Environmental Assessment

Disposal and Reuse of Topsham Annex
Naval Air Station Brunswick
Brunswick, Maine

December 2010

UNITED STATES DEPARTMENT OF THE NAVY
Base Realignment and Closure Program
Management Office Northeast
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Responsible Agency:
U.S. Department of the Navy
Base Realignment and Closure Program Management Office Northeast
Philadelphia, Pennsylvania

ENVIRONMENTAL ASSESSMENT (EA)

Proposed Action: Disposal of Topsham Annex, Naval Air Station Brunswick in a manner consistent with the *Topsham Annex Reuse Master Plan*.

Abstract

The U.S. Department of the Navy (Navy) is required to close Naval Air Station Brunswick and all outlying properties in accordance with Public Law 101-510, the Defense Base Closure and Realignment Act of 1990, as amended in 2005. This includes the closure and reuse of Topsham Annex, located in Topsham, Maine.

This EA analyzes two proposed options and the No Action Alternative for the disposal of the Topsham Annex and its reuse in a manner consistent with the approved *Topsham Annex Reuse Master Plan*.

The Topsham Local Redevelopment Authority and the citizens of Topsham selected an alternative with mixed uses as the preferred alternative. The plan calls for 46 acres of existing military housing to be zoned medium- and high-density residential. Furthermore, 14 acres of undeveloped and recreational land would be used for open space and recreational activities coordinated with the local school district's adjacent athletic facilities. The remaining 14 acres of land in the existing administrative area of the Annex would be zoned for business and community uses. The second alternative is for the entire Annex to be redeveloped as a business park.

The No Action Alternative also was evaluated. Under this alternative the property would be retained by the U.S. government and placed in caretaker status, and no reuse or redevelopment would occur.

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Executive Summary

ES.1 Type of Report

This environmental assessment (EA) evaluates the reasonably foreseeable environmental consequences of the U.S. Department of the Navy's (the Navy's) disposal of Topsham Annex, a 74-acre property associated with Naval Air Station (NAS) Brunswick, Maine, and its reuse in a manner consistent with the *Topsham Annex Reuse Master Plan* (*Reuse Master Plan* [Matrix Design Group December 2007]). The 74-acre Annex property consists of a 60-acre residential area and a 14-acre military administrative area (the Military Triangle) that contains a commissary, a fire station, and office space. Implementation of the *Reuse Master Plan* is the responsibility of the Midcoast Regional Redevelopment Authority (MRRA). The closure of the property is required by Public Law 101-510, the Defense Base Closure and Realignment Act of 1990, as amended in 2005 (BRAC Closure Law), which directed the closure of NAS Brunswick. By law, NAS Brunswick and Topsham Annex must be closed before September 15, 2011. NAS Brunswick and Topsham Annex are scheduled to close in May 2011.

This EA was prepared in accordance with requirements of the National Environmental Policy Act of 1969 (NEPA), NEPA regulations of the Council on Environmental Quality (CEQ) in 40 Code of Federal Regulations (CFR) parts 1500-1508 (CEQ regulations), and Navy regulations in 32 CFR Part 775 (Navy NEPA regulations). The Navy is the lead agency for the proposed action.

ES.2 Description of the Proposed Action

The proposed action is the disposal of Topsham Annex by the Navy and reuse of the property in a manner consistent with the *Topsham Annex Reuse Master Plan* (*Reuse Master Plan).* Reuse of the Annex property could require renovation or demolition of some or all of the existing buildings as well as construction of new residential or office/commercial buildings. Existing utility and road infrastructure would require upgrades or replacement to meet local standards, and some utility lines and roads may need to be relocated prior to redevelopment of the property.

ES.3 Alternatives

The EA evaluates a No Action Alternative and two likely alternatives for reuse of the property that were developed during the local reuse planning effort. Alternative 1, the preferred alternative, is consistent with the *Reuse Master Plan* that was approved by the Topsham Local Redevelopment Authority (Topsham

LRA) Board of Directors. A second reuse alternative, a business park, also is presented in this EA. Alternative 2 is consistent with a business park scenario that was developed and evaluated as part of the *Reuse Master Plan*. The alternatives analyzed in the EA encompass a mixture of different land uses and development intensities, which allows for an analysis of a broad range of potential impacts that could occur with the disposal and reuse of Topsham Annex.

ES.3.1 Alternative 1 (Preferred Alternative) – Mixed-Use Scenario

The *Reuse Master Plan* proposes redevelopment of approximately 60 acres (81%) of the total 74-acre Annex property with a mixture of medium-density residential, high-density residential, and business and community land uses. The housing units currently are managed by a public-private venture (PPV) partner, Northeast Housing, LLC, through a 50-year lease with the Navy. Approximately 14 acres (19%) of the Annex would be dedicated to a variety of active and passive recreational uses that would complement adjacent athletic facilities owned by the local school district. Full build-out of the area under the *Reuse Master Plan* would be implemented over a 20-year period. The development is designed to be compatible with adjacent land uses while utilizing existing facilities and infrastructure.

ES.3.2 Alternative 2 – Business Park Scenario

Alternative 2 consists of redevelopment of the entire Annex property as a business park. This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Under Alternative 2, all existing housing units and the slabs remaining from previously demolished housing units would be demolished. The administrative buildings in the Military Triangle would also be demolished. Approximately 30 acres of the Annex property would be redeveloped as a business park consisting of about 660,000 square feet of business/commercial floor space and 594,000 square feet of parking space (Roedner December 5, 2008).

ES.3.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. The No Action Alternative is evaluated in this EA as prescribed by CEQ regulations.

ES.4 Summary of Potential Environmental Impacts

This EA describes potential environmental consequences that would be associated with renovation, demolition, or construction activities and changes in population as a result of the redevelopment of Topsham Annex.

ES.4.1 Alternative 1 (Preferred Alternative) – Mixed Use

The environmental consequences that would result from implementing Alternative 1 include the following:

- Topsham's 2007 population would initially decrease by about 2.3%, followed by a minor increase in the town's population upon completion of redevelopment.

- The town's housing stock would increase slightly by 19 units.

- Short-term economic impacts from the closure of Topsham Annex would include the loss of 80 permanent jobs and a corresponding loss of $3 million in annual payroll.

- Short-term economic benefits would accrue from construction expenditures and long-term economic benefits from the creation of approximately 140 permanent jobs with an average annual payroll between $4.44 and $6.88 million.

- The town's tax base would increase.

- An initial loss of 50 students in Maine School Administrative District (MSAD) 75 and the loss of $50,000 in annual federal impact aid (0.1% of the school district's total budget) would be offset by gradual student population growth and an increase in revenues due to school taxes paid by new residents.

- The number of local recreational facilities would increase.

- All intersections would operate at a level of service 'D' or better, except for the unsignalized intersection of Eagles Way at Route 201, where traffic would be delayed.

- Water consumption and wastewater generation would increase by 90% over existing conditions but would not exceed the capacity of the town's existing water supply and wastewater collection infrastructure.

- Approximately 6.4 acres of new impervious surface would be created, which would generate an additional 7.4 million gallons of annual runoff.

- Hydric soils and soils designated as prime farmland or farmland of statewide importance could be affected by construction.

- The Atlantic salmon, an endangered species, will not be affected. Redevelopment activities on the Annex property are not expected to alter the species' physical habitat or prevent its upstream movement. In addition, no in-stream activities or reduction in riparian vegetation are anticipated. Activities that disturb land on Annex property that is larger than 1 acre would be required to adhere to an erosion and sedimentation control plan and use appropriate best management practices during construction activities to prevent or minimize downstream sedimentation.

ES.4.2 Alternative 2 – Business Park

The environmental consequences that would result from implementing Alternative 2 include the following:

- Topsham's 2007 population would initially decrease by about 2.3%, followed by a minor increase in the town's population upon completion of redevelopment.
- Short-term economic impacts from the closure of Topsham Annex would include the loss of 80 permanent jobs and $3 million in annual payroll.
- Short-term economic benefits would accrue from construction expenditures and long-term economic benefits from the creation of approximately 1,320 permanent jobs with approximately $50 million in average annual payroll.
- The town's tax base would increase.
- An initial loss of 50 students in MSAD 75 and the loss of $50,000 in annual federal impact aid (0.1% of the school district's total budget) would be offset by gradual student population growth and an increase in revenues from school taxes paid by new residents.
- All intersections would operate at a level of service 'D' or better, except for the unsignalized intersection of Eagles Way at Route 201, where traffic would be delayed.
- Water consumption and wastewater generation would increase by 35% over existing conditions but would not exceed the capacity of the town's existing water supply and wastewater collection infrastructure.
- Approximately 18.3 acres of new impervious surface would be created, which would generate an additional 21.1 million gallons of annual runoff.
- Hydric soils and soils designated as prime farmland or farmland of statewide importance could be affected by construction.
- The Atlantic salmon, an endangered species, will not be affected. Redevelopment activities on the Annex property are not expected to alter the species' physical habitat or prevent its upstream movement. In addition, no in-stream activities or reduction in riparian vegetation are anticipated. Activities that disturb land on Annex property that is larger than 1 acre would be required to adhere to an erosion and sedimentation control plan and use appropriate best management practices during construction activities to prevent or minimize downstream sedimentation.

ES.4.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement.

ES.5 Areas of Potential Controversy

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List of Abbreviations and Acronyms

AADT	annual average daily traffic
ACM	asbestos-containing material
amsl	above mean sea level
AST	aboveground storage tank
ATR	automatic traffic recorder
bgs	below ground surface
BMPs	best management practices
BNAS	Brunswick Naval Air Station
BRAC	Base Closure and Realignment
BSD	Brunswick sewer district
BTWD	Brunswick and Topsham water district
CAA	Clean Air Act
CCD	Coastal Consistency Determination
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DEP	(Maine) Department of Environmental Protection
DIFW	(Maine) Department of Inland Fisheries and Wildlife
DoD	U.S. Department of Defense

Abbreviations and Acronyms (cont.)

DOT	Department of Transportation
DPS	distinct population segment
EA	environmental assessment
ECP	environmental condition of property
EIS	environmental impact statement
EMS	emergency medical service
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESCP	Erosion and Sedimentation Control Plan
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FOST/FOSL	finding of suitability to transfer/lease
FR	Federal Register
FRC	Fleet Readiness Center
FY	fiscal year
ITE	Institute of Transportation Engineers
IRP	Installation Restoration Program
LBP	lead-based paint
LOS	level of service
LRA	local redevelopment authority
LUC	Land Use Code
MBTA	Migratory Bird Treaty Act
MCGP	Maine Construction General Permit
MCP	Maine Coastal Program

Abbreviations and Acronyms (cont.)

MEPDES	Maine Pollutant Discharge and Elimination System
MEG	maximum exposure guidelines
mgd	million gallons per day
mg/kg	milligrams per kilogram
mg/m^3	milligrams per cubic meter
MNG	Maine Natural Gas
MOA	Memorandum of Agreement
MRRA	Midcoast Regional Redevelopment Authority
MSAD	Maine School Administrative District
MRSA	Maine Revised Statutes Annotated
NAAQS	National Ambient Air quality Standards
NAS	Naval Air Station
NECTA	New England City and Town Area
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRPA	(Maine) Natural Resources Protection Act
NWI	National Wetlands Inventory
O_3	ozone
OPNAVINST	Chief of Naval Operations Instruction
PCB	polychlorinated biphenyl

Abbreviations and Acronyms (cont.)

Pb	lead
PBC	public benefit conveyance
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PMO	Program Management Office
ppm	parts per million
PPV	public-private venture
Pub.L.	Public Law
PUB/SSIF	palustrine broad-leafed deciduous scrub-shrub
SAGE	semi-automatic ground environment
SHPO	State Historic Preservation Office
SIP	state implementation plan
SO_2	sulfur dioxide
SPO	State Planning Office
SPCC	spill prevention, control, and countermeasures
SVOC	semi-volatile organic compound
TIF	tax increment financing
$\mu g/m^3$	micrograms per cubic meter
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound
WWTP	wastewater treatment plant

1 Purpose of and Need for Action

1.1 Action Summary

The U.S. Department of the Navy (Navy) is required to close Naval Air Station (NAS) Brunswick (and several outlying properties) in accordance with Public Law (Pub. L.) 101-510, the Defense Base Closure and Realignment Act of 1990, as amended in 2005 (BRAC Closure Law). One of the outlying properties, the 74-acre Topsham Annex, is the subject of this environmental assessment (EA). The Annex contains both improved and unimproved land and, as surplus Department of Defense (DoD) property, would be available for reuse when NAS Brunswick closes in May 2011. This EA evaluates the potential impacts on the human environment[1] resulting from the disposal of Topsham Annex and its reuse in a manner consistent with the approved *Topsham Annex Reuse Master Plan*. A separate environmental impact statement (EIS) has been prepared for the disposal and reuse of NAS Brunswick.

This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental Quality (CEQ) guidance implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508); Department of the Navy regulations implementing NEPA (32 CFR 775); and the Defense Base Closure and Realignment Act of 1990 (Pub. L. 101-510). The BRAC Program Management Office is the proponent for all BRAC actions. There are no cooperating agencies for preparation of this EA.

1.2 Purpose of and Need for Action

The purpose of the proposed action is to provide for the disposal and reuse of NAS Brunswick in a manner consistent with the *Topsham Annex Master Reuse Plan* (Matrix Design Group December 2007). The proposed action will provide the local community with an opportunity for economic development and job creation.

1.3 Background

Topsham Annex is located in the Town of Topsham, Sagadahoc County, Maine (Figure 1-1). The facility is located approximately 30 miles northeast of Portland and 30 miles south of Augusta, the state capital.

[1] The human environment is defined as "the natural and physical environment and the relationship of people with that environment" (OPNAVINST 5090.1C)

Topsham Annex opened in 1957 as the Topsham Air Force Station, operating an aircraft control and communications facility (HRP Associates November 14, 1996). The Annex was transferred to the Navy in January 1972 and is currently under the command of NAS Brunswick, located in the neighboring Town of Brunswick.

Topsham Annex functions as a general support facility for NAS Brunswick; it includes 177 housing units in a 60-acre residential area and a commissary, a training facility, office space, and a fire station in a 14-acre area called the Military Triangle (Figure 1-2). The housing units are managed by a public-private venture (PPV) partner, Northeast Housing, LLC (formerly GMH Military Housing, LLC), through a 50-year lease with the Navy. Of the original 177 housing units constructed, 129 units are functional and 48 units have been demolished or identified for demolition. The fire station is owned by the Navy and is currently licensed to the Town of Topsham for use by the town's fire department. In addition to Navy facilities, the 14-acre operational area also includes a U.S. Marine Corps reserve center and Army recruiting center that serves the mid-coast Maine region.

In August 2005, the BRAC Commission voted to close NAS Brunswick, including Topsham Annex and several outlying properties. The existing mission and support operations at NAS Brunswick, i.e., aircraft, personnel, equipment, and support, are moving to NAS Jacksonville, Florida. In addition, the maintenance department at NAS Brunswick will be consolidated with the Fleet Readiness Center (FRC) Southeast, also in Jacksonville. As part of the Topsham Annex closure actions, the commissary will close, and the Marine Corps reserve center and Army recruiting battalion will relocate. The recommendation to close NAS Brunswick was approved by President Bush on September 15, 2005 and accepted by Congress on November 9, 2005.

