Aforementioned interior renovations would only occur to the interior of buildings 210 and 223 and would not require any grading or leveling of grounds. Topography at the Hector IAP is at an elevation of which averages approximately

892 feet MSL, and does not pose an erosion hazard under the Proposed Action. Therefore, impacts to topography resulting from implementation of the Proposed Action would not be significant.

Soils

Given that only interior renovations would occur to Building 210 and Building 223, which are located on soils that have been extensively physically altered (e.g., cut, graded, or covered) or removed and replaced by imported fill, impacts to soils under the Proposed Action would be less than significant.

4.6.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown and complete LRE operations associated with the MQ-9 out of Grand Forks AFB, similar to existing MQ-1 Predator operations. No renovation component would occur under this Alternative. Consequently, impacts related to geology, soils, and topography under Alternative 1 would be the same as the Proposed Action, less than significant.

4.6.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the MQ-9 beddown and LRE would not be implemented at Hector IAP. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Under the No-Action Alternative, geology would remain as described in Section 3.6, *Geological Resources*, and no significant impacts would occur.

4.7 WATER RESOURCES

4.7.1 Approach to Analysis

Significance of potential impacts to water resources is based on water availability, quality, and use; existence of floodplains and wetlands; and associated regulations. An impact to water resources would be significant if it would: 1) reduce water availability to or interfere with the supply of existing users; 2) create or contribute to overdraft of groundwater basins or exceed safe annual yield of water supply sources; 3) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; 4) threaten or damage unique hydrologic characteristics; or 5) violate laws or regulations that have been established to protect or manage water resources of an area.

A floodplain impact would be significant pursuant to the National Environmental Policy Act (NEPA) if it results in notable adverse impacts on natural and beneficial floodplain values. Significant encroachment on a floodplain would occur if it would: 1) have a high probability of loss of human life; 2) have substantial, encroachment-associated costs or damage, including interrupting aircraft serve or loss of a vital transportation facility (e.g., flooding of a runway or taxiway; important navigational aid out of service due to flooding, etc.); or 3) cause adverse impacts on natural and beneficial floodplain values.

4.7.2 Impacts

4.7.2.1 Proposed Action

Surface Water

There are no natural drainage systems at the 119 WG installation (refer to Figure 3-9 in Section 3.7, *Water Resources*). Under the Proposed Action, no construction or demolition activities would take place adjacent to any on-installation surface water features. Though there are several on-installation drainages, which ultimately flow into the Red River, implementation of the Proposed Action is not anticipated to affect these areas. Therefore, no impacts to existing surface water in the vicinity of the 119 WG are anticipated.

Groundwater

Groundwater deposits on and in the vicinity of the 119 WG installation are located beneath 60 to 90 feet of highly impermeable clay sediments. As a result, groundwater recharge rates in the vicinity of the installation are naturally restricted and would therefore not be impacted as a result of implementation of the Proposed Action.

Wetlands

A total of eight wetland areas have been identified at the installation. Three of these wetlands, totaling 1.63 acres, were determined likely to be jurisdictional under Section 404 of the Federal Clean Water Act., while the other five wetlands, totaling 1.61 acres, did not appear to have surficial connections to other wetlands or surface water resources, and are presumed to be isolated and are therefore non-jurisdictional (North Dakota ANG 2009b). No construction or ground disturbing activities are proposed at the 119 WG installation under the Proposed Action. Therefore, impacts to wetlands would be less than significant.

Floodplains

Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA) indicate the presence of floodplains at the 119 WG installation (FEMA 2016). The majority of the 119 WG installation is located in an area classified as *Zone X Other Flood Area,* which contains minimal flooding hazard. No buildings associated with the Proposed Action would be located within areas of the installation classified as *Zone AE Special Hazard Areas of 100-Year Flood,* which are subject to flooding at a FEMA-calculated Base Flood Elevation (BFE) of 892 feet MSL (FEMA 2015, 2016). Accordingly, impacts with regard to floodplains under the Proposed Action would be less than significant.

4.7.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown the MQ-9, and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 operations. No renovation component would occur under this Alternative. Consequently,

impacts related to surface water, groundwater, wetlands and floodplains under Alternative 1 would be the same as for the Proposed Action, less than significant.

4.7.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the Proposed Action would not be implemented at Hector IAP. Baseline water resources conditions described in Section 3.7, *Water Resources*, would remain unchanged. Therefore, implementation of this alternative would have no impacts on water resources.

4.8 BIOLOGICAL RESOURCES

4.8.1 Approach to Analysis

Determination of the significance of potential impacts to biological resources is based on applicable legal protection of sensitive resources (e.g., Federal Endangered Species Act [ESA], Migratory Bird Treaty Act [MBTA], and Bald and Golden Eagle Protection Act [BGEPA]). Impacts to biological resources would be considered significant if special status plant or wildlife species or habitats of special concern were adversely affected or if disturbances caused substantial reductions in population size or distribution. The Federal ESA further provides that an impact to biological resources would be considered significant if the U.S. Fish and Wildlife Service (USFWS) determines that the action would: 1) jeopardize the continued existence of a federally listed threatened or endangered species; or 2) result in the destruction or adverse modification of federally designated critical habitat. For federally listed threatened and endangered species and federally designated critical habitat, formal consultation with USFWS under section 7(a)(2) of the ESA is triggered when: 1) it is determined that the proposed action "may affect" federally listed species or designated critical habitat unless the USFWS or National Marine Fisheries Service (NMFS) concur in writing that the proposed action is not likely to adversely affect any listed species or critical habitat; or 2) the USFWS does not concur with the determination that the proposed action is not likely to adversely affect federally listed species or designated critical habitat.

Data from the North Dakota of Fish and Game Department (NDFGD) and USFWS Information, Planning, and Conservation System (IPaC) were reviewed to determine the presence or potential occurrence of sensitive species and habitats on Hector IAP, in Cass County, and in North Dakota (refer to Section 3.8.2, *Threatened and Endangered Species*). Potential physical impacts such as habitat loss, noise, and impacts to surface water were evaluated to assess potential impacts to biological resources resulting from implementation of the Proposed Action and the identified alternatives.

4.8.2 Impacts

4.8.2.1 Proposed Action

Vegetation

Approximately half of the 119 WG installation is comprised of open, undeveloped space containing manicured landscaping or short grass. No native vegetation remains at the installation. Interior renovations of buildings 210 and 223 associated with the Proposed Action would not require any vegetation removal; further, due to the lack of sensitive or native plant species at the installation, proposed activities would not have significant impacts on vegetation or the habitat it may provide. Therefore, short- and long-term impacts to vegetation would not be significant.

Wildlife

Implementation of the Proposed Action would not affect wildlife through permanent habitat alteration or temporary disturbance due to noise and human presence from baseline conditions described in section 3.8.2, *Wildlife*. Interior renovation activities proposed for Building 210 and Building 223 would not displace wildlife from otherwise suitable habitat in the immediate vicinity of the 119 WG installation. However, should any wildlife be disturbed by renovation activities, there is similar habitat nearby that could facilitate temporary or permanent relocation. Because there are no ground-disturbing activities proposed, smaller, less mobile species and those seeking refuge in burrows would not be harmed over the short-term and impacts to population dynamics of such species would not occur. Therefore, impacts to wildlife from implementation of the Proposed Action would not be significant.

Threatened and Endangered Species

Three federally listed threatened or endangered species are known to occur on or within of the vicinity of the 119 WG installation; however, due to its developed, industrial nature, the 119 WG installation does not provide suitable habitat for these listed species. In addition, no USFWS-listed migratory bird species are known to occur in the area or have been observed on installation property (North

Dakota ANG 2011). Therefore, impacts to threatened and endangered species associated with the Proposed Action would be less than significant.

4.8.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown the MQ-9 and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 Predator operations. No renovation component would occur under this Alternative. Consequently, impacts related to vegetation, wildlife, and threatened and endangered species under Alternative 1 would be the same as the Proposed Action and remain less than significant.

4.8.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the North Dakota ANG 119 WG would not implement the Proposed Action. Baseline conditions, as described in Section 3.8, *Biological Resources*, would remain unchanged. Therefore, implementation of this alternative would have no impact on biological resources.

4.9 TRANSPORTATION AND CIRCULATION

4.9.1 Approach to Analysis

Potential impacts to transportation and circulation are assessed with respect to anticipated disruption or improvement of current transportation patterns and systems; deterioration or improvement of existing levels of service; and, changes in existing levels of transportation safety. Impacts (i.e., beneficial or adverse) may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity, introduction of construction-related traffic on local roads, or changes in daily or peak-hour traffic volumes created by either direct or indirect workforce and population changes related to base activities. Adverse impacts on roadway capacities would be significant if roads with no history of capacity exceedances were forced to operate at or above their full design capacity.

4.9.2 Impacts

4.9.2.1 Proposed Action

Construction-Related Impacts

Implementation of the Proposed Action would not require facilities construction or infrastructure improvements. The 2016 SATAF identified necessary interior renovations to Building 210 and Building 223 to support the increased size of the MQ-9 Reaper aircraft. However, the temporary increase in vehicle trips associated with interior building renovations would comprise only a small portion of the total existing traffic (refer to Figure 3-12 in Section 3.9, *Transportation and Circulation*), and many of the vehicles would be driven to and kept on-site for the duration of building renovations, resulting in very few actual increased trips. Further, any increases in traffic volumes associated with renovation activities would be temporary. Traffic increases associated with interior building renovations would be negligible and would therefore not have a significant impact on traffic circulation at the installation.

Upon completion of building renovation, no long-term impacts to off-installation transportation systems would occur.

Operations-Related Impacts

Under the Proposed Action, personnel levels at the 119 WG would increase slightly (i.e., by 25 full-time and 41 traditional staff) as additional operations and maintenance personnel would be required to fulfill the proposed MQ-9 beddown and LRE mission at Hector IAP. The approximately 7.0 percent increase in vehicle trips along local roadways and within the 119 WG installation associated with the Proposed Action would not result in significant impacts to transportation and circulation on local public roadways or within the installation. Further, under the Proposed Action operations-related vehicle trips associated with LRE operations at Grand Forks AFB would be eliminated, as operational and maintenance staff would not be required to commute from the 119 WG installation to Grand Forks AFB to support RPA operations.