When closing and realigning installations the Navy is required to make final determinations regarding excess property needs of other DoD and federal agencies no later than six months after the date of approval for closure or realignment. No facilities or parcels were identified for transfer to other federal agencies upon closure of the Annex, so the entire 74-acre Annex property is considered "surplus" property. The reuse of surplus property is determined by the local redevelopment authority (LRA).

The Topsham LRA was established by Maine Governor John Baldacci in an Executive Order (EO) issued August 25, 2005. On December 1, 2005 the Secretary of Defense gave the Topsham LRA the responsibility for preparing the redevelopment plan for the Annex

The Topsham LRA developed the *Topsham Annex Reuse Master Plan* (Matrix Design Group December 2007), which was officially adopted by the Topsham LRA Board of Directors on December 19, 2007. The Midcoast Regional Redevelopment Authority (MRRA) was established by the Maine State

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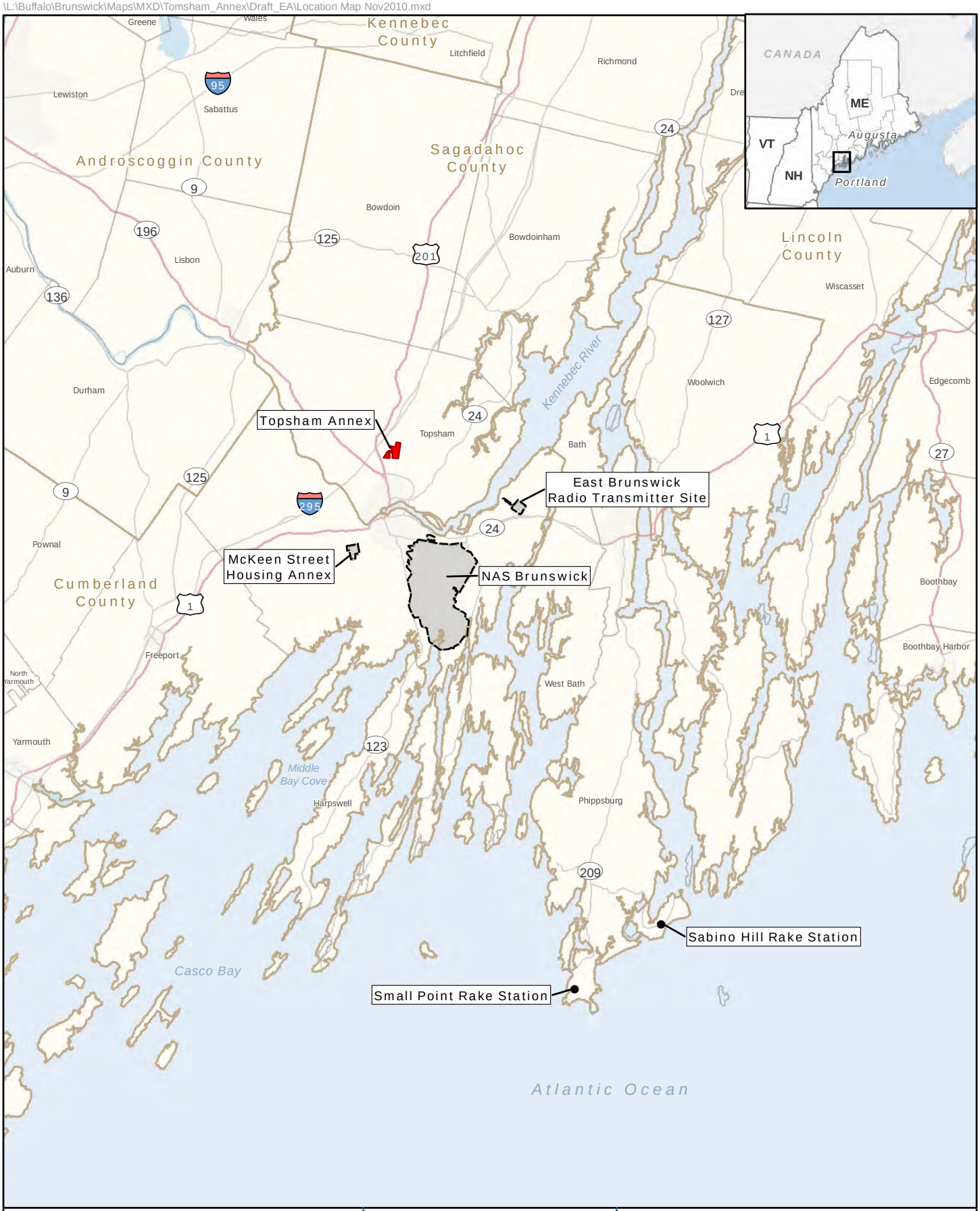

Legend

- Topsham Annex
- Installation Boundary and Outlying Properties
- Municipal Boundary
- County Boundary

N

0 0.5 1 2 3 4
Miles

Figure 1-1
General Location Map
Topsham Annex, Maine

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L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 1-2 Topsham Annex Location Map.mxd 04/08/2009

Legend

- Gate
- Topsham Annex Surplus Property
- Military Triangle
- Residential Area

N

0 100 200 400 600 800

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 1-2
Site Map
Topsham Annex, Maine

Legislature to implement the *Reuse Master Plans* for both Brunswick Naval Air Station (BNAS) and Topsham's Annex the *Reuse Master Plan* is discussed in more detail in Section 2.

1.4 Scope of the EA

This EA evaluates the potential environmental consequences of the disposal of Topsham Annex and its reuse in a manner consistent with the *Topsham Annex Reuse Master Plan*.

The resource areas likely to be affected by the proposed action are evaluated in this EA and include the following:

- Land use, coastal zone, and visual setting
- Socioeconomics
- Community services
- Transportation
- Environmental management
- Air quality
- Infrastructure
- Cultural resources
- The terrestrial environment (geology and topography, water resources, vegetation and wildlife, and threatened and endangered species).

Information and data have been obtained by reviewing existing installation and community documents, including literature, maps, and planning documents; conversations with local stakeholders and officials; fieldwork; and a tour of the Annex. The analysis of impacts assumes that the property would be developed to full build-out under each alternative.

1.5 Regulatory Requirements

The Navy is required to close NAS Brunswick, including Topsham Annex. Disposal of the Topsham Annex property is the responsibility of the Navy. The MRRA is responsible for implementing the *Reuse Master Plan*. The future developer will be responsible for acquiring building permits, zoning approvals, and environmental permits for development of the property.

In addressing environmental consequences, the Navy is guided by relevant statutes (and their implementing regulations) and by Executive Orders that establish standards and provide guidance on environmental and natural resources management and planning (Table 1-1).

Table 1-1 Applicable Regulatory Requirements and Approvals

Regulation	Agency	Permit/Approval	*Regulated Activity*
National Environmental Policy Act (42 U.S. Code [U.S.C.] 4321 et seq.)	Navy	Finding of No Significant Impact	Federal action
Clean Air Act of 1970 (42 U.S.C. 7401 et seq.)	U.S. Environmental Protection Agency	Compliance with National Ambient Air Quality Standards	Federal actions that result in air emissions
National Historic Preservation Act of 1966 as amended (16 U.S.C. 470 and amendments)	■ Advisory Council on Historic Preservation ■ State Historic Preservation Office	Section 106 consultation	Federal actions that affect potentially eligible or listed National Register of Historic Places sites
Endangered Species Act	■ U.S. Fish and Wildlife Service ■ National Marine Fisheries Service ■ Maine Department of Inland Fisheries and Wildlife	Agency consultation for presence of threatened and endangered species	Federal action
Maine Coastal Zone Management Program	■ Maine Department of Environmental Protection ■ Maine Department of Conservation ■ Maine Department of Marine Resources ■ Maine Department of Inland Fisheries and Wildlife ■ Maine Department of Health	Coastal Consistency Determination	Actions by federal or state agencies that may affect coastal resources in Maine

2 Proposed Action and Alternatives

2.1 Introduction

This section provides a detailed description of the proposed action and alternatives. NEPA requires the analysis of a reasonable range of alternatives, including a No Action Alternative. Reasonable alternatives are actions other than the proposed action that could achieve the objectives. This EA evaluates two alternatives for reuse of the site that were developed during the local reuse planning process. The preferred reuse alternative is the mixed-use scenario adopted by the Topsham LRA, i.e., a mix of residential areas, parks and recreational areas, and business and community areas. The second reuse alternative is a business park, which also was developed and evaluated as part of the Topsham LRA master planning process.

The alternatives analyzed in this EA encompass a mixture of different land uses and development intensities, allowing for an analysis of a broad range of potential impacts that could occur with the disposal and reuse of Topsham Annex.
The EA also analyzes a No Action Alternative. Under the No Action Alternative, the property would be retained by the U.S. government and placed in caretaker status. Existing structures and land would not be reused or developed. Under this alternative, the existing PPV residential housing is expected to be occupied per lease agreement.

2.2 Development of the Topsham Annex Reuse Master Plan

The Topsham LRA developed the *Reuse Master Plan* based on the existing conditions on the Annex and in the region, the properties available for redevelopment, public involvement, and a set of guiding principles. The guiding principles developed and approved by the Topsham LRA Board of Directors included:

- **Community Development.** Uses should be landmarks or special places in Topsham and should enhance the quality of living, working, learning, and playing for everyone in the community.

- **Consistency.** Uses should be consistent with the goals and policies of relevant local plans, including the *Comprehensive Plan* (Topsham Comprehensive Plan Update Committee May 19, 2005; May 24, 2007), the

Main Street Village Plan (Topsham Main Street Advisory Committee 2007), the *Route 196/I-295 Interchange Study* (April 3, 2007), and other transportation and economic development studies.

- **Realism.** Uses should be achievable for the 74-acre site.
- **Compatibility.** Uses should complement neighboring activities, including education, retirement living, office work, retail shopping, and year-round residences.
- **Environmental Quality.** Uses should include strategies to preserve land, protect the environment, reduce energy use, promote quality design, and encourage walking.

The following were considered when proposing land uses for the Annex:

- Past uses of the property
- Existing property conditions
- Public purpose needs and the interests of other state and local governments and certain nonprofit organizations (e.g., schools, parks, and other public facilities)
- Needs of the homeless in the local community
- Needs of the local community for economic redevelopment and other development, including job creation.

The Topsham LRA also identified goals for reuses within the Military Triangle and residential areas. These goals were to:

- Promote economic development and focus on commercial uses that generate tax revenues and create well-paid jobs
- Support existing local businesses
- Support a youthful population
- Focus on professional, commercial, and community services
- Focus on recreational uses with a buffer for residential uses to the east
- Provide market-rate housing of moderate density
- Provide workforce housing at a higher density (Matrix Design Group December 5, 2007).

2.2.1 Evaluation of Existing Conditions and Properties Available for Redevelopment

In developing the *Reuse Master Plan*, the Topsham LRA assessed existing conditions and properties available for redevelopment at the Annex. The existing conditions assessment included evaluations of the environmental conditions of the property, existing infrastructure, transportation networks, and local and regional economic markets. As noted in Section 1, the entire 74-acre Topsham Annex property is considered surplus; no parcels have been identified for transfer to other federal agencies. However, existing housing at Topsham Annex is currently being managed by Northeast Housing, LLC under a 50-year lease. Originally 177 military housing units were located on Topsham Annex; 48 of these units have been demolished or identified for demolition. Of the remaining 129 units, 72 are occupied, one is vacant, and 56 are "off-line"—unoccupied and fenced off from the rest of the property. While the Navy has the ability to dispose of the land on which the housing is located under procedures used in the BRAC process, improvements on that land are currently under the control of Northeast Housing, LLC. During development of the reuse scenarios, the Topsham LRA assumed that Northeast Housing, LLC will be divesting its interests in the residential area.

Surplus property may be conveyed to public agencies and not-for-profit organizations to provide public goods and services. The Topsham LRA considered applications for public benefit conveyances (PBC) of the surplus property from local and state entities and designated housing providers for the homeless. Three parcels were recommended for approval as PBCs and were incorporated into the reuse scenarios:

1. The Town of Topsham requested approximately 3 acres of land for future economic development.

2. The school district requested approximately 15 acres of open space to support recreational needs of the adjacent middle and high schools.

3. The Topsham Sewer District requested two buildings at the entrance to the Annex for administrative and maintenance needs, which might be expanded in the future.

2.2.2 Public Involvement

Public involvement was a critical component of the development of the *Reuse Master Plan*. To engage the public in the reuse planning process, the Topsham LRA held a series of public workshops and meetings over a 10-month period beginning in November 2006 and ending in August 2007, during which the Topsham LRA planning team was introduced to the public. Additional public meetings, plan development meetings, and economic development workshops were held, and multiple opportunities to comment were provided. Additional public outreach efforts included a public website, press releases and newspaper inserts, and *Reuse Master Plan* graphic displays at the Topsham Library provided for public review and comment.

2.2.3 Reuse Master Plan Selection

Reuse planning led to the development of four reuse concepts that provided a variety of development strategies, densities, and land uses. These four reuse scenarios were further analyzed in the draft *Reuse Master Plan* and were presented to Topsham citizens at a public meeting on August 1, 2007, for additional comment. On August 15, 2007, the Topsham LRA Board of Directors voted to approve the draft *Reuse Master Plan* as the basis for the final *Reuse Master Plan.*

2.3 Alternatives

2.3.1 Identification of Alternatives

A reasonable range of alternatives to compare disposal and reuse options for Topsham Annex has been selected for discussion in this EA. To implement the proposed action, the Navy has identified the following alternatives:

- Alternative 1 (Preferred Alternative) – Mixed Use
- Alternative 2 – Business Park
- No Action

Alternative 1, the preferred alternative, is the disposal of Topsham Annex and its reuse in a manner consistent with the *Reuse Master Plan* selected by the Topsham LRA and the citizens of the Topsham community, i.e., a combination of residential, parks and recreation, and business and community land uses. The Navy is also evaluating Alternative 2, a single land-use scenario (a business park) that excludes any residential development. This alternative was developed based on a meeting with representatives from the Town of Topsham and the MRRA. A single land-use alternative was also evaluated during the local redevelopment planning process. The No Action Alternative is required by the NEPA statute and establishes a baseline by which to compare and identify potential impacts on the human environment resulting from the redevelopment of Topsham Annex.

One additional alternative—proposing a higher density of residential development in the existing residential area—was considered and rejected. This alternative was not considered an economically viable reuse of the property, given current market conditions, and therefore has not been evaluated in this EA.

2.3.2 Description of Alternatives

2.3.2.1 Alternative 1 (Preferred Alternative) – Mixed Use

The *Reuse Master Plan* calls for developing approximately 60 acres (81%) of the total Annex property. Approximately 14 acres (19%) of the Annex would be dedicated to a variety of active and passive uses, including recreation, open space, and natural areas. Full build-out of the area under the *Reuse Master Plan* would be implemented over a 20-year period. The development is designed to be compatible with current, adjacent land uses while using existing facilities and infrastructure.