As noted in Section 3.9, *Transportation and Circulation*, the USAF has established guidelines intended to ensure that adequate parking is available at USAF and ANG facilities. According to these guidelines, the ratio of available parking spaces to personnel should be no less than 0.75 spaces per person. Under the Proposed Action, 119 WG staff would increase by 25 full-time employees and 41 traditional staff, for a total of 394 daily personnel and a total authorized guard strength of 941 during drill weekends.

With implementation of the Proposed Action, the average daily parking ratio would decrease from 2.28 to 2.23 but would remain substantially above the recommended 0.75 ratio (Table 4-3). During Unit Training Assembly (UTA) weekends, the parking ratio would also be decreased from 1.0 to 0.93, but would remain above the recommended 0.75 ratio (Table 4-4). Therefore, the Proposed Action would not result in significant impacts to parking conditions.

Table 4-3. Average Daily Parking Ratio at the 119 WG Installation

	Full-time Personnel	Parking Spaces	Ratio	Comparison to Recommended Ratio
Current	369	880	2.28	>0.75
Proposed	394	880	2.23	>0.75

Table 4-4. Drill Weekend Parking Ratio at the 119 WG Installation

	Part-time/Reserve Personnel	Parking Spaces	Ratio	Comparison to Recommended Ratio
Current	875	880	1.00	>0.75
Proposed	941	880	0.93	>0.75

4.9.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown four MQ-9 and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 Predator operations described in Section 2.2. No facilities renovations would occur under this Alternative and only slight (i.e., +7.0 percent) changes to ADTs and transportation and circulation conditions would occur under Alternative 1. Consequently, changes related to transportation and circulation under Alternative 1 would be comparable to the Proposed Action, and no significant impacts would occur.

4.9.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the proposed MQ-9 RPA beddown or LRE mission would be implemented. Baseline conditions, as described in Section 3.9, *Traffic and Transportation*, would remain unchanged. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission and not need to travel to and from Grand Forks AFB Therefore, implementation of this alternative would have no impact on traffic and transportation.

4.10 VISUAL RESOURCES

4.10.1 Approach to Analysis

Determination of the significance of impacts to visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact to a visual resource is significant if implementation of the action would result in substantial alteration to an existing sensitive visual setting.

4.10.2 Impacts

4.10.2.1 Proposed Action

During a SATAF visit to the site conducted in 2016, interior renovations to Building 210 and Building 223 were identified as necessary to support the increased size of the MQ-9 Reaper aircraft. Further, two GDTs would be required and placed on Building 217, east and west rooftops, and extend up to 70-feet. Interior renovations to buildings 210 and 223 would not affect the exterior viewshed of the buildings at Hector IAP, and the proposed GDTs would be consistent with the existing viewsheds of the 119 WG installation and Hector IAP. Further, the visual environmental of the 119 WG installation does not constitute unique or sensitive viewsheds; therefore, the implementation of Proposed Action would be expected to have less than significant impacts on visual resources.

4.10.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown the MQ-9 RPA and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 Predator operations described in Section 1.3, *Current Mission and Operations*. No renovations component would occur under this Alternative, nor placement of a GDT on either an existing structure or concrete pad. Consequently, impacts related to visual resources under Alternative 1 would be less than significant.

4.10.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, no interior renovation would be implemented and GDT additions on Building 217 would not be required. Baseline visual resources conditions described in Section 3.10, *Visual Resources*, would remain unchanged. Therefore, implementation of this alternative would have no impacts on visual resources.

4.11 CULTURAL RESOURCES

4.11.1 Approach to Analysis

Cultural resources are subject to review under both Federal and state laws and regulations. Section 106 of the National Historic Preservation Act of 1966 empowers the Advisory Council on Historic Preservation to comment on federally initiated, licensed, or permitted projects affecting cultural sites listed or eligible for inclusion on the National Register of Historic Places (NRHP).

Once cultural resources have been identified, significance evaluation is the process by which resources are assessed relative to significance criteria for scientific or historic research, for the general public, and for traditional cultural groups. Only cultural resources determined to be significant (i.e., eligible for the NRHP) are protected under the National Historic Preservation Act.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may occur by 1) physically altering, damaging, or destroying all or part of a resource; 2) altering the characteristics of the surrounding environment that contribute to resource significance; 3) introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or 4) neglecting the resource to the extent that it is deteriorated or destroyed.

Direct impacts can be assessed by identifying the types and locations of Proposed Actions and determining the exact locations of cultural resources that could be affected. Indirect impacts primarily result from the effects of project-induced population increases and the resultant need to develop new housing areas, utilities services, and other support functions necessary to accommodate population growth. These activities and facilities' subsequent use can disturb or destroy cultural resources.

4.11.2 Impacts

4.11.2.1 Proposed Action

A Phase I archaeological and architectural survey was conducted at the 119 WG installation in 2005 and 2006 (North Dakota ANG 2007c). No prehistoric or historic cultural resources were encountered during the archaeological investigation, and the architectural survey found that no buildings at the installation meet general NRHP-eligibility criteria or are eligible Cold War Assets. The North Dakota State Historic Preservation Office (SHPO) concurred with these findings (North Dakota State Historic Preservation Office 2009). In addition, there were no known federally recognized Native American lands or resources recorded on or in the general vicinity of the installation. Previous consultation with all relevant Native American groups conducted as part of the interagency consultation process had determined that no area of interest to Native Americans existed within or in the immediate vicinity of the 119 WG installation (North Dakota ANG 2007c).

Impacts to Archaeological Resources

No construction or demolition activities are proposed under the Proposed Action. Therefore, no construction-related impacts to cultural resources resulting from potential disturbances caused by grading and other ground-disturbing activities would occur. Therefore, the Proposed Action would have no impact on archaeological resources.

Impacts to Historic Structures

Building 210 and Building 223, which would be affected with implementation of the Proposed Action, are not recognized as being historically significant and would only be subject to interior renovations. Further, Building 217 is not eligible for listing on the NRHP based on the "loss of original integrity" (North Dakota ANG 2007d). Therefore, the Proposed Action would not result in any impacts to any historically significant or NRHP-listed resources.

4.11.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown four MQ-9 RPA and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 Predator operations described in Section 2.2 and renovation of Building 210 and Building 223 would not occur and exterior additions to Building 217 would not be implemented. Consequently, Alternative 1 would have no impact to cultural resources.

4.11.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, cultural resources would remain as described in Section 3.11, *Cultural Resources*, and no impact would occur.

4.12 SOCIOECONOMICS

4.12.1 Approach to Analysis

Significance of population and expenditure impacts are assessed in terms of their direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary depending on the location of a Proposed Action; for example, implementation of an action that creates 20 employment positions may be unnoticed in an urban area but may have significant impacts in a more rural region. If potential socioeconomic impacts would result in substantial shifts in population trends, or adversely affect regional spending and earning patterns, they would be significant. An impact would be considered significant if required or resulted in: 1) extensive relocation of residents, but sufficient replacement housing is unavailable; 2) extensive relocation of community businesses that would create severe economic hardship for the affected communities; 3) disruptions of local traffic patterns that substantially reduce the levels of service of the roads serving the airport and its surrounding communities; or 4) substantial loss in community tax base.

4.12.2 Impacts

4.12.2.1 Proposed Action

Short-Term Impacts

Under the Proposed Action, economic activity associated with renovation activities, such as hiring of temporary personnel and purchasing of materials for renovations, would provide short-term economic benefits to the local economy. However, such short-term beneficial impacts would be negligible on a regional scale.

Long-Term Impacts

Under the Proposed Action, long-term changes in economic activity associated with the 119 WG would occur associated with the addition of approximately 41 traditional slots and 25 full-time civilian personnel in support of the Proposed

Action. However, no substantial population or spending differences are anticipated to result. Therefore, implementation of the Proposed Action would not result in a significant impact to local or regional socioeconomic characteristics.

4.12.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown the MQ-9 RPA and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 Predator operations described in Section 1.3, *Current Mission and Operations*. No renovation would occur under this Alternative, however, there would be a slight increase in the number of long-term military personnel due to the increased operations associated with additional aircraft.

Despite this potential increase, no substantial population or spending differences are anticipated as a result of this alternative. Therefore, impacts with regard to local and regional socioeconomic conditions under this alternative would be the same as the Proposed Action, less than significant.

4.12.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, no changes to local and regional socioeconomic characteristics would occur. With the 119 WG anticipating to cease MQ-1 Predator operations in 2016, the unit would no longer have an RPA mission. Under the No-Action Alternative, socioeconomic conditions would remain as described in Section 3.12, *Socioeconomics*.

4.13 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

4.13.1 Approach to Analysis

In order to comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, the ethnicity and poverty status in the vicinity of the 119 WG installation has been examined and compared to regional, state, and national data to determine if any minority or low-income communities could potentially be disproportionately affected by implementation of the Proposed Action or alternatives. Similarly, to comply with Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, the distribution of children and locations where numbers of children may be proportionally high on and in the vicinity of the 119 WG installation were determined to ensure that environmental risks and safety risks to children are addressed.

4.13.2 Impacts

4.13.2.1 Proposed Action:

Environmental Justice

Based on data contained in the 2010 *Census of Population and Housing*, the percentage of the population living below the poverty level in the City of Fargo in 2010 was 15.4 percent and was slightly higher than Cass County (11.3 percent), the State of North Dakota (11.5 percent), and the nation (14.8 percent) (U.S. Census Bureau 2015). With regard to minority[1] residents, the percentage of minorities residing in Fargo was 9.8 percent, which was slightly higher than Cass County (8.3 percent), slightly less than North Dakota (10.0 percent), and substantially less than the nation (27.6 percent). Therefore, no minority or low-income populations are disproportionately located near the 119 WG installation. Consequently, no minority or low-income populations would be disproportionately impacted by the

[1] *Minorities* are defined to include persons of African-American, Native American, Asian, Pacific Islander, or Native Hawaiian descent; persons of two or more races; persons of races not defined by the U.S. Census Bureau; and persons of Hispanic/Latino descent of any racial background (U.S. Census Bureau 2000).