Topsham Annex consists of two primary areas: a residential area of approximately 60 acres and the Military Triangle, an operational area occupying approximately 14 acres. The residential area is further divided into three subareas: an undeveloped property on the western side north of Can Am Drive, existing housing north of Can Am Drive, and existing housing south of Can Am Drive. The distribution of the proposed land uses in the *Reuse Master Plan* is similar to existing land uses.

Figure 2-1 illustrates the *Reuse Master Plan* at full build-out, which includes four distinct areas:

- **Residential – Medium Density.** The 31 acres of existing housing north of Can Am Drive would be designated as medium-density residential land (up to four residential units per acre). The housing units could be renovated existing units or new construction.

- **Residential – High Density.** The 15 acres of existing housing south of Can Am Drive would be designated as higher-density residential land (up to 8 units per acre).

- **Parks and Recreation.** This 14-acre area located north of Can Am Drive and west of the existing residential area would be a mix of active and/or passive recreation and open space uses that are coordinated with and complement the adjacent athletic facilities owned by the local school district.

- **Business and Community.** The 14-acre Military Triangle area would include a mix of office, commercial, retail, light industrial, and other similar uses that would be consistent with adjacent residential and educational land uses. The business and community designation would also permit community and civic land uses such as governmental and cultural services and parks and open space. A small portion of the Military Triangle is currently undeveloped and could be used for new construction. In addition, existing DoD facilities could be reused or demolished to provide space for new construction.

Under Alternative 1, up to 146 housing units would be located on the Topsham Annex property. The total area designated for residential development is approximately 46 acres. However, given the proposed zoning, open space requirements, and infrastructure easements, the net developable acreage would be reduced by approximately 40%. The 31-acre parcel identified for medium-density residential use would have a net development area of approximately 19 acres or 76 dwelling units (4 dwelling units per acre). The 15-acre parcel identified for higher density residential would have a net development area of approximately 9 acres or 72 dwelling units (8 dwelling units per acre).

Redevelopment of the Military Triangle proposed under Alternative 1 includes renovation and/or reuse of the majority of the existing buildings on the property (approximately 70,000 square feet of mixed business space). One facility, the former auto storage facility (Building 338), would be demolished. The open space created by the demolition of this facility and an additional small area of

existing undeveloped space could potentially be available for new construction under Alternative 1. The maximum build-out could result in approximately 200,000 square feet of new floor space (Roedner December 5, 2008). If existing structures are used, this amount of space would likely be less because of an inefficient building layout that would not maximize the development area potential.

Infrastructure improvements proposed as part of the *Reuse Master Plan* would include on-site roadway upgrades, replacement of the water distribution and wastewater collection systems, and installation of new storm water infrastructure to serve new construction. Additionally, installation of off-site traffic signals may be required if the amount of traffic generated by the redevelopment exceeds traffic currently generated by existing development at Topsham Annex. Existing parking areas are sufficient to accommodate 70,000 square feet of mixed business space. If additional parking is needed for future development, it was assumed that three parking spaces per 1,000 square feet of floor space would be sufficient (Roedner December 5, 2008). Following that assumption, the proposed parking lot is estimated at 300 square feet per space, which includes 190 square feet for each individual parking space plus an additional 110 square feet per space for the parking lot interior aisles and circulation routes (Roedner December 5, 2008).

2.3.2.2 Alternative 2 – Business Park

Under Alternative 2, the entire Topsham Annex property, including the residential area and the Military Triangle, would be redeveloped as a business park. Alternative 2 provides a build-out scenario that excludes residential land uses. This alternative assumes that f the Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Further, this alternative assumes a reduction of the developable acreage in the residential area by 30% to meet the open space requirement and an additional 20% reduction for new roads and other infrastructure. Similarly, redevelopment on the Military Triangle must meet an open space requirement of 30%.

Figure 2-2 illustrates the business park scenario at full build-out. Under Alternative 2, all existing housing units and the slabs remaining from previously demolished housing units, plus all existing buildings in the Military Triangle, would be demolished.

A realistic development plan under this alternative would include approximately 660,000 square feet of business/commercial floor space (Roedner December 5, 2008). Provisions for new parking used the same assumptions as discussed in Alternative 1. Assuming a development of 660,000 square feet of floor space, approximately 1,980 parking spaces (covering an additional 594,000 square feet) would be required under Alternative 2. The total developed acreage would be approximately 1.3 million square feet (30 acres).

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\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 2-1 Landuse Alt 1.mxd

Legend

- Business and Community
- Parks and Recreation
- Residential - Medium Density
- Residential - High Density
- Topsham Annex Surplus Property

N

0 100 200 400 600 800

Feet

Figure 2-1
Land Use Alternative 1
Topsham Annex, Maine

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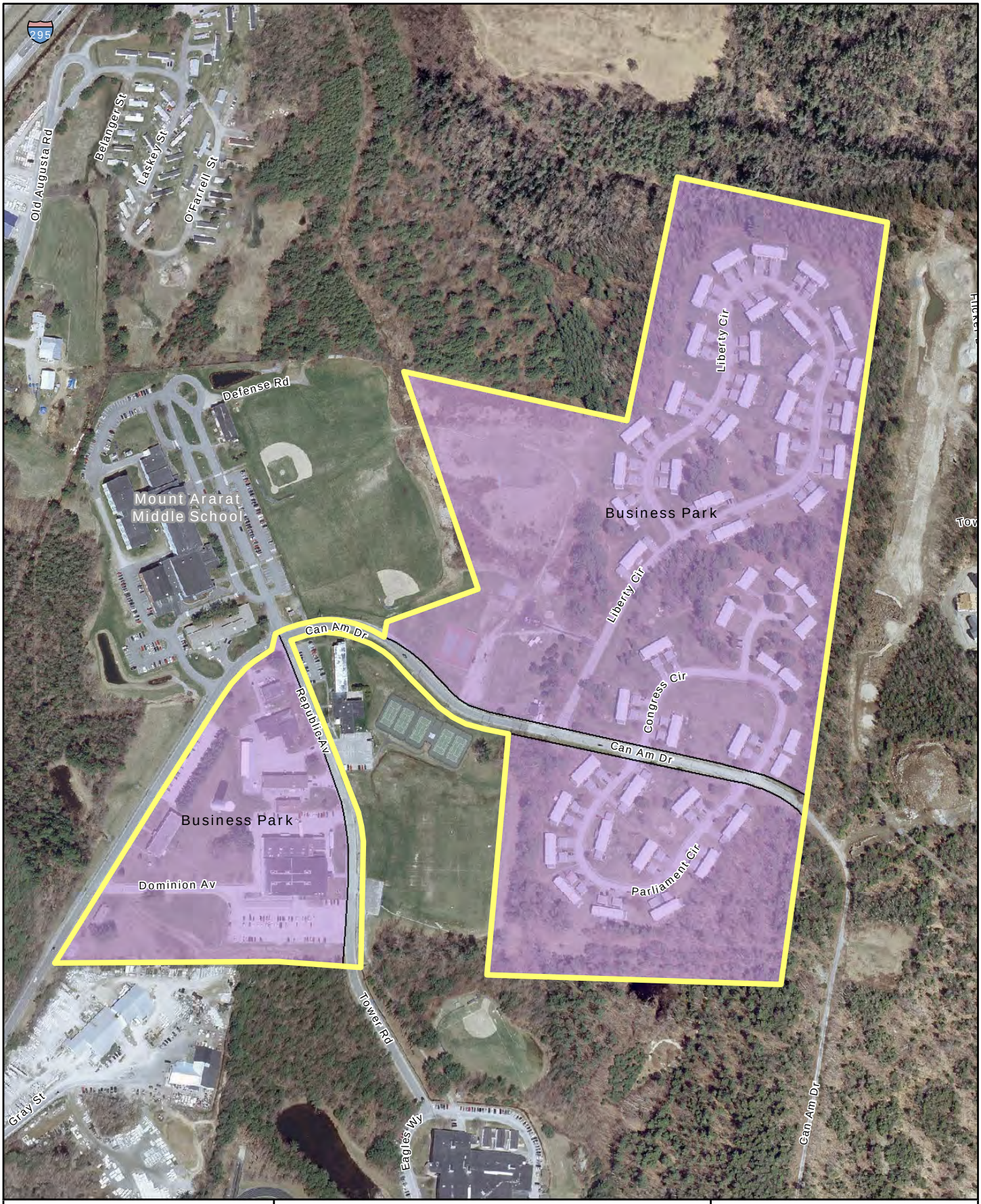
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 2-2 Landuse Alt 2.mxd



Legend

- Business Park
- Topsham Annex Surplus Property

N

0 100 200 400 600 800

Feet

Figure 2-2
Land Use Alternative 2
Topsham Annex, Maine

Infrastructure improvements proposed under Alternative 2 would include on-site roadway upgrades and possible relocation of some roadways, upgrades/ replacement of the water distribution and wastewater collection systems, and installation of new storm water infrastructure to serve new construction. Installation of off-site traffic signals may be required if traffic generated by the redevelopment exceeds traffic currently generated by existing development at Topsham Annex.

2.3.2.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. The No Action Alternative is evaluated in this EA as prescribed by CEQ regulations.

2.3.3 Comparison of Alternatives

Table 2-1 summarizes the differences between the key elements of the two alternatives that are evaluated as part of this EA. Table 2-2 presents a comparison of the environmental consequences of the alternatives.

Table 2-1 Comparison of Action Alternatives (Full Build-out)

Proposed Land Use	Alternative 1 Mixed Use (acres)	Alternative 2 Business Park (acres)
Residential – Medium Density	31	0
Residential – High Density	15	0
Business and Community	14	0
Office Park	0	74
Parks and Recreation	14	0
Total	**74**	**74**

Note: This list is the best approximation of the final development mix; acreages are subject to change based on market conditions and other factors. The acreages listed are the gross area.

Table 2-2 Comparison of the Environmental Consequences (Full Build-Out)

Resource	Alternative 1 (Preferred Alternative) Mixed Use	Alternative 2 Business Park	No Action
Land Use, Coastal Zone, and Visual Setting	**Land Use.** Uses would be consistent with the *Reuse Master Plan.*	**Land Use.** Uses would be partially consistent with the principles and goals of the *Reuse Master Plan*: Alternative 2 would conflict with Topsham's goals for mixed land uses in the Upper Village zone.	**Land Use.** Land use would not be consistent with the *Reuse Master Plan.*
	Coastal Zone. Alternative 1 would be consistent to the maximum extent practicable with the enforceable coastal zone policies of the Maine Coastal Zone Management Program.	**Coastal Zone.** Alternative 2 would be consistent to the maximum extent practicable with the enforceable coastal zone policies of the Maine Coastal Zone Management Program.	**Coastal Zone.** There would be no impact on the coastal zone.
	Visual Setting. The visual character would be similar to the existing visual character of property and surrounding area.	**Visual Setting.** The visual character would be similar to the existing visual character of property and surrounding area.	**Visual Setting.** There would be no impact on the visual setting.
Socioeconomics	**Population.** Disposal and reuse of Topsham Annex would result in an initial population loss of about 2.3% of Topsham's 2007 population. Redevelopment of the housing area would generate a minor increase in the town's population.	**Population.** Disposal and reuse of Topsham Annex would result in an initial population loss of about 2.3% of Topsham's 2007 population. Approximately 1,320 permanent jobs would be generated. Most of the people employed by the business park would be currently living in the region and any increase in population would be spread between Topsham and surrounding towns.	**Population.** There would be no development under this alternative and, therefore, no impact.
	Housing. Full build-out of the housing area would increase housing on Topsham Annex by 19 units. Any impacts on the housing market would be dispersed across the region and across the 20-year build-out period.	**Housing.** Existing housing on Topsham Annex would be demolished. Sufficient housing exists within commuting distance from Topsham Annex to support any increase in population generated by the business park.	**Housing.** There would be no new development; therefore, no impact on housing stock.
	Economy, Employment, and Income. Disposal and reuse of the Annex would result in the loss of 80 permanent jobs and approximately $3 million in annual payroll. Between $17.9 million and $40.6 million would be spent on construction and renovation. Approximately 140 permanent jobs would be created with between $4.44 million and $6.88 million in average annual payroll.	**Economy, Employment, and Income.** Disposal and reuse of the Annex would result in the loss of 80 permanent jobs and approximately $3 million in annual payroll. About $1.16 million would be spent on demolition of existing buildings and more than $99 million on construction. The business park could support 1,320 permanent employees and could generate approximately $50 million in average annual payroll.	**Economy, Employment, and Income.** Any adverse impacts from not reusing or redeveloping the Annex would be negated over time through normal job growth.

Table 2-2 Comparison of the Environmental Consequences (Full Build-Out)

Resource	Alternative 1 (Preferred Alternative) Mixed Use	Alternative 2 Business Park	No Action
	Taxes and Revenues. The total tax base in the residential area would increase by $17 million to $28 million. Total valuation of properties on the Military Triangle would range between $5 million and $7 million.	**Taxes and Revenues.** The total valuation of the redeveloped properties would increase the town's tax base in the range of $46 to $66 million.	**Taxes and Revenues.** There would be no impact on taxes and revenues in the short-term due to continued federal ownership. There would be a potential loss of long-term (20 years) productivity of the property if redevelopment does not occur.
	Environmental Justice. Compliance with applicable laws and regulations during demolition and construction activities would result in no disproportionate or adverse human health and safety impacts or disproportionate environmental impacts on low income or minority populations or populations aged 17 or younger.	**Environmental Justice.** Compliance with applicable laws and regulations during demolition and construction activities would result in no disproportionate or adverse human health and safety impacts or disproportionate environmental impacts on low income or minority populations or populations aged 17 or younger.	**Environmental Justice.** Public access to the Military Triangle would be controlled; there would be no disproportionate or adverse human health and safety impacts or environmental impacts on low income, minority, or aged 17 or younger populations.
	Schools. Maine School Administrative District (MSAD) 75 will lose about 50 students in the short-term. Redevelopment of the residential housing area would result in a net gain of 46 students. Disposal and reuse of the Annex would result in a loss of $50,000 in annual federal impact aid (0.1% of the school district's total annual budget), which would be offset by new private residents paying school taxes.	**Schools.** MSAD 75 will lose about 50 students in the short-term. Loss of $50,000 in annual federal impact aid would be offset over time by gradual population growth.	**Schools.** MSAD 75 will lose about 50 students in the short-term. Loss of $50,000 in annual federal impact aid would be offset over time by gradual population growth.
Community Services	**Police and Emergency Services/Medical Services.** There would be no significant increase in demand for police and emergency services or medical services.	**Police and Emergency Services/Medical Services.** There would be no significant increase in demand for police and emergency services or medical services.	**Police and Emergency Services/Medical Services.** There would be no increase in demand for police and emergency services or medical services.
	Parks and Recreation. The number of recreational facilities available in the town would increase.	**Parks and Recreation.** There would be no increase in recreational facilities or in demand for such facilities; Alternative 2 would be inconsistent with the *Reuse Master Plan* goal to increase recreational opportunities.	**Parks and Recreation.** There would be no increase in recreational facilities or in demand for such facilities; the No Action alternative would be inconsistent with the *Reuse Master Plan* goal to increase recreational opportunities.

Table 2-2 Comparison of the Environmental Consequences (Full Build-Out)

Resource	Alternative 1 (Preferred Alternative) Mixed Use	Alternative 2 Business Park	No Action
Transportation	All intersections would operate at a level of service 'D' or better, except for Eagles Way at Route 201. Exiting traffic would be delayed at this intersection.	All intersections would operate at a level of service 'D' or better, except for Eagles Way at Route 201. Exiting traffic would be delayed at this intersection.	A slight reduction in traffic would result from the closure of the Military Triangle.
Environmental Management	Demolition of any facilities may require additional cleanup of any petroleum contamination remaining under buildings and/or removal of abandoned underground storage tanks (USTs) and aboveground storage tanks (ASTs). Planned demolition of housing would address asbestos-contaminated material (ACM) and lead-based paint (LBP). Land use controls may be required. Future property owners will be notified regarding the environmental condition of the property and structures. Before transfer or lease of BRAC property, the Navy will prepare a Finding of Suitability to Transfer/Lease (FOST/FOSL) summarizing how the applicable requirements and notifications for hazardous substances, petroleum products, and other regulated materials have been satisfied and whether the property is environmentally suitable for transfer or lease. The document will also contain information on any long-term remedies and responsibilities for maintenance and reporting.	Demolition of any facilities may require additional cleanup of any petroleum contamination remaining under buildings and/or removal of abandoned USTs and ASTs. Planned demolition of housing would address ACM and LBP. Land-use controls may be required. Future property owners will be notified regarding the environmental condition of the property and structures. Before transfer or lease of BRAC property, the Navy will prepare a Finding of Suitability to Transfer/Lease (FOST/FOSL) summarizing how the applicable requirements and notifications for hazardous substances, petroleum products, and other regulated materials have been satisfied and whether the property is environmentally suitable for transfer or lease. The document will also contain information on any long-term remedies and responsibilities for maintenance and reporting.	ASTs on the Military Triangle would be assessed for continued use or closure. ASTs could be emptied and closed pending re-use of a building. ASTs could be permanently closed and replaced with natural gas. Periodic monitoring of ACM and LBP within the Military Triangle would be required.
Air Quality	The increase in housing units and business/community service uses could result in an increase in vehicles and a slight increase in vehicle emissions. Future tenants could produce air emissions. Total projected construction and vehicle emissions are below the de minimis threshold of 100 tons per year for each criteria pollutant.	Approximately 30 acres of demolition and new construction would likely increase vehicle use and vehicle emissions. Future tenants could produce air emissions. Total projected construction and vehicle emissions are below the *de minimis* threshold of 100 tons per year for each criteria pollutant.	The decrease in the number of vehicles traveling to and from the Annex would result in a minor reduction of emissions. Minimal air emissions associated with continued maintenance of the facility would be generated.

Table 2-2 Comparison of the Environmental Consequences (Full Build-Out)

Resource	Alternative 1 (Preferred Alternative) Mixed Use	Alternative 2 Business Park	No Action
Infrastructure	**Water Supply and Wastewater Collection and Treatment.** Water consumption and wastewater generation would increase approximately 90% over existing conditions. The increase in water demand would amount to about 8% of the available water in the town's storage tank. Wastewater generation would increase by approximately 22,000 gallons per day or 0.5% of the Brunswick Sewer District wastewater treatment plant's capacity. Utility infrastructure on the Annex property would be upgraded as necessary.	**Water Supply and Wastewater Collection and Treatment.** Water consumption and wastewater generation would increase by approximately 35% over existing conditions. The increase in water demand would amount to about 6% of the available water in the town's storage tank. Wastewater generation would increase by approximately 8,500 gallons per day or 0.2% of the Brunswick Sewer District wastewater treatment plant's capacity. Utility infrastructure on the Annex property would be upgraded as necessary.	**Water Supply and Wastewater Collection and Treatment.** There would be a slight reduction in water consumption and wastewater generation due to closure of the Military Triangle. System improvements to the housing area would be under the control of the lessee, Northeast Housing, LLC.
	Storm Water Collection. An increase in impervious surface from 11.7 acres to 18.1 acres would generate an additional 7.4 million gallons of annual runoff (or a total of 20.9 million gallons of annual runoff upon full build-out). Proper implementation of an erosion and sediment control plan and best management practices (BMPs) during construction would reduce impacts on surface waters from erosion and off-site sedimentation.	**Storm Water Collection.** An increase in impervious surface from 11.7 acres to approximately 30 acres would generate an additional 21.1 million gallons of annual runoff (or a total of 34.6 million gallons of annual runoff upon full build-out). Proper implementation of an erosion and sediment control plan and BMPs during construction would reduce impacts on surface waters from erosion and off-site sedimentation.	**Storm Water Collection.** There would be no new impervious surface created; therefore, there would be no impacts on storm water.
	Natural Gas. No impacts on the natural gas supply or delivery system would occur. An expansion of the system and an increase in usage could occur as a part of the redevelopment.	**Natural Gas.** No impacts on the natural gas supply or delivery system would occur. An expansion of the system and an increase in usage could occur as a part of the redevelopment.	**Natural Gas.** There would be no impacts on the natural gas supply or delivery system.
Cultural Resources	**Archaeological Resources.** No prehistoric archaeological resources would be affected. Any new facilities constructed could affect historic archaeological resources. Renovation and reuse of the Military Triangle facilities would have no effect on historic archaeological resources.	**Archaeological Resources.** No prehistoric archaeological resources would be affected. Demolition of existing buildings on the Military Triangle and construction of new buildings could affect historic archaeological resources.	**Archaeological Resources.** No prehistoric archaeological resources at Topsham Annex would be affected.

Table 2-2 Comparison of the Environmental Consequences (Full Build-Out)

Resource	Alternative 1 (Preferred Alternative) Mixed Use	Alternative 2 Business Park	No Action
	Historic Resources. The Navy and the Maine State Historic Preservation Office (SHPO) have placed a preservation covenant on Building 333, Flag Headquarters/Army Reserve Office, which is eligible for listing on the National Register of Historic Places (NRHP). The covenant requires all successors to the property to consult with the Maine SHPO before taking any action that could impact Building 333. At a minimum, the property owner would be required to adhere to Secretary of the Interior standards for recordation of the building. Therefore, the covenant mitigates but does not entirely preclude the possibility of an effect on this historic resource.	**Historic Resources.** The Navy and the Maine SHPO have placed a preservation covenant on Building 333, Flag Headquarters/Army Reserve Office, which is eligible for listing on the NRHP. The covenant requires all successors to the property to consult with the Maine SHPO before taking any action that could impact Building 333. At a minimum, the property owner would be required to adhere to Secretary of the Interior standards for recordation of the building. Therefore, the covenant mitigates but does not entirely preclude the possibility of an effect on this historic resource.	**Historic Resources.** No historic resources would be affected.
Terrestrial Environment	**Topography, Geology, and Soils.** Extensive grading would not be required, and areas of exposed bedrock would be avoided through site design. Erosion- and sediment-control measures would be employed at construction sites. New construction could affect up to 24 acres of hydric soils, up to 4 acres of prime farmland, and up to 22 acres of farmland of statewide importance.	**Topography, Geology, and Soils.** Extensive grading would not be required, and areas of exposed bedrock would be avoided through site design. Erosion- and sediment-control measures would be employed at construction sites. New construction could affect up to 24 acres of hydric soils, up to 4 acres of prime farmland, and up to 22 acres of farmland of statewide importance.	**Topography, Geology, and Soils.** There would be no impact on geology, topography, and soils; water quality; groundwater; floodplains; wetlands; vegetation and wildlife; migratory birds; or threatened and endangered species.
	Surface Water. Short-term impacts on water quality could result from the discharge of sediments during construction. Long-term changes in impervious surface on the property could also result in impacts on water quality. Ground disturbances would require submittal of an erosion and sedimentation control plan to the Maine Department of Environmental Protection or local planning officials.	**Surface Water.** Short-term impacts on water quality could result from the discharge of sediments during construction. Long-term changes in impervious surface on the property could also result in impacts on water quality. Ground disturbances would require submittal of an erosion and sedimentation control plan to the Maine Department of Environmental Protection or local planning officials.	**Surface Water.** No impacts on this resource are anticipated under the No Action alternative.

Table 2-2 Comparison of the Environmental Consequences (Full Build-Out)

Resource	Alternative 1 (Preferred Alternative) Mixed Use	Alternative 2 Business Park	No Action
	Groundwater. Construction activities could extend below the ground surface to a depth that would directly impact the underlying water table. Impacts of potential spills of fuels or other chemicals during construction would be minimized by adherence to a spill prevention, control, and countermeasures plan. Any contaminated groundwater areas and groundwater use restrictions at the Annex property would be detailed in a FOST/FOSL prepared by the Navy prior to transfer or lease of BRAC property.	**Groundwater.** Construction activities could extend below the ground surface to a depth that would directly impact the underlying water table. Impacts of potential spills of fuels or other chemicals during construction would be minimized by adherence to a spill prevention, control, and countermeasures plan. Any contaminated groundwater areas and groundwater use restrictions at the Annex property would be detailed in a FOST/FOSL prepared by the Navy prior to transfer or lease of BRAC property.	**Groundwater.** No impacts on this resource are anticipated under the No Action alternative.
	Floodplains. No new construction would occur in the 100-year floodplain.	**Floodplains.** No new construction would occur in the 100-year floodplain.	**Floodplains.** No new construction would occur in the 100-year floodplain.
	Wetlands. Indirect impacts on wetlands resulting from construction activities would be minimized by implementing Maine's BMPs for erosion and sediment control. Any wetland disturbances would require the developer to coordinate with the Maine Department of Environmental Protection and the U.S. Army Corps of Engineers.	**Wetlands.** Indirect impacts on wetlands resulting from construction activities would be minimized by implementing Maine's BMPs for erosion and sediment control. Any wetland disturbances would require the developer to coordinate with the Maine Department of Environmental Protection and the U.S. Army corps of Engineers.	**Wetlands.** No impacts on this resource are anticipated.
	Vegetation and Wildlife. Areas of lawn and individual shade and ornamental trees could be removed during construction. Construction activities could cause temporary displacement of wildlife. Due to a relative lack of vegetative cover and habitat diversity, there would be no impacts on wildlife as a result of habitat fragmentation.	**Vegetation and Wildlife.** Areas of lawn and individual shade and ornamental trees could be removed during construction. Construction activities could cause temporary displacement of wildlife. Due to a relative lack of vegetative cover and habitat diversity, there would be no impacts on wildlife as a result of habitat fragmentation.	**Vegetation and Wildlife.** No impacts on these resources are anticipated.
	Migratory Birds. Loss of a small area of maintained lawn and scrub-shrub habitat would not significantly impact populations of migratory birds.	**Migratory Birds.** Loss of a small area of maintained lawn and scrub-shrub habitat would not significantly impact populations of migratory birds.	**Migratory Birds.** No impacts on this resource are anticipated.
	Threatened and Endangered Species. The proposed action would have no effect on threatened or endangered species or habitat.	**Threatened and Endangered Species.** The proposed action would have no effect on threatened or endangered species or habitat.	**Threatened and Endangered Species.** No impacts on these resources are anticipated.

3 Existing Environment

3.1 Introduction

This section describes the environmental resources that could be affected by Alternative 1 (the preferred alternative), Alternative 2, or the No Action Alternative. The description of the existing environment encompasses the baseline information used to compare and evaluate potential impacts on the human environment that may result from implementation of each of the alternatives. Baseline conditions are represented by 2008 conditions. An analysis of the potential impacts on the resources described below is presented in Section 4.

3.2 Land Use, Coastal Zone, and Visual Setting

3.2.1 Land Use

Topsham Annex occupies 74 acres in the northern part of the Town of Topsham, Sagadahoc County, Maine. The Annex is approximately 1 mile north of the Androscoggin River, which marks the boundary between Topsham and the Town of Brunswick in Cumberland County, and about 3 miles north-northwest of NAS Brunswick (see Section 1, Figure 1-1).

As noted above, Topsham Annex consists of two areas, a residential area occupying about 60 acres and a 14-acre operational area known as the Military Triangle (see Figure 1-2). The residential area is currently developed with 129 units of military housing at a density of approximately 3 units per acre. As of 2008, approximately 72 of the 129 units were occupied, one was vacant, and 56 were "off-line," i.e., unoccupied and fenced off from the rest of the property. Forty-eight units of the original total of 177 units were previously demolished down to their foundation slabs or have been identified for demolition. These units are located in the northeast corner of the Annex on Liberty Circle and are fenced off from the rest of the property. The residential area is suburban in character, with areas of maintained lawn and scattered stands of trees between the housing units. The western portion of the residential area, north of Can Am Drive, consists of undeveloped open space and parkland. Two tennis courts and a playground are also located in this area.

The Military Triangle is in the western portion of the property between Can Am Drive and Republic Avenue. Approximately 50% of the Military Triangle is developed with various operational and support facilities, including a

commissary, a Marine Corps training facility, office space, a fire station, and the U.S. Army New England Battalion recruiting center. Undeveloped land in the Military Triangle consists of maintained lawn with scattered ornamental and shade trees. The Marine Corps training facility located on the Military Triangle is fenced, and access to this facility is restricted. Except for the off-line and demolished housing units, which are fenced, access to the residential area is unrestricted.

Photo 1 Housing Units

Photo 2 Housing Units

Photo 3 Recreation and Green Space

Photo 4 Commissary

East of the Annex is a retirement community (The Highlands) offering independent- and assisted-living accommodations. There is a gate at Can Am Drive between the Highlands and Topsham Annex restricting through traffic between the properties.

Photo 5 Marine Corps Training Facility

Northeast of the Annex is the 230-acre Cathance River Nature Preserve, which extends along 1.5 miles of the Cathance River (Brunswick-Topsham Land Trust n.d.). The nature preserve is accessed through the Highland Green retirement community (Brunswick-Topsham Land Trust n.d.). Mount Ararat is located south of the Annex's residential area, and more open, undeveloped land is located immediately north of the residential area.

Light industrial (concrete product manufacturing), commercial, and relatively dense residential land uses are located southwest of the Annex along Main Street.

Mt. Ararat Middle School is located immediately north of the Military Triangle, and recreational facilities (ball fields, tennis courts, and open fields) owned by the middle school are located between the Military Triangle and the residential area. The middle school and recreational fields are located on former Navy property that was transferred to the Maine School Administrative District (MSAD) 75 in 1998. Mt. Ararat High School is located south of the Annex with access from Main Street and Republic Avenue/Tower Road.

Development around Topsham Annex is controlled, guided, or influenced by the following local plans, ordinances, and studies:

- *Topsham Comprehensive Plan 2005* (amended in 2007)
- Town of Topsham Zoning Ordinance
- *Topsham Main Street Village Plan*
- *Route 196/Interstate 295 (I-295) Interchange Study*
- Maine Coastal Program.

3.2.1.1 Topsham Comprehensive Plan 2005

The *Topsham Comprehensive Plan* describes goals, objectives, and strategies for guiding future growth and development in the town. The original *Topsham Comprehensive Plan* was adopted in 1992. An updated plan, adopted in 2005, includes changes in the town's land use since 1992 and revised goals, objectives, and strategies. The most recent amendments to the plan were adopted on May 24, 2007 (Topsham Comprehensive Plan Update Committee May 24, 2007).