Proposed Action, and no significant impacts with regard to environmental justice are expected to result.

Protection of Children

In 2010, the percentage of the total population of the City of Fargo represented by children under age 18 was 19.4, slightly less than Cass County (21.8 percent), the State of North Dakota (22.3 percent), and the nation (24.0 percent) (U.S. Census Bureau 2015). Therefore, no populations of children are disproportionately located near the 119 WG installation. In addition, no housing or facilities for children currently exist on installation property. Various locations where children may gather are located within 2 miles of the installation, including: eight public schools; one private elementary school; two private kindergarten/ preschool; 16 preschools/daycare centers; 21 Fargo city parks; six Fargo city recreational facilities; one park located in nearby city of Moorhead, Minnesota; and, the Fargodome multipurpose event center, a venue which has the potential to attract a large number of children during specific events (e.g., annual High School graduations). However, any potential short-term impacts associated with the Proposed Action would be confined to installation property, and no impacts to these facilities would result. Further, children would not have access to the 119 WG installation and implementation of the Proposed Action is not expected to result in any adverse long-term increased health or safety risks to children. Consequently, with the implementation of standard safety measures, no adverse impacts to children would occur.

4.13.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under Alternative 1, the 119 WG would beddown the MQ-9 RPA and perform LRE operations out of Grand Forks AFB, similar to existing MQ-1 Predator operations described in Section 1.3, *Current Mission and Operations*. Because no minority or low-income populations are disproportionately located near the installation, and no significant, adverse environmental impacts are expected to result through the implementation of this alternative, no significant impacts with regard to environmental justice would result. With regard to protection of children, no housing or facilities for children currently exist on installation property, no facilities where children may gather located within 2 miles of the

installation would be impacted, and children would not have access to the 119 WG installation; therefore, no adverse impacts to children would occur under Alternative 1.

4.13.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the Proposed Action would not be implemented. No impacts to existing conditions, as described in Section 3.13, *Environmental Justice*, would result from selection of the No-Action Alternative, and no significant impacts to children, minority or low-income populations would occur.

4.14 HAZARDOUS MATERIALS AND WASTES

4.14.1 Approach to Analysis

Numerous local, state, and Federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on their toxicity, ignitability, and corrosivity. Impacts associated with hazardous materials and wastes would be significant if the storage, use, transportation, or disposal of hazardous substances substantially increased the human health risk of environmental exposure.

4.14.2 Impacts

4.14.2.1 Proposed Action

MQ-9 LRE Short-term Impacts

Hazardous Materials and Wastes

During the April SATAF determination, Building 210 and Building 223 were identified as requiring additional renovations to support weapons loading and corrosion control of the MQ-9 Reaper RPA. Upon implementation of the Proposed Action, a temporary increase in the storage of hazardous materials and waste throughout facility renovations would occur. However, the increase in renovation-related hazardous materials and wastes would be temporary and would not comprise a significant impact or exceed the installation's permitted allowance.

Hazardous Building Materials

Two common types of hazardous substances most associated with building materials include Asbestos-containing material (ACM) and lead-based paint (LBP). ACMs and LBPs are commonly found in buildings constructed prior to the late 1970s. While some buildings on the 119 WG installation were constructed prior to this date and may contain hazardous building materials, Building 210 was constructed in 2003 and Building 223 in 1980, and interviews with North Dakota

ANG personnel confirm that ACM and LBPs were not used during the construction of this facility (North Dakota ANG 2014). Therefore, there would be no significant impacts with regard to ACM or LBP through implementation of the Proposed Action.

Environmental Restoration Program

As described in Section 3.14.2.4, *Environmental Restoration Program*, a total of 11 ERP sites have been identified and are being managed by North Dakota ANG. All of these sites have completed clean up as of 2010, with the exception of Site 11, which is currently undergoing remedial action (North Dakota ANG 2011). Three ERP sites are located within close proximity of Building 210 (Sites 1, 5, and 7). However, the proposed interior renovation of Building 210 included in the Proposed Action would not involve ground-disturbing activities. Building 223 is adjacent to ERP Site 4; however, proposed interior renovations would not involve any ground disturbing activities. Therefore, renovation activities associated with the Proposed Action would not be anticipated to expose workers to contamination during ground-disturbing activities, and impacts associated with ERP and contaminated sites would be less than significant.

MQ-9 LRE Long-term Operational Impacts

The Proposed Action would involve the beddown of MQ-9 Reaper LRE aircraft at the 119 WG installation at the Hector IAP. The safe handling, storage, and use procedures currently managed under the ND ANG 119 WG Hazardous Materials Management Plan (HMMP) and the Enterprise Environmental Safety and Occupational Health-Management Information System (EESOH-MIS), in accordance with all Federal, state, and local regulations, would continue to be implemented with regard to hazardous materials and petroleum products generated from the MQ-9 Reaper LRE. The 119 WG does not maintain a permit to allow the operation of a hazardous waste storage facility (North Dakota ANG 2007). Hazardous waste generated at the 119 WG installation is currently transported to a Central Accumulation Point (CAP) before being disposed of off-site at a permitted hazardous waste treatment, storage, and disposal facility (TSDF) by an approved contractor through the Defense Reutilization and Marketing Office (DRMO). Consequently, any long-term changes to hazardous

materials and waste management under the Proposed Action would be less than significant.

4.14.2.2 Alternative 1: MQ-9 Reaper LRE at Grand Forks AFB

Under implementation of this alternative, the beddown of four MQ-9 Reaper RPA and LRE operations would take place at Grand Forks AFB; similar to current 119 WG MQ-1 LRE operations. Renovations of Building 210 and Building 223 would not occur to support the beddown and increased size of MQ-9 Reaper RPA, thus impacts regarding hazardous materials and wastes would be the same as those described under the Proposed Action, less than significant.

4.14.2.3 Alternative 2: No-Action Alternative

If the No-Action Alternative were selected, the 119 WG would not implement the proposed beddown of MQ-9 Reaper LRE and no associated facility renovations would occur. Therefore, no impacts with regard to hazardous materials or wastes would occur and conditions would remain as described in Section 3.14, *Hazardous Materials and Wastes.*

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SECTION 5
CUMULATIVE IMPACTS

Cumulative impacts on environmental resources result from incremental impacts of an action when combined with other past, present, and reasonably foreseeable future actions in an affected area. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various Federal, state, or local agencies or persons. In accordance with the National Environmental Policy Act (NEPA), a discussion of cumulative impacts resulting from projects proposed, under construction, recently completed, or anticipated to be implemented in the near future is required.

5.1 APPROACH TO CUMULATIVE IMPACTS ANALYSIS

Per Council on Environmental Quality (CEQ) guidelines for considering cumulative effects under NEPA (CEQ 1997), this cumulative impact analysis includes three major considerations to:

1. Determine the scope of the cumulative analysis, including relevant resources, geographic extent, and timeframe;
2. Conduct the cumulative effects analysis; and
3. Determine the cumulative impacts to relevant resources.

5.2 CUMULATIVE PROJECTS AT HECTOR IAP

CEQ guidelines require that potential cumulative impacts be considered over a specified time period (i.e., from past through future). The appropriate time for considering past, present, and reasonably foreseeable future projects can be the design life of a project, or future timeframes used in local master plans and other available predictive data. Determining the timeframe for the cumulative impacts analysis requires estimating the length of time the impacts of a proposed action would last and considering the specific resource in terms of its history of degradation (CEQ 1997). The Proposed Action and alternatives include ongoing and anticipated future military flight training activities. While training and testing requirements change over time – in response to world events and several other factors – the general types of activities addressed in this Environmental

Assessment (EA) are expected to continue indefinitely, and the potential impacts associated with those operations would also occur consistently and indefinitely. Therefore, the cumulative impacts analysis presented herein is not bound by a specific future timeframe.

Per CEQ guidelines, in order to assess the influence of a given action, a cumulative impact analyses should be conducted using existing, readily available data and the scope of the cumulative impact analysis should be defined, in part, by data availability. Consequently, only past projects or reasonably foreseeable future projects with the potential to contribute to cumulative impacts of the Proposed Action or its alternatives have been evaluated in this section. While the cumulative impacts analysis is not limited by a specific timeframe, it should be recognized that available information, uncertainties, and other practical constraints limit the ability to analyze cumulative impacts for the indefinite future. Consequently, future actions that are speculative are not considered in this EA.

5.2.1 Hector IAP Airport Authority

Improvement projects at Hector International Airport (IAP) are guided by the airport's master plan which is developed and approved by the Hector IAP Airport Authority. The Airport Authority is currently updating its Master Plan with an anticipated completion year of 2017. Cumulative projects at Hector IAP include the 1,700-foot extension of Runway 09/27 and a large-scale tenant/aircraft operator developing the northwest section of the airport property.

The proposed 1,700-foot extension of Runway 09/27 would have a negligible impact on existing civilian and proposed 119th Wing (119 WG) aircraft operations, given that it is primarily recognized as both a secondary and cross-wind runway. While Runway 09/27 would most likely need to be closed during the extension process or at least the western extension end, this runway does not experience a large number of aircraft operations and acts a cross-wind runway. Cross-wind situations at Hector IAP are not a frequent event, thus Runway 18/36 is available the majority of the time. Given that this is a proposed runway extension, it could still be used by single-engine general aviation aircraft in cross-wind situations if needed.

While still in the negotiation phase, the potential development in the northwest section of the property to accommodate a large-scale tenant and aircraft operations would have a negligible impact on civilian and military operations at Hector IAP. The current runway and airspace associated with Hector IAP is capable of handling additional aircraft operations, thus impacts to operation efficiency would not be anticipated with the introduction of a large-scale tenant. The 119 WG Lost Link Orbit and one Final Termination Point (FTP) is located near the potential location of the large-scale tenant in the northwest of the Hector IAP property. However, this is only one of two FTP sites in the area and the Lost Link Orbit occurs at 2,400 feet above mean sea level (MSL).