Topsham Annex is located in the Upper Village zone. The Upper Village zone has been designated as a "Growth Area," where future residential and nonresidential development will be allowed. The *Comprehensive Plan* envisions the Upper Village as a pedestrian-oriented, mixed-use village with its center on the Topsham Annex property. The types of development recommended by the *Comprehensive Plan* for the Upper Village include a core of small-scale retail businesses, restaurants, offices, and municipal services surrounded by higher-density residential areas. The plan specifies that future development in the Upper Village should complement and provide access to existing community resources, including recreational fields and natural areas, Mt. Ararat Middle and High Schools, and municipal services (Topsham Comprehensive Plan Update Committee May 24, 2007).

3.2.1.2 Town of Topsham Zoning Ordinance

Zoning is the primary land-use control used by the Town of Topsham to guide development on non-federal land (Figure 3-1). Topsham's zoning code was last amended in 1990. The zoning code identifies fourteen zones, or areas, designated

for a specific land use or land uses. The Annex property has been divided into two zoning districts— "Business Park 2" and "Residential 4"—in order to provide guidelines and requirements for redevelopment of the property. The Military Triangle is zoned as "Business Park 2;" the residential area is zoned as "Residential 4" (Town of Topsham, Maine November 18, 2008). These zones were established in an ordinance amending the Topsham Town Code, Chapter 225, Zoning, and Chapter 175, Site Plan Review, and the Official Topsham Zoning Map. The purposes of these zones are described below:

- **Business Park 2 Zone.** The purpose of the Business Park 2 Zone is "to allow for a level of business, commercial, and office development that will be compatible with the adjacent higher density residential zone [on Topsham Annex] and the adjacent civic uses" (Boundy January 28, 2009).

- **Residential 4 (R4) or Main Street Residential Zone.** The purpose of the R4 Zone "is to provide an area of higher density residential development, in close [sic] proximity to small scale mixed use developments and civic uses, such as schools. The R4 Zone is made up of three distinct areas. Two are intended as residential areas with different densities and housing costs (10% affordable housing is desired), and the other is intended for recreational uses" (Boundy January 28, 2009).

The area immediately surrounding Topsham Annex is zoned Upper Village, which is the northernmost of three village zones encompassing Main Street and the surrounding area from the Androscoggin River to Interstate 295 (I-295) northwest of the Annex. As noted above, development within the Upper Village zone is planned to be dense, mixed-use, and pedestrian-oriented (Town of Topsham, Maine 1990).

The Town of Topsham's zoning ordinance also designates three overlay zones to protect historical and natural resources: the historical zone, the shoreland zone, and the aquifer protection zone (Town of Topsham, Maine 1990). A small area of Topsham Annex, the southwest corner of the Military Triangle, lies within the shoreland zone in a "stream protection district" (see Figure 3-1). Construction of new commercial, industrial, and government/institutional land uses is prohibited within this district (Town of Topsham, Maine 1990). The area designated as a stream protection district on Topsham Annex is currently sparsely developed and mostly consists of maintained lawn and a small wetland fed by an intermittent stream channel. Part of one facility and part of the commissary parking lot lie within the district boundary. Can Am Drive and Dominion Avenue cross the district.

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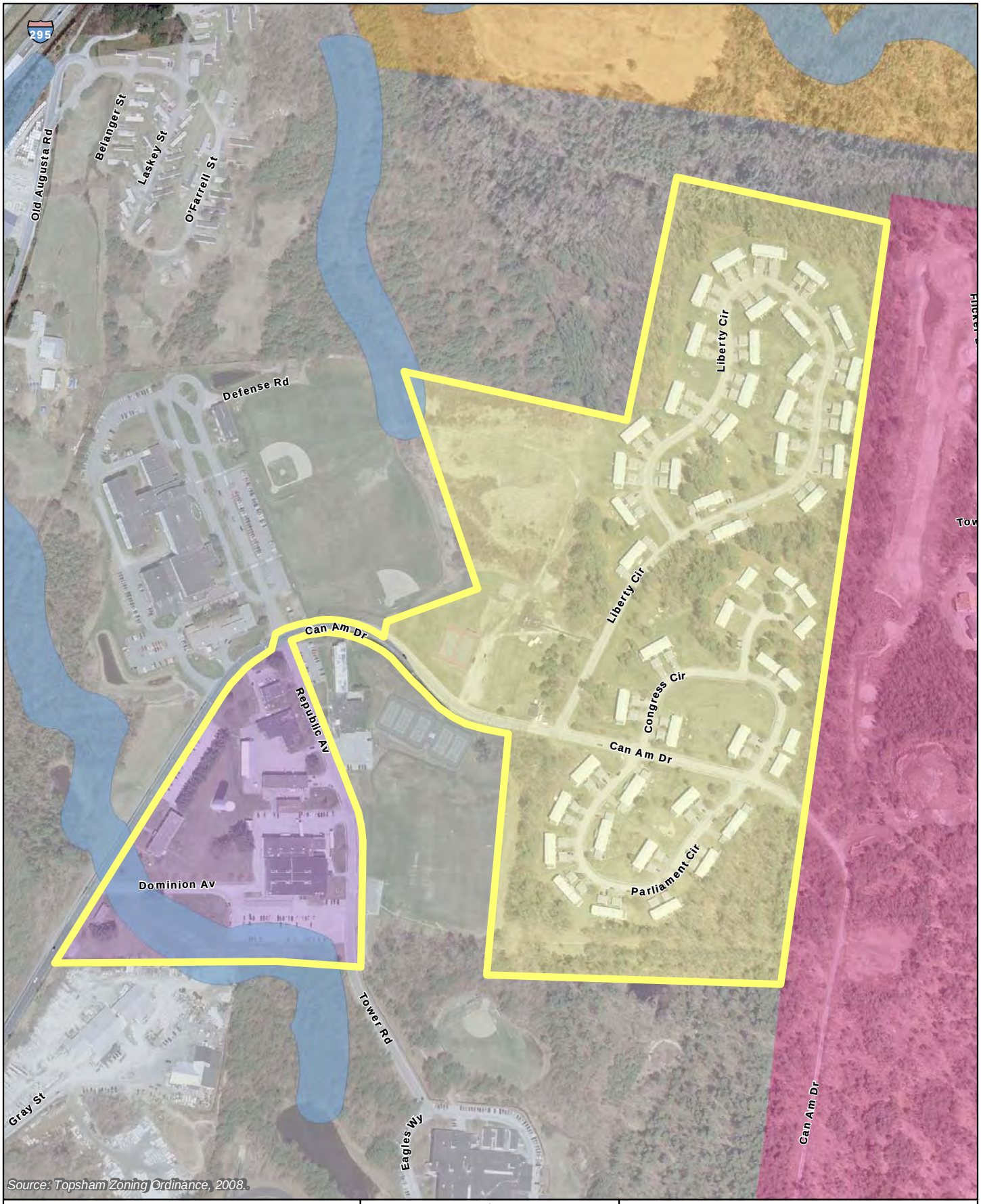
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-1 Topsham Annex Zoning.mxd



Legend

- Topsham Annex Surplus Property

Zone Type

- Business Park 2
- Mixed Use Limited
- Residential 4
- Rural Residential
- Upper Village
- Stream Protection Area

N

0 125 250 500

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-1
Local Zoning
Topsham Annex, Maine

3.2.1.3 Topsham Main Street Village Plan

The draft *Topsham Main Street Village Plan* was published in December 2007. The plan includes strategies to redevelop and revitalize 2 miles of the Main Street corridor, from the Androscoggin River to I-295, into a village center. The plan incorporates four elements addressing zoning and comprehensive planning, gateways and design, housing and economic development, and traffic and safety within the plan area (Topsham Main Street Advisory Committee 2007).

The plan proposes that the existing Upper Village zone be split into three zones: limited industrial, civic mixed use, and North Main overlay zones. Topsham Annex would be included in the civic mixed use zone. The plan recommends that the Annex property be developed as a "pedestrian-oriented neighborhood" to include "recreation areas, village-scaled residential neighborhoods and other compatible uses such as small-scale retail uses, restaurants, offices and services" (Topsham Main Street Advisory Committee 2007). The plan stresses the importance of pedestrian access and compatibility of future developments with the middle and high schools (Topsham Main Street Advisory Committee 2007).

3.2.1.4 Route 196/I-295 Interchange Study

The Town of Topsham formed a committee in 2005 to study existing development standards in the areas adjacent to the Route 196/I-295 interchange. On April 3, 2007, the committee introduced proposed amendments to the town's land-use ordinances for areas southwest and northwest of the interchange. These amendments have been adopted into the town's zoning ordinance. Analyses and recommendations regarding the areas southeast and northeast of the interchange have not yet been made available.

3.2.2 Coastal Zone

Topsham Annex is located in Maine's federally approved coastal zone; however, federal lands (such as Topsham Annex) are excluded from being assessed for coastal zone consistency. If, however, federal activity on these properties has reasonably foreseeable effects on any land or water use or natural resource in Maine's coastal zone, a federal consistency review must still be completed.

The Maine Coastal Program, established in 1978, undertakes or supports projects that promote sustainable economic development, encourage environmental stewardship and education, conserve and manage marine fisheries, reduce coastal hazards, and improve public access. The state has developed and implemented a federally approved Coastal Plan describing current coastal legislation and enforceable ("core") policies.

Federal actions subject to a coastal consistency determination in the state of Maine are required to be consistent to the maximum extent practicable with the core policies in the Maine Coastal Program: port and harbor development, marine resource management, shoreline management and access, hazard area development, state and local cooperative management, scenic and natural areas protection, recreation and tourism, water quality, and air quality. The Maine State Planning Office (SPO) serves as the lead agency for the program.

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S. Code [U.S.C.] Section 1451 et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land- and water-use programs in coastal zones.

3.2.3 Visual Setting

The Annex property is located on the outskirts of Topsham, a small, rural community typical of Maine. The more highly developed areas in the vicinity of Topsham Annex are south of the Annex along the town's major roadway corridors and include residential, open space, commercial/ industrial, and institutional land uses. Land to the north, east, and west of the Annex is predominantly suburban in character with institutional, residential, commercial, and undeveloped land uses.

3.3 Socioeconomics

3.3.1 Population

About 73 military personnel and 152 dependents currently reside in the existing family housing on Topsham Annex (Joy December 23, 2008). Military personnel residing at Topsham Annex are employed at NAS Brunswick in the neighboring Town of Brunswick.

Table 3-1 provides the current and projected population for the Town of Topsham, the Town of Brunswick, Sagadahoc County, and Cumberland County. The most recent population projections provided by the U.S. Census Bureau (2007) were used to project the 2008 populations for each locality. To project the 2008 population, the percent change in population from 2000 to 2007 was calculated; this growth rate was then divided by seven years to obtain the growth rate for one year, which was assumed to continue from 2007 to 2008. Table 3-1 shows a positive growth rate for each locality from 2000 to 2007. This positive growth rate was assumed to continue to the baseline year of 2008. As shown in Table 3-1, the Town of Topsham is growing at a faster rate than the Town of Brunswick or Sagadahoc and Cumberland counties.

Table 3-1 Projected Population Change 2000-2008 for the Towns of Topsham and Brunswick and Sagadahoc County, Maine

	2000 Population	2007 Population	% Change 2000 to 2007	2008 Population (estimate)	% Change 2007 to 2008 (estimate)
Town of Topsham	9,100	9,873	+ 8.5%	9,991	+ 1.2%
Town of Brunswick	21,172	21,806	+ 3.0%	21,900	+ 0.43%
Sagadahoc County	35,214	36,387	+ 3.3%	36,558	+ 0.47%
Cumberland County	265,612	275,374	+ 3.7%	276,833	+ 0.53%

Source: U.S. Census Bureau. n.d. [b],[d],[f],[g]

Population in the towns of Topsham and Brunswick between 2000 and 2007 largely followed a positive growth trend. Table 3-1 shows the population as recorded in the 2000 Decennial Census and the percent change in population between 2000 and 2007. The populations of both Sagadahoc and Cumberland counties also show similar growth trends for the same period.

3.3.2 Housing

The existing housing at Topsham Annex is currently being managed under a 50-year lease with Northeast Housing, LLC. The Navy transferred ownership of the housing and required Northeast Housing to provide the daily management of the property. The Navy retained ownership of the underlying fee simple land encumbered by Northeast Housing's lease. PPV housing is available to military and non-military alike, although military families have priority.

The total number of housing units in the Town of Topsham increased from 1990 to 2000 by about 9%. The total number of housing units in the town in 2000 was 3,573; about 68% were owner-occupied and about 28% were renter-occupied. The vacancy rate of 4.2% in Topsham was less than half the 2000 national average vacancy rate of 9%. In 2000, the Town of Brunswick had a higher percentage of renter-occupied housing units (34%, compared with 28% in Topsham). Owner-occupied housing units made up 60% of the housing stock in Brunswick. The vacancy rate of 6.5% in Brunswick was also less than the 2000 national average vacancy rate. In Sagadahoc County, which includes the Town of Topsham, owner-occupied housing units made up about 62% of the housing stock, while renter-occupied housing units made up 24%, a smaller percentage than both towns. The vacancy rate in the county in 2000 was 14.4%, about 5% higher than the national average vacancy rate of 9%. In Cumberland County, which includes the Town of Brunswick, owner-occupied housing units made up 59% of the total housing stock and renter-occupied housing units made up about 29%. The vacancy rate in Cumberland County in 2000 was 9%, equivalent to the national average (Table 3-2).

Table 3-2 Regional Housing Availability (2000)

	Housing Units				Vacancy Rate (%)
	Owner-Occupied	Renter-Occupied	Vacant	Total	
Town of Topsham	2,430	994	149	3,573	4.2%
Town of Brunswick	5,212	2,938	570	8,720	6.5%
Sagadahoc County	10,174	3,943	2,372	16,489	14.4%
Cumberland County	72,093	35,896	14,611	122,600	9.0%

Source: U.S. Census Bureau n.d. [a], [c], [e], [g]

More recent housing stock information is presented in the *Topsham Comprehensive Plan 2005*, as amended in 2007. According to the plan, in 2003 approximately 3,828 housing units were located in the Town of Topsham, an increase of about 7% (255 units) over the 2000 number (see Table 3-2). An additional estimated 300 housing units were constructed in the town between 2003 and 2006, for a total in 2006 of 4,128 units (Topsham Comprehensive Plan Update Committee May 24, 2007).

In 2003, approximately 30% of the town's housing was rented. The high rate of renter-occupied housing is due in part to the proximity of NAS Brunswick (with its transient workforce) and to the several retirement communities located in the town, which are composed entirely of rental units. Topsham had a 4% vacancy

rate in 2003, which represents a slight decrease from the vacancy rate in 2000 (Topsham Comprehensive Plan Update Committee May 24, 2007).

3.3.3 Economy, Employment, and Income

3.3.3.1 NAS Brunswick and Topsham Annex

NAS Brunswick is the second largest employer in Maine and an important economic driver in both the state and the Brunswick labor market area, which encompasses a region that includes the towns of Brunswick, Bath, and Topsham (Maine Department of Labor Center for Workforce Research and Information n.d.). NAS Brunswick occupies 3,200 acres in the Town of Brunswick and employs 3,656 military and civilian personnel (Maine State Planning Office 2007). As noted in Section 3.3.1, about 225 military personnel and dependents currently reside on Topsham Annex, and additional civilian personnel live within the Town of Topsham. About 80 military and civilian personnel work at the administrative and support facilities located on the Military Triangle (Joy December 23, 2008). The 80 personnel reside in the local area.

NAS Brunswick is an important economic contributor to the Town of Brunswick. Each year a portion of the procurement funds used to purchase goods and services for NAS Brunswick and its associated properties, including Topsham Annex, goes to local and regional companies: procurement funds used to purchase services from local companies represent about $5.5 million annually. About half of this amount is spent on construction and related maintenance services, while the remaining half is spent on additional services such as groundskeeping, snow plowing, trash collection, administrative services, and housekeeping services (Maine State Planning Office 2007). In addition, personnel employed at NAS Brunswick likely spend a portion of their salaries on goods and services purchased in Topsham. Total annual payroll at Topsham Annex is approximately $3 million.

3.3.3.2 Town of Topsham and Region

The region included in this analysis of the economy, income, and employment includes Sagadahoc County, the Brunswick labor market area, and the state of Maine. The Brunswick labor market area is equivalent to the Brunswick, Maine New England City and Town Area (NECTA) micropolitan statistical area defined by the U.S. Census Bureau. The Brunswick, Maine NECTA includes the towns of Topsham, Brunswick, Harpswell, Dresden, Westport, Wiscasset, Arrowsic, Bowdoin, Bowdoinham, Georgetown, Phippsburg, Richmond, West Bath, and Woolwich; the City of Bath; and the unorganized territory of Perkins (U.S. Census Bureau, Population Division 2008).

From 2000 to 2007, the labor force in Sagadahoc County increased slightly, from 18,795 to 18,937, an increase of 142 or less than 1%. The intervening years between 2000 and 2007 saw slight drops as well as slight gains in the county's labor force. The labor force in the Brunswick labor market area increased slightly from 34,704 in 2000 to 35,086 in 2007, an increase of about 1%. Similarly, the labor force in the Town of Topsham increased slightly in the same time period, from 4,586 to 4,858, an increase of 272 or 5.9%. Overall, Topsham's labor force was steady or growing over the seven-year period from 2000 to 2007 and showed

a higher growth rate than both the county and the Brunswick labor market area. The growth rate in Topsham's labor force also exceeded the growth rate in the state's labor force, which grew from 672,440 to 704,693 (an increase of 32,253 or 4.8%), during the same time period (U.S. Department of Labor, Bureau of Labor Statistics n.d.).

Table 3-3 presents the average annual pay from 2001 to 2007 in Sagadahoc County compared with the Brunswick labor market area, the state of Maine, and the nation. (Average annual pay data are not available at the town level.) As shown in Table 3-3, average annual pay in Sagadahoc County increased steadily from 2001 to 2007. Average annual pay in the county has consistently been higher than the state and Brunswick labor market area averages but is lower than the national average.

Table 3-3 Average Annual Pay in Sagadahoc County, the State of Maine, and the Nation

	Sagadahoc County	Brunswick Labor Market Area	State of Maine	United States
2001	$31,817	$29,224	$28,815	$36,219
2002	$33,133	$30,732	$29,736	$36,764
2003	$34,880	$32,396	$30,750	$37,765
2004	$35,035	$33,072	$31,906	$39,354
2005	$35,884	$33,748	$32,701	$40,677
2006	$36,813	$34,424	$33,794	$42,535
2007	$39,442	$36,140	$35,129	$44,458
Percent Change 2001-2007	**24%**	**24%**	**22%**	**23%**

Source: U.S. Department of Labor, Bureau of Labor Statistics n.d.; Maine Department of Labor, Labor Market Information Services 2009

As shown in Table 3-4, the Town of Topsham has a relatively low unemployment rate. The unemployment rate has grown from 2.4% in 2000 to 3.7% in 2007; however, the unemployment rate in the town has consistently been lower than the unemployment rates in Sagadahoc County, the Brunswick labor market area, and the state.

The Brunswick labor market area includes 24 employers that employ 100 or more people (Matrix Design Group December 2007). Large regional employers and the industries they represent are listed in Table 3-5. As noted above, NAS Brunswick is one of the largest employers in the area as well as the second largest employer in the state of Maine. Bath Iron Works, located in the Town of Bath, and Bowdoin College, located in the Town of Brunswick, are the two additional major employers in the area (Matrix Design Group December 2007).

Table 3-4 Percentage of Unemployed Population

Year	Topsham	Brunswick Labor Market Area	Sagadahoc County	Maine
2000	2.4	2.7	2.6	3.3
2001	2.8	3.1	3.1	3.7
2002	3.4	3.6	3.5	4.4
2003	3.7	4.0	3.9	5.0
2004	3.5	3.7	3.7	4.6
2005	3.8	4.3	4.3	4.8
2006	3.8	4.0	4.0	4.6
2007	3.7	4.0	4.0	4.7

Source: U.S. Department of Labor, Bureau of Labor Statistics n.d.

Table 3-5 Large Regional Employers, Brunswick Labor Market Area

Employer, Location	Industry
Bath Iron Works, Bath	Shipbuilding
Bowdoin College, Brunswick	Post-secondary Education
Brunswick Village Candle, Topsham	Manufacturing
Cooper Wiring Devices, Brunswick	Manufacturing
Downeast Energy & Building Supplies, Brunswick	Fuel and Building Materials
Hannaford Brothers, Brunswick and Topsham	Retail
Harry Crooker & Sons, Topsham	Civil Construction
Home Depot, Topsham	Retail
Hyde School, Bath	Secondary Education
L.L. Bean Manufacturing Plant, Brunswick	Manufacturing
Lowe's, Brunswick	Retail
MBNA, Brunswick	Credit Cards
Mid-Coast Health Services, Brunswick	General Medical Hospital
MSAD 75, Topsham, Bowdoin, Bowdoinham, and Harpswell	Primary and Secondary Education
Naval Air Station Brunswick	Military
Parkview Adventist Medical Center, Brunswick	General Medical Hospital
Reed & Reed, Woolwich	Civil and Non-residential Construction
Saint-Gobain Technical Fabrics, Brunswick	Manufacturing
Sears, Brunswick	Retail
Super Wal-Mart, Brunswick	Retail
Supervisor of Shipbuilding, Bath	Shipbuilding
The City of Bath	Government
The Town of Brunswick	Government
Wright Pierce Engineers, Topsham	Civil Engineers

Source: Matrix Design Group December 2007.

3.3.4 Taxes and Revenues

The proposed annual budget for the Town of Topsham for fiscal year (FY) 2009 is $17,340,274, an increase of about 3.3% over the FY 2008 actual budget of $16,786,353 (Town of Topsham n.d. [a]). Local property taxes and tax increment financing [2](TIF) together represent the town's largest source of revenue, contributing more than 80% of the annual budget (Topsham Comprehensive Plan Update Committee May 24, 2007). In FY 2009, approximately $14,453,209 of the town's revenues will be obtained from property taxes and TIFs (Town of Topsham n.d. [a]). Based on the town's proposed 2009 annual budget and the estimated 2007 population (9,873), the local per capita tax burden is about $1,460 for town-related taxes.

Other sources of revenue for the town include excise taxes; intergovernmental revenue; charges for services (including public works, ambulance, and public safety services); licenses, permits, and fees; and investment income. These sources of revenue account for about 20% of the town's annual budget. The town's annual expenditures include education; capital outlay; public safety; general government; fixed charges (including county government taxes, emergency funds, and overlay); public works; recreation and culture; debt service; and public utility, health and social service, contractual service, and general assistance funds for needy families and individuals (Topsham Comprehensive Plan Update Committee May 24, 2007).

Because Topsham Annex is federally owned, the property is not subject to local taxation and does not contribute to the town's annual revenues. The Town of Topsham provides services such as police and emergency services to Topsham Annex, and the Navy and Balfour Beatty Communities pay annual fees through their service agreements with the town.

3.3.5 Environmental Justice

Environmental justice concerns stem from actions that could cause harm in areas with high concentrations of minority or low income populations. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* was signed in 1994 to address the potential impacts from federal actions that disproportionately fall upon these groups in the local population. Consistent with the EO 12898, the Navy's policy is to identify and address any disproportionately high and adverse human health or environmental effects of its actions on minority and low-income populations. Disproportionate human health or environmental effects occur when the impacts on a minority or low-income population from exposure to an environmental hazard exceed the impacts on the general population and, where available, of another appropriate comparison group.

[2] To increase the funds available for redevelopment, a locality may designate a TIF district in an area that meets state criteria for blight or underdevelopment. In order to designate a TIF district, a locality must prepare a redevelopment plan. Following adoption of the redevelopment plan, the increase in property tax revenues resulting from the increase in assessed value of the properties in the district is available to the locality to pay for the cost of redevelopment. This includes revenues that would otherwise be collected by counties, school districts, or other jurisdictions.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates that federal agencies identify and assess environmental health and safety impacts that may disproportionately burden populations aged 17 years or younger as a result of the implementation of federal policies, programs, activities, and standards (62 Federal Register [FR] 19883-19888).

In order to comply with EOs12989 and 13045, race, poverty status, and age of the populations in the census tracts in the vicinity of Topsham Annex were examined and compared with county, state, and national data.

Table 3-6 summarizes environmental justice data for the proposed redevelopment of Topsham Annex. Figure 3-2 shows the census tracts surrounding Topsham Annex in the Town of Topsham, Sagadahoc County.

Table 3-6 Environmental Justice Data, Topsham Annex

Location	Total Percent Minority[a]	Percent Below Poverty Level[b]	Percent Aged 17 Years or Younger
United States	22.4%	12.4%	25.7%
Maine	3.0%	10.9%	23.6%
Sagadahoc County	2.3%	8.6%	25.8%
Tract 980301	3.6%	4.9%	28.6%
Tract 980302	3.2%	3.3%	26.8%

Source: U.S. Census Bureau n.d.(i)

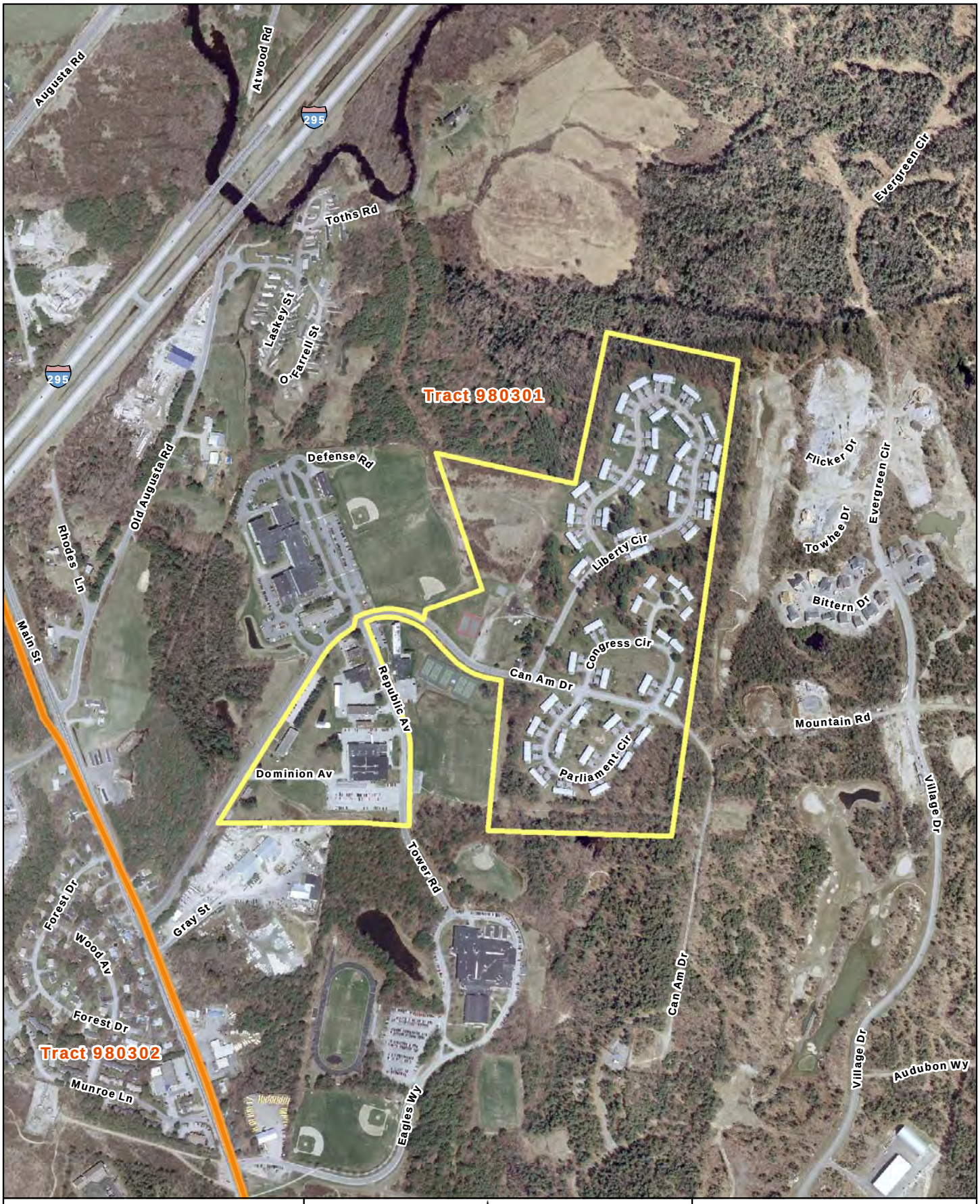
Notes:
[a] To calculate the total percent minority, the numbers for only individuals in the "one race" category were included. The "one race" individuals represent 95% to 99% of the population and allow for an accurate portrayal of the entire population.
[b] The most recent data for percent below poverty level available were used in the table. The national, state, county, and the census tract data are from 1999 information.

Both census tracts in the vicinity of the base (980301 and 980392) have slightly higher percentages of minority populations than Sagadahoc County and the state of Maine; however, the percentage of minority populations in these two census tracts, the county, and the state is much lower than the percentage of the minority population nationwide. The percentages of children in both census tracts are higher, by several percentage points, than the percentages of children in the county, state, and nation. In contrast, the percentages of people below the poverty level in tracts 980301 and 980302 are lower than the percentages in the county, state, and nation.

3.3.6 Schools

Topsham is part of MSAD 75, which serves the communities of Bowdoin, Bowdoinham, Harpswell, and Topsham. The school district had about 2,800 students as of October 2008 (Boundy December 9, 2008). The district has six elementary schools, one middle school, and one high school. Table 3-7 lists the current enrollment (2008-2009 school year) and an estimate of the capacity of each MSAD 75 school. The estimated school-age population living in military housing at Topsham Annex is 50 students, an estimate based on the average family size from local census data.

© Ecology & Environment, Inc. GIS Department Project #
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-2 Census Tracts.mxd



Legend

Topsham Annex Surplus Property

Census Tract

Source: U.S. Department of Commerce, Bureau of the Census, 2000.