5.2.2 Proposed Airspace Actions

Cumulative airspace-related projects include the increased remotely piloted aircraft (RPA) utilization of Restricted Area 5403 (R-5403) Sections A through F (A-F) by users out of Grand Forks Air Force Base (AFB), which includes Grand Forks AFB, U.S. Customs and Border Patrol, and General Dynamics. The Base Realignment Impact Committee (BRIC) is currently exploring the possibility of leasing Grand Forks AFB property for development of Grand Sky Technology Park to support the unmanned aerial systems (UAS) industry. North Dakota was recognized as one of six test sites in the country and the Federal Aviation Administration (FAA) UAS test site currently is within Grand Forks AFB. While a specific number of additional RPA operations associated with Grand Sky development have not been identified, with access to the FAA test site, approximately 1.2 million square feet available for aviation-type hangars and high-bay shops, the ability to accommodate local aircraft operations, and an existing temporary flight restriction (TFR) corridor connecting Grand Forks AFB and R-5403 A-F, the possibility of an increase in RPA operations at both Grand Forks AFB and R-5403 A-F is probable.

5.3 CUMULATIVE IMPACTS

5.3.1 Cumulative Operational Impacts

When considered cumulatively with the proposed runway extension and large-scale aircraft operator associated activities, the Proposed Action and alternatives

would have a limited potential to contribute to cumulative impacts with regard to Hector Air Traffic Control. As described in Section 4.1, *Airspace Management* additional aircraft operations at Hector IAP as a result of the MQ-9 Reaper Launch and Recovery Element (LRE) would be negligible relative to existing operations at the airport. Given that the 119 WG would not increase the proposed MQ-9 operations in R-5403 and R-4301 over existing 119 WG MQ-1 operations (two sorties per day) that occur in the same Restricted Areas, the Proposed Action and alternatives would not be expected to alter regional air traffic patterns, require any changes to military flight procedures, compromise existing regional Air Traffic Control (ATC) facilities, or increase the chance for mid-air collisions with civilian or military aircraft within R-5403 or R-4301. As a result, potential cumulative impacts to airspace management regionally would be expected to be less than significant.

SECTION 6
SUMMARY OF FINDINGS

A summary of environmental impacts anticipated as a result of the implementation of the Proposed Action at Hector International Airport (IAP) by the 119th Wing (119 WG) of the North Dakota Air National Guard (ANG) is provided in this section.

Airspace Management. Under the Proposed Action, MQ-9 flight operations would occur within existing training areas (i.e., Restricted Area [R-] 5403 and R-4301), transition airspace from Hector IAP to R-5403 and R-4301, and in the local airspace of Hector IAP. The Proposed Action would increase aircraft operations at Hector IAP by 44 additional airport operations daily including during Unit Training Assembly (UTA) drill weekend days (24 days per year), this would result in an increase (22 percent) over existing conditions at Hector IAP. Implementation of the Proposed Action would not require any modification to the current terminal airspace structure or operational procedures. Further, implementation of the Proposed Action would not require any changes to the departure and arrival route structure of any airport in the vicinity or the Victor Routes used to transition between airports. The proposed MQ-9 aircraft operations would have no significant impact on the use and management of the Hector IAP Class D airspace or the airspace surrounding public and private airports in the region. Consequently, the Proposed Action would result in *less than significant* impacts to airspace management.

Safety. The Proposed Action would increase aircraft operations at Hector IAP by 44 additional airport operations daily including during UTA drill weekend days (24 days per year), which would be a 22 percent increase over existing conditions at Hector IAP and operations would adhere to all established flight safety guidelines and protocol. Additionally, 119 WG aircrews operating at Hector IAP and within airspace associated with unit training would continue to follow applicable procedures outlined in the Hector IAP Integrated Bird-Wildlife Air Strike Hazard (BASH) Plan. There would be no safety-related impacts associated with the use of long-range, non-eye safe lasers within R-5403. Further, proposed renovation activities and placement of the Ground Data Terminals (GDTs) have been designed and sited to meet all airfield safety criteria, and implementation of

the Proposed Action would not result in adverse impacts to explosives safety or Explosive Safety Quantity Distance (ESQD) arcs at Hector IAP. Therefore, safety impacts associated with implementation of the Proposed Action would be *less than significant*.

Air Quality. Under the Proposed Action, no construction or demolition activities, including site clearing or grading would occur. As such, the Proposed Action would not result in impacts to air quality associated with construction and demolition activities or construction-related combustion emissions. Mobile operational emissions of criteria pollutants at Hector IAP would increase as a result of flight operations associated with the Proposed Action. Emissions from mobile sources (i.e., aircraft) are not currently regulated under the Title V program. Further, as described in Section 2.2.1, *Proposed MQ-9 Reaper LRE*, operating altitudes would range from 8,500 feet to 9,500 feet above mean sea level (MSL) under the Proposed Action within R-5403 and R-4301 and above 18,000 feet MSL when transitioning to and from Hector IAP. The Federal Aviation Administration (FAA) (2000) determined that aircraft operations at or above the average mixing height of 3,000 feet above ground level (AGL) have a very small effect on ground level concentrations and could not directly result in a violation of the National Ambient Air Quality Standards (NAAQS) in a local area. Further, North Dakota is in attainment for all criteria pollutants. Implementation of the Proposed Action would result in overall *less than significant* impacts to air quality.

Noise. Proposed interior renovations to Building 210 and Building 223 and GDT additions to Building 217 would result in negligible localized noise exposure; however, noise generation would be short-term and would be restricted to normal working hours (i.e., between 7:00 AM and 5:00 PM). Given the type of interior renovations associated activities (e.g., sporadic, during daytime hours, short-term, etc.), implementation of the Proposed Action would not be expected to substantially alter the noise environment over the short-term. Proposed MQ-9 aircraft operations at Hector IAP associated with the Proposed Action would represent an overall negligible increase, and consequently, would not have a measurable effect on the existing 65 Day-Night Average Noise Level (DNL) contour. Similarly, establishment of the proposed travel corridor would have a negligible effect on the noise environment in underlying areas do to the flight altitude and low number of daily operations. There would be no sensitive

receptors that would be impacted by the Proposed Action. Therefore, potential long-term operational related noise impacts would be *less than significant*.

Land Use. Implementation of the Proposed Action would result in interior renovations to existing facilities that would support the Proposed Action. All component projects included in the Proposed Action are inherently consistent with established planning policies as well as land use and safety guidelines. The Proposed Action would not require any changes to off-site land use patterns. No new incompatible land uses would be introduced and no adverse changes to current land use as a result of the Proposed Action. Therefore, implementation of any alternative of the Proposed Action would result in *less than significant* impacts on land use.

Geological Resources. Implementation of the Proposed Action would not require construction or infrastructure improvements. All project sites are relatively flat do not present any topographical constraints. No grading activities are associated with the proposed renovation. Therefore, impacts to geological resources would be *less than significant*.

Water Resources. Under the Proposed Action, only interior renovations are proposed, of which, would not affect any on-installation surface water features. Groundwater in the project vicinity is naturally restricted and would not be impacted by the Proposed Action. No construction or ground disturbing activities would occur within or near a wetland, and the Proposed Action would not result in any activity on the 100-year floodplain. Therefore, impacts to water resources due to implementation of the Proposed Action would be *less than significant.*

Biological Resources. No potential habitat-disturbing activities associated with the Proposed Action are foreseen. Due to the lack of sensitive or native species at the 119 WG installation and the disturbed nature of existing vegetation, activities under the Proposed Action would have less than significant impacts on vegetation or the habitat it may provide. Further, wildlife located at the installation is generally accustomed to disturbance, and no U.S. Fish and Wildlife Service (USFWS)-listed migratory bird species or threatened and endangered species are not known to utilize project areas for habitat. Therefore, activities associated with

the Proposed Action would not be likely to have a substantial effect on vegetation or wildlife, and impacts to biological resources would be *less than significant*.

Transportation and Circulation. Implementation of the Proposed Action would include delivery of building renovation materials to and from the project site. Vehicle trips associated with building renovation would comprise only a small portion of the total existing traffic volume on the base transportation network and vicinity roadways, and associated activities would be short-term in duration and would occur only during non-peak traffic hours in coordination with applicable agencies. Operationally, implementation of the Proposed Action would increase the personnel at Hector IAP. Vehicle trips to and away from the base as well as parking availability would remain similar under the Proposed Action. Furthermore, implementation of the Proposed Action would reduce vehicle trips associated with Launch and Recovery Element (LRE) operations. The Proposed Action would consolidate beddown and LRE operations to the Hector IAP and eliminate vehicle trips to and from Grand Forks Air Force Base. Therefore, impacts to transportation and circulation would be *less than significant*.

Visual Resources. The proposed interior renovation activities under the Proposed Action and within the boundaries of Hector IAP would be consistent with the visual character expected at an airport. Two GDTs would be placed on Building 217 and extend up to 70-feet above ground level (AGL), this would not disrupt any sensitive line-of-sight views. Interior renovations would not affect the exterior viewshed of the buildings at Hector IAP. Consequently, *less than significant* impacts to visual resources would result from implementation of the Proposed Action.

Cultural Resources. The proposed interior renovation activities under the Proposed Action would not affect cultural resources at Hector IAP. Building 210 and Building 223 which shall undergo renovations to accommodate the Proposed Action are not eligible for listing on the National Register of Historic Places (NRHP). Building 217 is not eligible for listing on the NRHP based on "loss of original integrity" (North Dakota ANG 2007d). According to previous archaeological surveys, no archaeological resources are present at Hector IAP, and the 119 WG installation has been characterized as having a low potential for

containing archaeological resources. Therefore, cultural resource impacts from implementation of the Proposed Action are anticipated to be *less than significant*.

Socioeconomics. The proposed interior renovation activities under the Proposed Action would include short-term economic benefits as a result of temporary construction employment and materials-related expenditures. There would be minor increases of personnel under the Proposed Action; 25 additional full-time and 41 traditional slot positions would be added to support the MQ-9 Reaper LRE mission at Hector IAP. No long-term changes in economic activity associated with the Proposed Action related to payroll and employee service expenses would occur. Likewise, there would be no impacts to the surrounding community. Therefore, implementation of the Proposed Action would have *less than significant* socioeconomic impacts.