N

0 125 250 500 750 1,000

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-2
Census Tracts
Topsham Annex, Maine

Table 3-7 Maine School Administrative District 75 Enrollment 2008-2009

Name of School and Location	Total Enrollment 2008-2009	Capacity	Percent Filled
Bowdoin Central Elementary School (Town of Bowdoin)	212	278	76%
Bowdoinham Community Elementary School (Town of Bowdoinham)	185	240	77%
Harpswell Islands Elementary School (Town of Harpswell)	111	109	102%
West Harpswell Elementary School (Town of Harpswell)	73	66	111%
Williams-Cone Elementary School (Town of Topsham)	244	306	80%
Woodside Elementary School (Town of Topsham)	392	499	79%
Mt. Ararat Middle School (Town of Topsham)	669	886	76%
Mt. Ararat High School (Town of Topsham)	954	974	98%

Source: MSAD 75 Enrollments, 2008-2009 School Year, MSAD 75 January 20, 2009, Maine Department of Education

Topsham contains two of the school district's six elementary schools and the only middle school and high school for the district. Woodside Elementary School and Williams-Cone Elementary School are located less than 2 miles south of the Military Triangle, on Barrows Drive and Perkins Street, respectively. Mt. Ararat Middle School is located directly adjacent to Topsham Annex at 58 Republic Avenue. Mt. Ararat High School is located at 73 Eagles Way, less than a quarter-mile southeast of the Military Triangle (Figure 3-3).

MSAD 75 also has one adult education school, Merrymeeting Regional Adult Education Center, located next to Topsham Annex at 35 Republic Avenue. The center offers academic and vocational classes, driver education, and a large variety of extracurricular courses in visual art, music and dance, health and wellness, computers, foreign languages, and personal enrichment (Merrymeeting Adult Education 2009).

MSAD 75 also shares a vocational school with Brunswick and Freeport: Maine Vocational Region 10 (Maine School Administrative District 75 September 4, 2008). This school is located on 68 Church Road in Brunswick, approximately 5 miles southwest of Topsham Annex.

3.4 Community Services

3.4.1 Police and Emergency Services

The Topsham Police Department and the Fire and Rescue Department are located in the Public Safety Building on Main Street, less than 1 mile south of the Military Triangle. The police department has one chief of police, one lieutenant, two sergeants, six officers, one traffic officer, and one animal control officer (Town of Topsham, Maine n.d. [b]). The fire and rescue department has eight officers, thirty-two firefighters, four emergency medical service (EMS) personnel, and five junior firefighters (Town of Topsham, Maine November 6, 2008). The Topsham Police Department and Fire and Rescue Department are first responders to the Town of Topsham, including Topsham Annex. They provide additional backup and mutual aid to other communities only when needed (Roedner

December 5, 2008). As of the 2000 census, the population served by the Topsham Police and Fire and Rescue Departments was about 9,100, as noted in Table 3-1.

Topsham Annex has one small fire station facility: Building 363, a single-story, square brick building measuring 4,284 square feet located at the intersection of Can Am Drive and Republic Avenue (Matrix Design Group December 2007). The facility is not currently staffed on a regular basis, but it is under license with the Town of Topsham for use by the Fire and Rescue Department, which uses it to store and service fire trucks (Matrix Design Group December 2007).

3.4.2 Medical Services

Two hospitals, Parkview Adventist Medical Center and Mid-Coast Hospital, are located in the adjacent Town of Brunswick. Parkview Adventist Medical Center, located on Maine Street in Brunswick, is about 4 miles south of Topsham Annex. Parkview Adventist Medical Center is a full-service hospital, providing cardiopulmonary services, diagnostic and screening services, emergency services, medical services, outpatient programs, pastoral care, physician practices, rehabilitation, surgical services, and women's health programs. The acute care hospital has a 55-bed capacity (Parkview Adventist Medical Center 2009).

Mid-Coast Hospital has multiple facilities in Brunswick, including an addiction-resource center, a senior health center, and a consolidated general hospital. The hospital's consolidated facility, located on Medical Center Drive about seven miles south of Topsham Annex, opened in 2001. Clinical services offered by the hospital include addiction services, behavioral health services, a breast health center, cancer services, cardiac services, diagnostics, hospice services, laboratory services, hearing and speech services, maternity and nursing services, rehabilitation, sleep services, surgical services, and wellness services (Mid-Coast Hospital 2008).

Mid-Coast Hospital is based in Brunswick, with satellite facilities located in the neighboring towns of Bath and Topsham. The general hospital currently has an in-patient capacity of 76 beds. Because of the increase in population in the mid-coast region, Mid-Coast Hospital plans to expand its in-patient facilities by 18 beds, bringing the total in-patient capacity to 94 beds. The planned expansion also includes the addition of a redesigned emergency room and expanded rooms for diagnostic preparation, consultation, and recovery. The expansion is projected to be complete in late spring 2011 (Mid-Coast Hospital 2010).

Medical services in Portland, Lewiston, and Augusta also are available to Topsham residents. Portland is approximately 28 miles south of Topsham and offers three hospitals: Maine Medical Center with 606 beds, Mercy Hospital with 230 beds, and New England Rehabilitation Hospital of Portland with 90 beds. Maine Medical Center offers comprehensive inpatient and medical specialty services (Maine Medical Center n.d. [b] and [c]). Mercy Hospital is a private, non-profit community hospital sponsored by the Sisters of Mercy of the Americas. The New England Rehabilitation Center of Portland is an acute

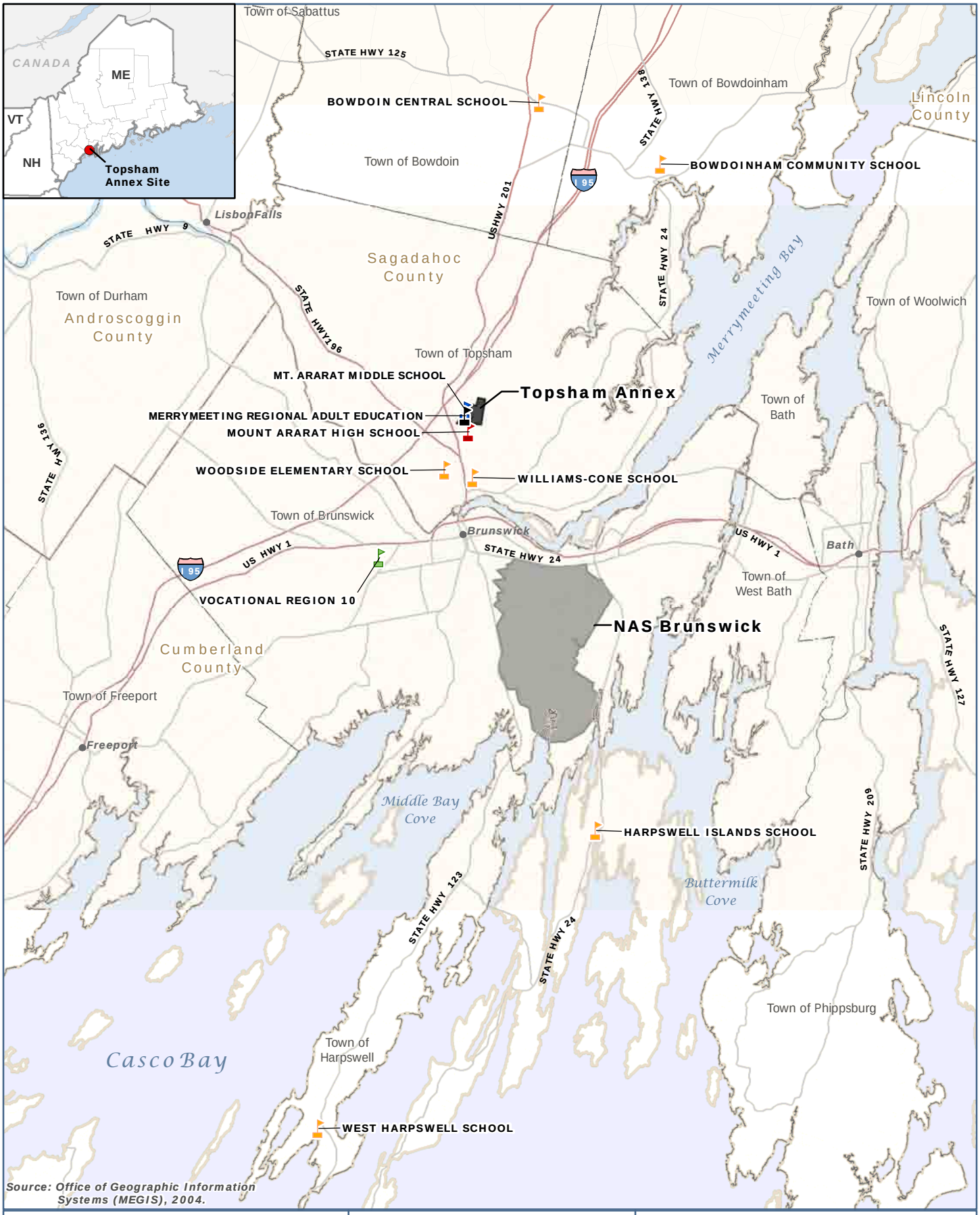


Figure 3-3
Maine School Administrative District 75 Schools
Topsham Annex, Maine

rehabilitation hospital with inpatient specialty programs (New England Rehabilitation Hospital of Portland n.d.).

Lewiston, located 18 miles northwest of Topsham, is home to Central Maine Medical Center, a 250-bed facility with more than 150 physicians covering over 30 specialties. Services include cardiopulmonary, surgery, and an osteoporosis center (NurseUniverse.com 2009).

The City of Augusta, approximately 31 miles north of Topsham, has a 126-bed hospital that is a campus of the Maine General Medical Center offering services such as emergency, critical care, and others (Maine General Health n.d.).

3.4.3 Parks and Recreation

Two outdoor tennis courts and a playground are located on Topsham Annex west of the existing housing at Liberty Circle and north of Can Am Drive. This area also has approximately 14 acres of unmaintained open space. The tennis courts, playground, and open space are intended for use by Navy families living in the adjacent housing units.

The Town's Parks and Recreation Department owns and maintains an outdoor recreation complex located at Foreside Road. The complex has three 60-foot baseball diamonds, one 90-foot baseball diamond, six multi-purpose playing fields, one full-size soccer field, two outdoor basketball courts, 4 miles of hiking trails, two winter skating rinks, a concession pavilion with restrooms, and a playground. The Parks and Recreation Department also runs some recreation programs that use recreation facilities at MSAD 75 schools in Topsham (Williams Cone Elementary, Woodside Elementary, Mt. Ararat Middle School, and Mt. Ararat High School). The Parks and Recreation Department incorporates the use of the schools' outdoor sports fields, basketball courts, tennis courts, and playgrounds into the town recreational programs. Williams/Cone Elementary and Mt. Ararat High School have 3 miles and 5.5 miles of hiking trails, respectively. Mt. Ararat High School also has five outdoor tennis courts that are available for public use (Topsham Comprehensive Plan Update Committee May 19, 2005).

The town also owns natural areas at the Townsend Way Recreational Area (22 acres) and the Rogers property (32 acres). The Townsend Way Recreational Area is located on Townsend Way, which connects with Foreside Road in eastern Topsham. It has two fishing ponds, one stocked with bass and the other with trout. The Rogers property is located adjacent to the Cathance Preserve, along the shores of the Cathance River. Nature trails have been proposed for this site. Eventually, the trails could link up with a town-wide trail network (Topsham Comprehensive Plan Update Committee May 19, 2005).

The *2005 Topsham Comprehensive Plan* recommends more indoor recreation space for senior citizen activities. The plan also proposes a downtown waterfront park in the Lower Village that will provide access to the Androscoggin River (Topsham Comprehensive Plan Update Committee May 19, 2005). The Highland Green retirement community offers various recreational facilities for residents, including a pool, tennis courts, a croquet court, a fitness center, and social

gathering spaces. In addition, the retirement community's nine-hole golf course is open to the public.

The Brunswick-Topsham Land Trust holds conservation easements for public access to private property in Topsham at the Cathance River Nature Preserve and the Bradley Pond Farm Preserve. Both have trails intended for use by hikers, snowshoers, and cross-country skiers. The Cathance River Nature Preserve consists of 230 acres of land extending from the Highland Green retirement community north to the Cathance River. Habitats include old growth forest, a heath, quarries, and a vernal pool. There is also an ecology center located on the preserve. The Bradley Pond Farm Preserve, located next to the Bradley Pond in northern Topsham, consists of 2.5 miles of trail traversing a working farm of more than 163 acres. The trails pass through hardwood and softwood forests, wetlands, and fields, and offer views of Bradley Pond and the Cathance River as it enters and exits the pond (Brunswick-Topsham Land Trust n.d).

3.5 Transportation

This section describes the local roadway network and current traffic and is based on a traffic study prepared by Gorrill-Palmer Consulting Engineers, Inc. (Gorrill-Palmer 2009. The traffic study can be found in Appendix D.

The primary access road to the Topsham Annex is U.S. Route 201, a two-lane arterial roadway that begins in Brunswick and ends in Sandy Bay Township, Maine, where it enters Quebec, Canada. Can Am Drive, a minor collector road that intersects with Route 201, provides an incomplete loop road through the annex. There is a gate on Can Am Drive at the eastern edge of the property where it continues onto the abutting property, The Highlands retirement community.

The roadways in the vicinity of the Annex are considered urban roadways, i.e., roads that typically see commuter traffic and experience little fluctuation from week to week throughout the year (see Figure 3-4).

The roads studied include the following intersections:

- Route 196 (Lewiston Road/Bypass Drive) at
  - Southbound I-295 on/off ramp (unsignalized)
  - Northbound I-295 on/off ramp (signalized)
  - Topsham Fair Mall Road (signalized)
  - Mallet Drive (signalized)
  - Hamilton Court (signalized)
  - Route 201 (Main Street) (signalized)

- Route 201 (Main Street) at
  - Eagles Way (unsignalized)
  - Can Am Drive (unsignalized)
  - Elm Street (signalized)

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Existing Traffic Signal

Topsham Annex Surplus Property

0 100 200 400 600 800
Feet

Figure 3-4
Existing Traffic Conditions
NAS Brunswick, Maine

Automatic traffic recorder (ATR) counts were compiled on each of the primary approaches into Topsham Annex on Wednesday, November 19, 2008. The local schools were in session. The ATR information was then adjusted to annual average daily traffic (AADT) volumes using Maine Department of Transportation (DOT) weekly group mean factors. The results are summarized in Table 3-8.

Table 3-8 Estimated Annual Average Daily Traffic for Primary Road Segments

Intersection	Estimated 2008 AADT
Route 196 west of the Topsham Fair Mall Road	20,093
Route 196 east of Route 201	18,168
Route 201 between Second Street and Monument Place	10,032
Route 201 between Eagles Way and Can Am Drive	9,933

Source: Gorrill-Palmer Consulting Engineers, Inc. December 2008.