Environmental Justice and Protection of Children. No minority or low-income populations are disproportionately located near Hector IAP and the proposed interior renovation activities under the Proposed Action. Any potential short-term impacts associated with the Proposed Action would be confined to the base and the immediate surrounding vicinity. Additionally, no impacts would be expected to occur in areas where children would be impacted. Consequently, with the implementation of standard safety measures, impacts with regard to environmental justice and protection of children would be *less than significant.*

Hazardous Materials and Wastes. The Proposed Action would result in a short-term minor increase in the storage of building renovation-related hazardous materials and waste. However, the proposed interior renovation activities under the Proposed Action would cause only a temporary increase in storage of hazardous materials and waste and would not constitute a significant impact. Long-term operation of the MQ-9 would result in similar hazardous materials and waste to those currently produced through operation of the MQ-1, thus long-term hazardous materials and waste impacts resulting from operation of the MQ-9 would not be significant. While several Environmental Restoration Program (ERP) sites are located within vicinity of Building 210 and Building 223, nearby ERP sites have undergone complete remedial action. As no construction or demolition activities involving ground-disturbance would occur under the Proposed Action, the Proposed Action is not anticipated to expose workers to contamination from

nearby ERP sites. As identified during previous interviews with North Dakota ANG personnel, and given the construction date of the facility, no hazardous building materials, such as asbestos and lead-based paints, are present at Building 210 or Building 223. Therefore, renovation of these facilities under the Proposed Action would not result in any potential impacts with regard to hazardous building materials. The safe handling, storage, and use procedures associated with operation of the Proposed Action would be managed under the North Dakota ANG 119 WG Hazardous Materials Management Plan (HMMP) and the Enterprise Environmental Safety and Occupational Health-Management Information System (EESOH-MIS), in accordance with all Federal, state, and local regulations, and would continue to be implemented with regard to hazardous materials and petroleum products generated from the MQ-9 Reaper LRE. Therefore, impacts associated with hazardous materials and wastes would be *less than significant*.

SECTION 7
SPECIAL PROCEDURES

Impact evaluations conducted during preparation of this Environmental Assessment (EA) have determined that no significant environmental impacts would result from implementation of the Proposed Action at the Hector International Airport (IAP) in Fargo, North Dakota. This determination is based on a thorough review of existing resource information, objective analysis of the Proposed Action, and coordination with knowledgeable, responsible personnel from the 119th Wing (119 WG) and relevant Federal, state, and local agencies.

Given that no construction, demolition, or ground disturbing activities are associated with the Proposed Action, no special procedures would be required prior to implementation of the Proposed Action.

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SECTION 8
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APPENDIX A

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APPENDIX A
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NGB/A4AM

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Proposed MQ-9 Reaper Launch and Recovery Element for the North Dakota Air National Guard at Hector International Airport

In support of the North Dakota Air National Guard's 119 Wing (119 WG), the National Guard Bureau (NGB) is proposing the beddown of the MQ-9 Reaper Launch and Recovery Element (LRE) and interior renovation projects at Hector International Airport (IAP).

The *need* for the Proposed Action, both beddown and LRE mission at Hector IAP, is driven by the upgrade to the 119 WG's Remotely Piloted Aircraft (RPA) and inefficiencies associated with the separation of the existing MQ-1 beddown at Hector IAP and the MQ-1 LRE element at Grand Forks Air Force Base (AFB). The beddown and LRE mission of the MQ-9 RPA at Hector IAP would 1) upgrade the 119WG's RPA; 2) reduce the MQ-9 aircraft operating costs (e.g., personnel costs and vehicle maintenance costs) associated with traveling to and from Grand Forks AFB; 3) reduce the time associated with maintenance and petroleum, oils, and lubricants (POL) personnel commuting to Grand Forks AFB; 4) increase overall training time for the Continuation Training Mission; and 5) provide for increased safety of staff and personnel.

The NGB has prepared a Draft Environmental Assessment (EA) to evaluate the impacts of the Proposed Action on the physical and human environment. The Draft EA was prepared in accordance with Council on Environmental Quality regulations to comply with the National Environmental Policy Act of 1969.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your assistance in reviewing the enclosed Draft EA and providing comments. We also request your assistance in advising appropriate agencies of this Proposed Action and soliciting their comments on the Draft EA. Offices listed in the attached distribution list have already received this package; if there are additional agencies you feel should review and comment on the proposal, please include them in your distribution of these materials.

Please review this information and respond with comments within 30 days. If you have questions concerning the proposal, please contact me at (240) 612-8855. Please forward any written comments to: Kevin Marek, NGB/A4AM, Shepperd Hall, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or email to kevin.p.marek.civ@mail.mil. If you choose to email comments, please include "MQ-9 Reaper Launch and Recovery Element for the North Dakota Air National Guard at Hector International Airport" in the subject line. Upon written request, a copy of the Final EA and/or Finding of No Significant Impact (FONSI) will be provided. Thank you for your assistance.

Sincerely,

KEVIN MAREK, REM
NGB/A4AM
Environmental Specialist
Plans and Requirements Branch

Attachments:

1. Distribution List
2. Draft EA and FONSI on CD

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS MD 20762-5157

NGB/A4AM

Mr. Jeffrey Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

SUBJECT: Proposed MQ-9 Reaper Launch and Recovery Element for the North Dakota Air National Guard at Hector International Airport

Dear Mr. Towner,

In support of the North Dakota Air National Guard's 119 Wing (119 WG), the U.S. Air Force (USAF) is proposing the beddown of the MQ-9 Reaper Launch and Recovery Element (LRE) and interior renovation projects at Hector International Airport (IAP).

The *need* for the Proposed Action, both beddown and LRE mission at Hector IAP, is driven by the upgrade to the 119 WG's Remotely Piloted Aircraft (RPA) and inefficiencies associated with the separation of the existing MQ-1 beddown at Hector IAP and the MQ-1 LRE element at Grand Forks Air Force Base (AFB). The beddown and LRE mission of the MQ-9 RPA at Hector IAP would 1) upgrade the 119WG's RPA; 2) reduce the MQ-9 aircraft operating costs (e.g., personnel costs and vehicle maintenance costs) associated with traveling to and from Grand Forks AFB; 3) reduce the time associated with maintenance and petroleum, oils, and lubricants (POL) personnel commuting to Grand Forks AFB; 4) increase overall training time for the Continuation Training Mission; and 5) provide for increased safety of staff and personnel.

The NGB has prepared a Draft Environmental Assessment (EA) for the Proposed Action. The Draft EA was prepared in accordance with Council on Environmental Quality regulations to comply with the National Environmental Policy Act of 1969.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your assistance in reviewing the enclosed Draft EA and providing comments.

According to an initial project scoping including review of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) database as well as the North Dakota Game and Fish Department's State Wildlife Action Plan, only three federally listed species have been documented in Cass County, North Dakota and none have been documented within the 119 WG installation at Hector IAP. Additionally, federally threatened or endangered wildlife species have the potential to occur in the region beneath the proposed travel corridor between Hector IAP and Camp Grafton's Restricted Area 5403; however, the establishment of the proposed travel corridor and the Lost Link Orbit would not result in any ground disturbing activities and

aircraft activity would occur altitudes above 10,000 feet above mean sea level (MSL) resulting in negligible noise impacts. Therefore, interior building rennovations and aircraft operations associated with the Proposed Action would have "*no effect*" on threatened or endangered species at Hector IAP.

Please review this information and respond with comments within 30 days. If you have questions concerning the proposal, please contact me at (240) 612-8855. Please forward any written comments to: Kevin Marek, NGB/A4AM, Shepperd Hall, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157, or email to kevin.p.marek.civ@mail.mil. If you choose to email comments, please include "MQ-9 Reaper Launch and Recovery Element for the North Dakota Air National Guard at Hector International Airport" in the subject line. Upon written request, a copy of the Final EA and/or Finding of No Significant Impact (FONSI) will be provided. Thank you for your assistance.

Sincerely,

MAREK.KEVIN.P.1230396570

Digitally signed by MAREK.KEVIN.P.1230396570
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USAF, cn=MAREK.KEVIN.P.12303965

KEVIN MAREK, REM
NGB/A4AM
Environmental Specialist
Plans and Requirements Branch

Attachments:

1. Distribution List
2. Previous Correspondence Dated 9 June 2016
3. IPaC List
4. Draft EA and FONSI on CD

NATIONAL GUARD BUREAU
3501 FETCHET AVENUE
JOINT BASE ANDREWS MD 20762-5157

MEMORANDUM FOR DISTRIBUTION

FROM: NGB/A4AM
3501 Fetchet Avenue
Joint Base Andrews, MD 20762-5157

SUBJECT: Proposed MQ-9 Reaper Launch and Recovery Element for the North Dakota Air National Guard at Hector International Airport

1. The National Guard Bureau (NGB) has prepared a Draft Environmental Assessment (DEA) to evaluate the potential impacts on the physical and human environment associated with the North Dakota Air National Guard (ANG) 119th Wing's (119 WG) proposed beddown of the MQ-9 Reaper Launch and Recovery Element (LRE) and interior renovation projects at Hector International Airport (IAP), North Dakota. The DEA was prepared in accordance with Council on Environmental Quality regulations to comply with the National Environmental Policy Act of 1969.

2. Per Executive Order (EO) 12372, *Intergovernmental Review of Federal Programs*, this memorandum is being sent to you as part of the intergovernmental review phase of the Environmental Impact Analysis Process (EIAP). We are writing to request your review and comment on the DEA.

3. As a tribe with historic and cultural interests in the projects Area of Potential Affect (APE), the NGB is reaching out to you to review and comment on our analysis of the undertakings effect. In accordance with Section 106 of the NHPA and in reference to EO 13175, *Consultation and Coordination with Indian Tribal Governments*, the North Dakota ANG would like to initiate government-to-government consultation with your tribe. The NGB anticipates the APE for this undertaking to be limited to the 119 WG installation at Hector IAP as well as areas beneath the proposed transit corridor and the proposed Lost Link Orbit.

4. In particular, the NGB requests your input about 1) existence of any traditional resources that may be located in or near the proposed APE; 2) whether you have knowledge of any historic properties that might be affected by the proposed undertaking in the APE; and 3) whether your tribe wishes to participate in the Section 106 consultation for this particular undertaking. Being defined as a Federal undertaking, the NGB will be seeking input and inviting other potential consulting parties, such as the North Dakota State Historic Preservation Office (SHPO).

5. In support of the 119 WG, the NGB is proposing the beddown of the MQ-9 Reaper LRE and associated interior building renovation projects at Hector IAP. The 119 WG has obtained a Certificate of Waiver or Authorization (COA) from the Federal Aviation Administration to operate the MQ-9 aircraft within the local flight pattern of Hector IAP. Currently, the FAA

is reviewing the 119 WG's proposal to transit from Hector IAP airspace to Restricted Area 5403 at Camp Grafton to complete MQ-9 training requirements. If approved, the FAA would issue a separate COA addressing the transit corridor to the 119 WG.

6. The *need* for the Proposed Action, both beddown and LRE mission at Hector IAP, is driven by the upgrade to the 119 WG's Remotely Piloted Aircraft (RPA) and inefficiencies associated with the separation of the existing MQ-1 beddown at Hector IAP and the MQ-1 LRE element at Grand Forks Air Force Base (AFB). The beddown and LRE mission of the MQ-9 RPA at Hector IAP would 1) upgrade the 119 WG's RPA; 2) reduce the MQ-9 aircraft operating costs (e.g., personnel costs and vehicle maintenance costs) associated with traveling to and from Grand Forks AFB; 3) reduce the time associated with maintenance and petroleum, oils, and lubricants (POL) personnel commuting to Grand Forks AFB; 4) increase overall training time for the Continuation Training Mission; and 5) provide for increased safety of staff and personnel.

7. The NGB is committed to continuous consultation with all potentially affected Native American tribes. The comments on the DEA your tribe provides will assist us identifying potential Native American resources within the APE and ensuring they are assessed and included in subsequent iterations of the EA. Please review this information and respond with comments within 30 days. If you have questions concerning the proposal, please contact Mr. Reymundo Chapa, the ANG Cultural Resources Program Manager at NGB/A4AM, Shepperd Hall, 3501 Fetchet Avenue, Joint Base Andrews, MD 20762-5157. You may also contact Mr. Chapa by email at reymundo.chapa.civ@mail.mil. If you choose to email comments, please include "MQ-9 Reaper Launch and Recovery Element for the North Dakota Air National Guard at Hector International Airport" in the subject line. Upon written request, a copy of the Final EA and/or Finding of No Significant Impact (FONSI) will be provided. We intend to maximize the use of electronic submittals during subsequent consultation phases; however, if you would prefer to receive a hardcopy of the Final EA and FONSI, please indicate in your response. Thank you for your assistance.

Sincerely,

REYMUNDO CHAPA, GS-13, RPA
Cultural Resources Program Manager

Attachments:
1. Distribution List
2. Draft EA and FONSI on CD

APPENDIX B

AIR QUALITY

		Emission Factors (lb/LTO)				
Aircraft	**Operation Type**	**CO**	**NO_x**	**PM**	**SO_x**	**VOC**
MQ-9	LTO	2.50	1.59	0.56	0.05	0.09

Notes: MQ-9 emission rates are based on air emissions modeling performed for MQ-9 aircraft at Syracuse Hancock International Airport (New York ANG 2015).

		Total Annual Emissions (tpy)				
Activity	**Total Annual Operations**	**CO**	**NO_x**	**PM**	**SO_x**	**VOC**
MQ-9 LTO Operations	5,104	6.38	4.06	1.43	0.13	0.23

Notes: Two 6- to 8-hour sorties per day, four days per week and one weekend per month. Each sortie would include 10 closed patterns at Hector IAP occuring below 3,000 feet above ground level. The 119 WG would complete up to 44 operations daily at Hector IAP when completin two MQ-9 daily sorties.

The emissions produced above the standard mixing height (3,000 feet AGL) have a negligible effect on ground level concentrations and could not directly result in a violation of the NAAQS in a local area (FAA 2000). Therefore, MQ-9 training activities above this altitude have not been quantified in this analysis.

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APPENDIX C

FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER OR AUTHORIZATION

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CERTIFICATE OF WAIVER OR AUTHORIZATION

ISSUED TO

Department of the Air Force
119th Wing ND ANG
1400 32nd Ave North
Fargo, ND 58102

This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the standard and special provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.

OPERATIONS AUTHORIZED

Operation of the Reaper MQ-9, Unmanned Aircraft System (UAS) in Class D airspace at Hector International Airport (FAR) under the jurisdiction of Hector Airport Traffic Control Tower (ATCT).

LIST OF WAIVED REGULATIONS BY SECTION AND TITLE

N/A

STANDARD PROVISIONS

1. A copy of the application made for this certificate shall be attached and become a part hereof.
2. This certificate shall be presented for inspection upon the request of any authorized representative of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations.
3. The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein.
4. This certificate is nontransferable.

Note-This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.

SPECIAL PROVISIONS

Special Provisions are set forth and attached.

This certificate 2015-CSA-220 is effective from July 28, 2016, to July 27, 2018, and is subject to cancellation at any time upon notice by the Administrator or his/her authorized representative.

BY DIRECTION OF THE ADMINISTRATOR

FAA Headquarters, AJV-115
(Region)

Scott J. Gardner
(Signature)

July 27, 2016
(Date)

Acting Manager, UAS Tactical Operations Section
(Title)

FAA Form 7711-1 (7-74)

COA Number: 2015-CSA-220

Issued To: Department of the Air Force, referred herein as the "operator"

Address: 119th Wing ND ANG
1400 32nd Ave North
Fargo, ND 58102

Activity: Operation of the Reaper MQ-9, Unmanned Aircraft System (UAS) in Class D airspace at Hector International Airport (FAR) under the jurisdiction of Hector Airport Traffic Control Tower (ATCT). See attachment 1.

Purpose: To prescribe UAS operating requirements in the National Airspace System (NAS) for the purpose of training flights.

Dates of Use: This COA is valid from July 28, 2016, through July 27, 2018. Should a renewal become necessary, the operator shall advise the Federal Aviation Administration (FAA), in writing, no later than 45 business days prior to the requested effective date.

Policy:

1. A public aircraft operation is determined by statute, 49 USC §40102(a)(41) and §40125.
2. All public aircraft flights conducted under a COA must comply with the terms of that statute.
3. All flights must be conducted per the declarations submitted on COA on-line.
4. In Order for the waiver of 14 CFR Part 91 §91.113(b) to be effective, the operator must comply with all terms of this COA.
5. All operations will be conducted in compliance with Title 14 CFR Part 91 and the conditions of the waiver issued herein. If the Operator cannot adhere to any of these requirements a separate FAA Form 7711-2 Waiver application may be required.

General:

1. The review of this activity is based upon current understanding of UAS operations and their impact in the NAS. This COA will not be considered a precedent for future operations. (As changes in or understanding of the UAS industry occur, limitations and conditions for operations will be adjusted.)
2. All personnel connected with the UAS operation must read and comply with the contents of this authorization and its provisions.
3. A copy of the COA including the special limitations must be immediately available to all operational personnel at each operating location whenever UAS operations are being conducted.
4. This authorization may be canceled at any time by the Administrator, the person authorized to grant the authorization, or the representative designated to monitor a specific operation. As a general rule, this authorization may be canceled when it is no

longer required, there is an abuse of its provisions, or when unforeseen safety factors develop. Failure to comply with the authorization is cause for cancellation and enforcement as determined by the Administrator. The operator will receive written notice of cancellation.

STANDARD PROVISIONS

A. **Airworthiness Certification and Supporting Documentation.**
The unmanned aircraft must be shown to be airworthy to conduct flight operations in the NAS. The Department of the Air Force has made its own determination that the Reaper MQ-9 unmanned aircraft is airworthy. The Department of the Air Force will ensure the airworthiness certificate remains valid for the duration of this COA. The Reaper MQ-9 must be operated in strict compliance with all provisions and conditions contained in the Airworthiness Safety Release, including all documents and provisions referenced in the COA application. It is the responsibility of the Department of the Air Force to ensure all supporting documents, i.e. frequency spectrum approval, pilot training, medical clearances, etc., are current and valid for the operations being performed.

B. **Operations.**
1. Unless otherwise authorized as a special provision, a maximum of one unmanned aircraft will be controlled:
   a. From a single control station, and
   b. By one pilot at a time.
2. A Pilot-in-Command (PIC) is the person who has final authority and responsibility for the operation and safety of flight, has been designated as PIC before or during the flight, and holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight. The responsibility and authority of the PIC as described by 14 CFR Part 91 §91.3, Responsibility and Authority of the Pilot-in-Command, apply to the unmanned aircraft PIC. The PIC position may rotate duties as necessary with equally qualified pilots. The individual designated as PIC may change during flight.

Note: Flight Crew Member (UAS). In addition to the flight crew members identified in 14 CFR Part 1, Definitions and Abbreviations, an Unmanned Aircraft System flight crew members include pilots, sensor/payload operators, and visual observers and may include other persons as appropriate or required to ensure safe operation of the aircraft.

3. Operations (including lost link procedures) should not be conducted over populated areas, heavily trafficked roads, or an open-air assembly of people, unless authorized in the Airworthiness Certification.
4. When necessary, transit of airways and routes must be conducted as expeditiously as possible. The unmanned aircraft should not plan to loiter on Victor airways, jet routes, Q and T routes, IR routes, or VR routes.
5. For flights operating on an IFR, the PIC must ensure positional information in reference to established National Airspace System (NAS) fixes, NAVAIDs, and/or waypoints is provided to ATC. The use of latitude/longitude positions is not authorized, except oceanic flight operations.
6. If equipped, the unmanned aircraft must operate with

a. An operational mode 3/A transponder with altitude encoding, or mode S transponder (preferred) set to an ATC assigned squawk
b. Position/navigation and anti-collision lights on at all times during flight unless stipulated in the special provisions or the proponent has a specific exemption from 14 CFR Part 91 §91.209.

C. **Air Traffic Control (ATC) Communications.**

1. The pilot and/or PIC will maintain direct, two-way communication with ATC and have the ability to maneuver the unmanned aircraft in response to ATC instructions, unless addressed in the Special Provision Section.
   When required, ATC will assign a radio frequency for air traffic control during flight. The use of land-line and/or cellular telephones is prohibited as the primary means for in-flight communication with ATC.
2. The PIC must not accept an ATC clearance requiring the use of visual separation, or visual approach.

D. **Safety of Flight.**

1. The operator or delegated representative is responsible for halting or canceling activity in the COA area if, at any time, the safety of persons or property on the ground or in the air is in jeopardy, or if there is a failure to comply with the terms or conditions of this Waiver and Authorization.
2. When operating in controlled airspace, ATC must be immediately notified in the event of any emergency, loss and subsequent restoration of command link, loss of PIC or observer visual contact, or any other malfunction or occurrence that would impact safety or operations.
3. Lost link programmed procedures will avoid unexpected turn-around and/or altitude changes and will provide sufficient time (2-3 minutes) to communicate and coordinate with ATC prior to executing any lost link maneuver. It is preferred that at least the initial Lost Link Procedure include last assigned/coordinated heading and altitude.

4. **See-and-Avoid.**
   Unmanned aircraft have no on-board pilot to perform see-and-avoid responsibilities; therefore, when operating in the National Airspace System provisions must be made to provide an alternate means of compliance to 14 CFR Part 91 §91.113.
   a. The operator and/or delegated representatives are responsible at all times for collision avoidance with all aviation activities and the safety of persons or property on the surface with respect to the UAS.
   b. UAS pilots will ensure there is a safe operating distance between other aviation activities and the unmanned aircraft at all times.
   c. Any crew member responsible for performing see-and-avoid requirements for the UA must have and maintain instantaneous communication with the PIC.
   d. Visual or tactical observers must be used at all times except in Class A, airspace, active Restricted Areas, and Warning areas designated for aviation activities or as authorized in the Special Provisions.

      (1) Observers may either be ground-based or airborne in a chase plane.

(2) If the chase aircraft is operating more than 100 feet above/below and/or more than ½ NM laterally of the unmanned aircraft, the chase aircraft PIC will advise the controlling ATC facility.

e. The PIC is responsible to ensure visual observers are;
(1) Able to see the aircraft and the surrounding airspace throughout the entire flight, and
(2) Able to provide the PIC with the UA's flight path, and proximity to all aviation activities and other hazards (e.g., terrain, weather, structures) sufficiently to exercise effective control of the UA to:
(a) Comply with 14 CFR Parts 91 § 91.111, §91.113 and § 91.115, and
(b) Prevent the UA from creating a collision hazard, and
(c) Comply with all conditions of the waiver of 14 CFR 91 § 91.113 (b).

f. Observers must be able to communicate clearly to the pilot any instructions required to remain clear of conflicting traffic, using standard phraseology as listed in the Aeronautical Information Manual when practical.

g. A PIC may rotate duties as necessary to fulfill operational requirements; a PIC must be designated at all times.

E. **Notice to Airmen (NOTAM).**

1. A Distant (D) NOTAM must be issued when unmanned aircraft operations are being conducted unless operations are contained within Class A airspace, restricted or warning areas or the operating areas are designated within the appropriate aeronautical chart or airport directory. This requirement may be accomplished:
a. Through the operator's local base operations or NOTAM issuing authority, or
b. By contacting the Lockheed Martin Flight Service Station NOTAM Office at 1-877-4-US-NTMS (1-877-487-6867) not more than 72 hours in advance, but not less than 48 hours prior to the operation, unless otherwise authorized as a special provision. The issuing agency will require the:
(1) Name and contact information of the pilot filing the NOTAM request
(2) Location, altitude, or operating area
(3) Time and nature of the activity.
2. For operators filing their NOTAM with the Department of Defense: The requirement to file with an Automated Flight Service Station (AFSS) is in addition to any local procedures/requirements for filing through the Defense Internet NOTAM Service (DINS).

F. **Data Reporting.**

1. Operators are strongly encouraged to provide documentation of all operations associated with UAS activities regardless of the airspace in which the UAS operates. This includes COA operations within Special Use airspace and International Airspace and the information will only be used for the development of civil standards and not released without prior consent of the owner.

NOTE: Negative (zero flights) reports are requested.

2. The operator is strongly encouraged to submit the following information through UAS COA On-Line on a monthly basis:

a. The number of flights conducted under this COA. (A flight during which any portion is conducted in the NAS must be counted only once, regardless of how many times it may enter and leave Special Use airspace between takeoff and landing)
b. Aircraft operational hours per flight
c. Ground control station operational hours in support of each flight, to include Launch and Recovery Element (LRE) operations
d. Pilot duty time per flight
e. Equipment malfunctions (hardware/software) affecting either the aircraft or ground control station

Note: The greater the detail, the better as it will provide the FAA critical insights and assist the FAA in the development of civil standards and certification, as well as accident and incident investigative techniques.

f. Deviations from ATC instructions and/or Letters of Agreement/Procedures
g. Operational/coordination issues
h. The number and duration of lost link events (control, vehicle performance and health monitoring, or communications) per aircraft per flight.

G. **Incident/Accident/Mishap Reporting.**

After an incident or accident that meets the criteria below, and within 24 hours of that incident, accident or event described below, the proponent must provide initial notification of the following to the FAA via email at mailto: 9-AJV-115-UASOrganization@faa.gov and via the UAS COA On-Line forms (Incident/Accident).

a. All accidents/mishaps involving UAS operations where any of the following occurs:
    1) Fatal injury, where the operation of a UAS results in a death occurring within 30 days of the accident/mishap
    2) Serious injury, where the operation of a UAS results in:
        - Hospitalization for more than 48 hours, commencing within 7 days from the date of the injury was received;
        - A fracture of any bone (except simple fractures of fingers, toes, or nose);
        - Severe hemorrhages, nerve, muscle, or tendon damage;
        - Involving any internal organ; or
        - Involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.
    3) Total unmanned aircraft loss
    4) Substantial damage to the unmanned aircraft system where there is damage to the airframe, power plant, or onboard systems that must be repaired prior to further flight
    5) Damage to property, other than the unmanned aircraft.
b. Any incident/mishap that results in an unsafe/abnormal operation including but not limited to

1) A malfunction or failure of the unmanned aircraft's on-board flight control system (including navigation)
2) A malfunction or failure of ground control station flight control hardware or software (other than loss of control link)
3) A power plant failure or malfunction
4) An in-flight fire
5) An aircraft collision involving another aircraft.
6) Any in-flight failure of the unmanned aircraft's electrical system requiring use of alternate or emergency power to complete the flight
7) A deviation from any provision contained in the COA
8) A deviation from an ATC clearance and/or Letter(s) of Agreement/Procedures
9) A lost control link event resulting in
   - Fly-away, or
   - Execution of a pre-planned/unplanned lost link procedure.

c. Initial reports must contain the information identified in the COA On-Line Accident/Incident Report.

d. Follow-on reports describing the accident/incident/mishap(s) must be submitted by providing copies of proponent aviation accident/incident reports upon completion of safety investigations.

e. Civil operators and Public-use agencies (other than those which are part of the Department of Defense) are advised that the above procedures are not a substitute for separate accident/incident reporting required by the National Transportation Safety Board under 49 CFR Part 830 §830.5.

f. For other than Department of Defense operations, this COA is issued with the provision that the FAA be permitted involvement in the proponent's incident/accident/mishap investigation as prescribed by FAA Order 8020.11, Aircraft Accident and Incident Notification, Investigation, and Reporting.

AIR TRAFFIC CONTROL SPECIAL PROVISIONS

A. **Coordination Requirements.**

1. A signed Letter of Agreement (LOA) between the 119th Wing and Fargo ATCT must be in effect prior to operations within the FAR Class D airspace. The LOA may be more restrictive based on ATC requirements, but cannot be less restrictive than the contents of this Authorization.
2. The operator will coordinate the fight schedules and proposed flight operation with the Tower at the time when the NOTAM for the flight is filed.
3. The operator will coordinate with the Tower any changes to the Flight Schedule, 24 hours prior to the flight.

4. The operator will conduct final coordination of flight operations two hours prior to the scheduled event.

B. **Communication Requirements.**

1. Pre-flight coordination will be via land line telephone (701) 235 - 8894
2. Conduct all ground movement operations on the Airport Movement Areas on Ground Control Frequency 121.9 VHF or 348.6 UHF.
3. All runway operations will normally be conducted on Local Control Frequency (Tower Frequency) 133.8 VHF or 290.4 UHF. Ground Control will instruct the UAS PIC where and when to contact Tower.

C. **Flight Planning Requirements.**

1. Flights remaining within the Fargo Class D Surface Area require the issuance of the appropriate NOTAM and coordination with the Tower.
2. In addition to the NOTAM and Tower coordination requirements, flights departing the Fargo Class D Surface Area require an IFR flight plan for NAS operations.

D. **Procedural Requirements.**

1. Launch and recovery operations of the MQ-9 will only be accomplished when FAR ATCT is operational and the Fargo Class D airspace is active.
2. The UA PIC shall not accept any ATC clearance requiring the use of visual separation or sequencing.
3. Simultaneous operations of manned and unmanned aircraft in the Class D are authorized. However, manned and unmanned aircraft must not conduct concurrent or simultaneous pattern operations unless approved segregation procedures are written in a letter of agreement with the affected ATC facility.

E. **Emergency/Contingency Procedures.**

1. Lost Link Procedures:

   In the event of a lost link, the UAS pilot will immediately notify FAR ATCT at 701-235-8894, state pilot intentions, and comply with the following provisions:

   a. See attachment 2.
   b. If lost link occurs within a restricted or warning area, or the lost link procedure above takes the UA into the restricted or warning area – the aircraft will not exit the restricted or warning areas until the link is re-established or coordination with ATC has occurred.
   c. The unmanned aircraft lost link mission should minimize transit or orbit over populated areas.
   d. Lost link programmed procedures will avoid unexpected turn-around and/or altitude changes and will provide sufficient time to communicate and coordinate with ATC.
   e. Lost link orbit points shall not coincide with the centerline of Victor airways.

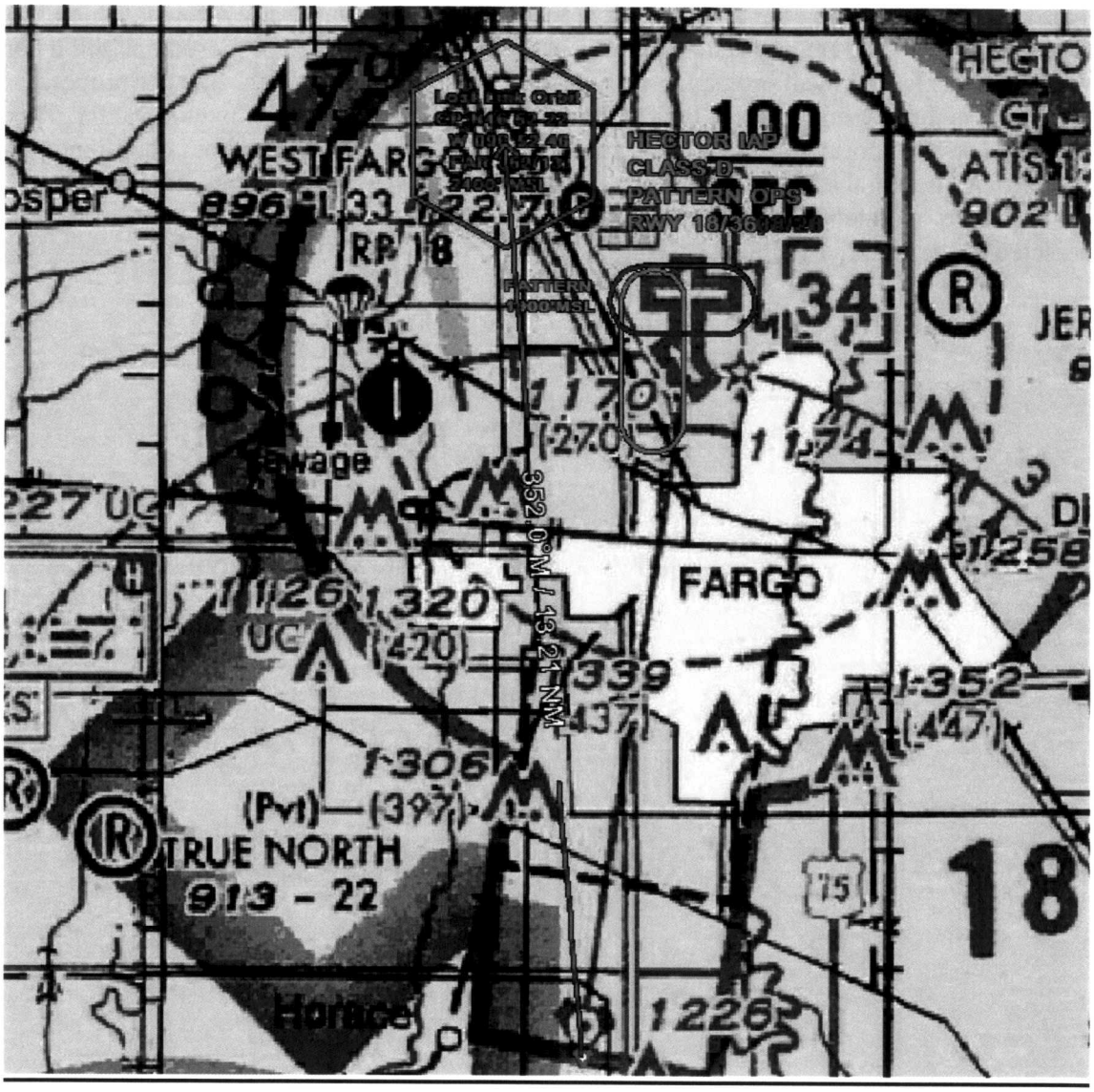
2. Lost Communications: If communications are lost between the PIC and ATC or the PIC and observer, the UAS must land.

AUTHORIZATION

This Certificate of Waiver or Authorization does not, in itself, waive any Title 14 Code of Federal Regulations, nor any state law or local ordinance. Should the proposed operation conflict with any state law or local ordinance, or require permission of local authorities or property owners, it is the responsibility of the Department of the Air Force to resolve the matter. This COA does not authorize flight within regulatory Special Use airspace without coordinating and de-conflicting with the scheduling agency. The Department of the Air Force is hereby authorized to operate the Reaper MQ-9 Unmanned Aircraft System in the operations area depicted in the Activity section of this attachment.

Attachment 1

Operations Area (Graphics/Maps)



Attachment 2

Lost Link

A. **General Lost Link Procedures:**

1. When contact with the GCS is lost for 10 seconds, the MQ-9 initiates its' Lost Link (LL) profile. In all cases, the UA GCS or SOF shall immediately notify FAR ATC and provide the following information:
   a. UA call sign.
   b. UAS squawk code.
   c. Last known position (in NAVAID, radial, distance format), altitude, and heading.
   d. ALL profile (routing, airspeed, and altitude) from the last known position to the final, lost link, emergency mission loiter orbit point.
   e. Useable fuel remaining (in hours and minutes).
2. While the UA is airborne in a LL condition, the PIC/SOF shall be in direct contact with ATC via GCS radio or landline. ATC will provide position and altitude updates to the PIC as able. The crew will use ATC updates to confirm that the UA has responded correctly to the programmed flight profile. The crew will also monitor flight progress from the GCS if downlink/return link is available.

B. **General Lost Link Procedures:**

1. If below 2400ft. MSL, such as during climb-out or on final approach: Turn to runway heading while executing an immediate climb to 2400ft. MSL. Upon reaching 2400ft. MSL, the UA will turn in the shortest direction to the Flight Termination Point (FAR352-13, N46 58 22/W096 52 46).
2. Upon reaching the FTP, the UA shall hold in a clockwise orbit, (3NM diameter) at 2400ft. MSL until command link is re-established. If the command link is not re-established, the UA will terminate flight on course in the orbit at the point of fuel exhaustion.
3. When link is re-established, the PIC/SOF will coordinate with ATC for further actions.
4. All options to safely recover the MQ-9 prior to fuel exhaustion will be made. The SOF will coordinate with ATC to provide the last known aircraft position for mishap response operations.

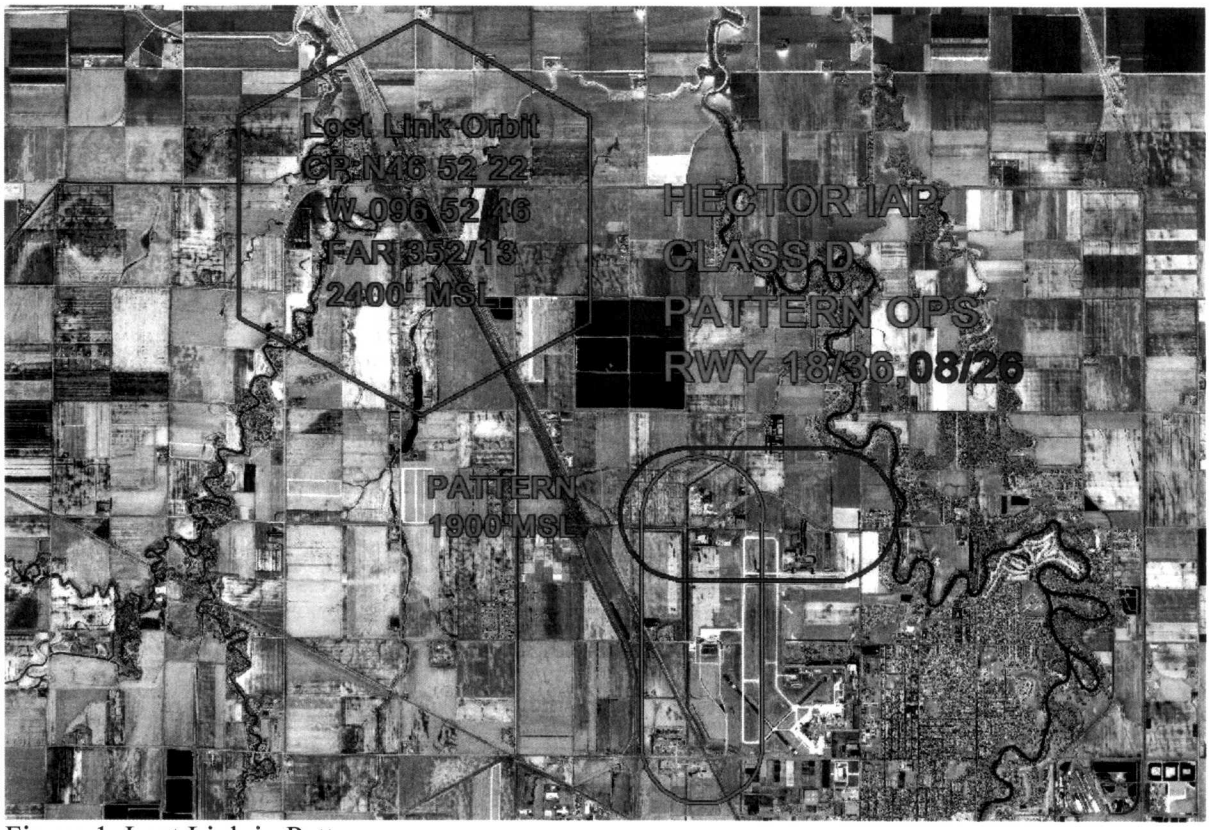


Figure 1. Lost Link in Pattern

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