The two nearby schools, Mt. Ararat Middle and High Schools, with approximately 700 and 1,100 students, respectively, generate enough traffic to influence local traffic patterns. Some students living in the Annex housing may walk to school, thereby reducing automobile trips. School traffic includes travel to/from the Town of Topsham to the south—Route 201 northbound during the morning peak hour and southbound during the afternoon peak. When school is out of session, traffic volumes are lower along this corridor, which results in less delay for the Route 201/196 intersection. The Route 196 corridor, primarily near Topsham Fair Mall, operates at an acceptable level of service when school is not in session (Gorrill-Palmer Consulting Engineers, Inc. May 2009 [Appendix D]). Although there is an acceptable level of service, the traffic study indicated several existing transportation design deficiencies and made recommendations for improvement (see Section 4.5).

The Annex, in addition to providing military housing units, also contains the commissary, a training facility, office space, and the fire station. The Institute of Transportation Engineers (ITE) publication *Trip Generation* (November 2003) manual was used by Gorrill-Palmer to determine the number of trips that are generated by the current occupants of the 72 dwelling units [Residential Condo / Townhouse (Land Use Code 230)]. Occupied housing units generate 32 morning and 37 evening trips at the ends of the adjacent peak hour of street traffic.

The adequacy of a roadway network is characterized in terms of levels of service (LOS). LOS is a measure used by traffic engineers that describes the flow of traffic on a roadway or through an intersection. LOS considers factors such as the number of vehicles, speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience (www.tfhrc.gov/pubrds/septoct01/marriage.htm). LOS rankings are similar to the academic ranking system where an ‘A’ is very good with little control-delay and an ‘F’ represents very poor conditions. An LOS of ‘D’ and higher is desirable for a signalized intersection. If the level of service falls below a ‘D’ at an unsignalized intersection, an evaluation should be made to determine if mitigation is warranted.

The LOS rankings for current conditions indicated 8 out of 12 key intersection (morning/evening peak traffic) operate at an LOS of 'A.' The analysis showed one intersection, Route 196/201 (signalized), operating at an LOS 'D' during the afternoon peak hour. The remaining three intersections were operating at an LOS of 'B' or 'C.'

3.6 Environmental Management

Environmental management, i.e., management of hazardous materials or substances, was discussed in an environmental condition of property (ECP) report for NAS Brunswick and its auxiliary properties, including Topsham Annex (U.S. Department of the Navy BRAC Program Management Office 2006). The ECP report documented existing environmental conditions at Topsham Annex, focusing on current conditions at the time of report preparation, and did not include exhaustive research. Other sources of information used for this EA include review of NAS Brunswick environmental records such as remedial investigation reports and discussions with NAS Brunswick environmental staff. A remedial investigation report, "Total Petroleum Hydrocarbons Soil Remediation and Investigation Activities" (U.S. Department of the Navy BRAC Management Office 2006), was included in the current review. This report documented the Navy's excavation and removal of contaminated soil at several locations on Topsham Annex as well as environmental investigation activities conducted at that time.

3.6.1 Installation Restoration Program

The Installation Restoration Program (IRP) is a DoD program developed in 1975 to investigate and manage hazardous materials impacts on military installations. There are no IRP sites at Topsham Annex, although several areas of concern have been investigated and remedial actions have been conducted at some areas (see Section 3.6.4).

3.6.2 Underground Storage Tanks

There are currently no active underground storage tanks (USTs) on Topsham Annex (U.S. Department of the Navy BRAC Program Management Office 2006). All of the non-housing area USTs at Topsham Annex were removed between 1985 and 1995. In addition, 65 USTs in the housing area were removed or abandoned-in-place between 1983 and 1995 in accordance with regulatory requirements (HRP Associates November 14, 1996). Twelve USTs still remain abandoned-in-place, i.e. concrete-filled.

3.6.3 Aboveground Storage Tanks

There are seven active aboveground storage tanks (ASTs) at Topsham Annex that were installed between 1994 and 2000. Most of the ASTs store heating fuel oil for the heated operational buildings on the Military Triangle and one stores diesel fuel for an emergency generator at the commissary (U.S. Department of the Navy BRAC Program Management Office 2006). Previously, there were 66 ASTs on the Annex used for gasoline, diesel, or heating oil (Matrix Design Group December 2007). Most of the tanks were removed and disposed of before 1996.

All ASTs on the Annex are inspected at least annually as per the NAS Brunswick Spill Prevention Control and Countermeasures Plan (U.S. Department of the Navy BRAC Program Management Office 2006).

3.6.4 Areas of Concern

In addition to previous activities, the Navy has conducted field investigations to address concerns about the existence and extent, if any, of soil and/or groundwater contamination as follows:

In 2004, the Navy conducted field investigations to test soil and groundwater for potential contaminants. A report was issued in 2006; the report recommended restricting the use of groundwater for potable and non-potable purposes and removal of impacted soil in certain areas (U.S. Department of the Navy March 2008

Further investigations and soil remediation activities were conducted in September and October 2006 and a report was issued in 2007. Eight areas with hydrocarbon-contaminated soil with levels greater than 10 parts per million (ppm) (Maine Petroleum Remediation Goal) had been identified from the 2004 investigation. As part of 2006 activities, a total of 417 tons of petroleum hydrocarbon-contaminated soil were excavated and disposed off-site in accordance with Maine DEP requirements. Before back-filling with clean fill material, confirmatory soil samples were taken at five locations within each excavation pit—one on each of the four sides and one on the bottom. Except as noted, excavation continued until the contamination levels in samples were below the remediation goal.

A brief description of each site and the 2004 and 2006/2007 activities and investigation results are summarized below. The locations of the areas of concern are shown on Figure 3-5.

- **Area A** includes Buildings 337 (former fire station, auto service center, etc.) and 338 (former auto storage and repair). Currently, the Marine Corps uses both buildings for storage. Building 337 contained gasoline USTs and both buildings contained heating fuel oil USTs. The 2004 investigation found concentrations above remediation goals for hydrocarbons[3], volatile organic compounds (VOCs)[4], and three metals[5]—arsenic, chromium, and lead—in soil and/or groundwater samples. All samples of soil excavated in 2006 showed concentrations below the remediation goal, with one exception. The sample from the south sidewall of Building 338 had a hydrocarbon concentration of 260 ppm, exceeding the remediation goal. Due to the potential threat to the structural integrity of the building, further excavation

[3] Hydrocarbons include compounds such as hexane, heptane, octane, and decane, which are components of gasoline, diesel, and domestic heating oil.

[4] VOCs are organic chemical compounds, such as hydrocarbons, that can vaporize readily into the atmosphere under normal conditions.

[5] Metals are chemical elements with metallic properties that, in elevated concentrations, can be dangerous to humans and the environment. Metals include lead, arsenic, chromium, copper, and mercury. Some metals, such as arsenic, can occur naturally in soils.

was not required. Also discovered near Building 338 was an underground oil/water separator, which was removed.

- **Area B** includes Building 369, the operations building/central heating plant. Building 369 was served by seven USTs, which were removed between 1985 and 1995. The building was demolished in 1984 and this area now contains athletic fields and tennis courts. The 2004 investigation showed a combination of concentrations above remediation goals for VOCs, hydrocarbons, and 12 metals in soils and/or surface water. The 2006/2007 investigations included three test trenches to collect samples for VOCs, heavy metals, and vinyl chloride constituents. The soil test yielded a non-detect result for vinyl chloride. No VOC contamination was found in soil or groundwater samples. Concentrations above remediation goals for arsenic, barium, chromium, and lead were found in soil and groundwater samples.

- **Area C** contains Building 378, which had been first used as a booster station for water used to suppress fires and for domestic uses and later was used as a housing maintenance storage area and workshop. This building had a single 550-gallon UST used to store both gasoline and diesel/fuel oil. The tank was removed in 1994. The 2004 investigation found hydrocarbons and metals concentrations above remediation goals for in groundwater. Soil samples indicated hydrocarbon concentrations above the remediation goal at two of four sample locations. There were no metals concentrations above the remediation goal at Area C. Building 378 was not included in the scope of the investigation in 2006 because, as the report stated, the likely source of hydrocarbon contamination in the soil and groundwater at this site was the previously impacted residual soil. Therefore, no sampling was conducted.

- **Area D** contains Building 1108, which is used and always has been used for residential housing. The contamination is likely from a former fuel oil UST, removed before 2004. The 2004 investigation found concentrations above remediation goals for hydrocarbons, arsenic, and one VOC (xylene) in groundwater and/or soil samples. Of the ten total samples taken during the 2006 remediation activities, all but three soil samples had concentrations of hydrocarbons below the remediation threshold. Excavation was halted to prevent structural damage to the residence. Hydrocarbon concentrations from the three samples ranged from 23 ppm to 53 ppm.

- **Area E** contains Buildings 1099 and 1114, which are currently and always have been used for residential housing. This area also contained former fuel oil USTs, which were removed before 2004. The 2004 investigation found concentrations above the remediation goals for hydrocarbons, arsenic, and VOC (xylenes) in groundwater and/or soil samples. Following soil excavation at Building 1099 in 2006, soil samples taken at excavation limits had concentrations above the remediation goal of 10 ppm. Constraints such as the building foundation, utility lines, a mature tree, and roadway/curb curtailed excavation in those areas. Excavation at Building 1114 (front) was limited because of similar constraints as Building 1099. Soil samples from both excavations showed hydrocarbon concentrations above the remediation

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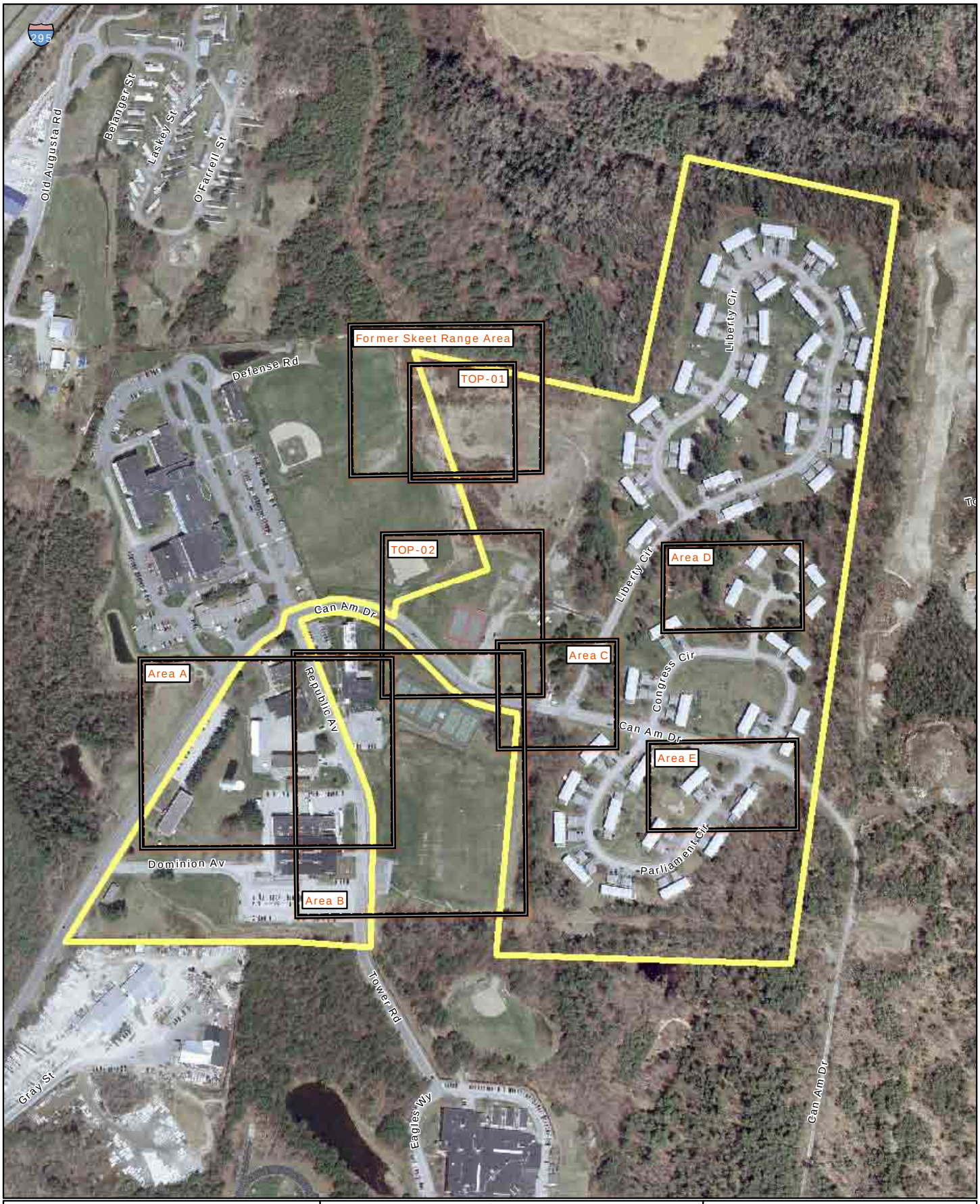

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Areas of Concern

Topsham Annex Surplus Property

N

0 125 250 500

Feet

Source: ECC 2008

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-5
Areas of Concern
Topsham Annex, Maine

goal. At the rear of the house, all soil samples taken following excavation were below the remediation goal.

- **TOP-01.** This area was reported to contain fill material, e.g., construction and demolition rubble and surplus soil that had been buried. The 2004 investigation of soil and groundwater samples found concentrations above the remediation goal for hydrocarbons, metals (arsenic, chromium, and lead), semi-volatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs)[6]. The origin of this contamination is unknown. The 2006/2007 investigation activities/report included soil sampling and installing monitoring wells to determine the direction of groundwater flow. Groundwater flow in this area is southeasterly. The chemical constituent concentrations were below analytical detection limits or regulatory thresholds. The 2007 report did not offer any conclusions explaining the decrease in concentrations.

- **TOP-02** contained an oil/water separator. This site is a vacant, graveled area situated north of the tennis courts on the north side of Can Am Drive. The 2004 investigation was conducted to determine the presence or absence of contamination. Groundwater samples indicated the presence of hydrocarbons at or slightly above the state maximum exposure guidelines (MEG). Soil samples did not contain hydrocarbons or metals above state regulatory guidelines.

- **The former skeet range area** contained Building 380, which was demolished in the 1990s. Three composite soil samples at the site of Building 380 were taken in 2004 to test for lead from typical lead-shot ammunition. No lead concentrations were detected above the Maine remedial action goal in soil samples. The final investigation report (2006) noted that the Navy had hired a contractor to conduct a Preliminary Assessment (i.e., records search) of the skeet range under the Munitions Response Program. Soil sampling was conducted during summer 2009. No further information is available.

3.6.5 Asbestos and Lead-Based Paint

The Navy conducted a survey of a representative number of units of Topsham Annex housing in 2004 before it was transferred under the Navy's PPV program. Although not all units were inspected, the survey assumed that all units would be similar in age, use, and condition. Topsham Annex housing was constructed in 1961 (U.S. Department of Navy BRAC Program Management Office 2006).

The 2004 asbestos survey identified asbestos-containing material (ACM) in all the housing units that were inspected. Table 3-9 identifies the individual housing units inspected, the type of housing unit (single family or duplex), and ACM identified in each inspected housing unit. All ACM identified by the 2004 survey was determined to be in good condition and was not considered an asbestos hazard (U.S. Department of the Navy BRAC Program Management Office 2006).

[6] PCBs are organic chemical compounds that were used in a variety of products such as coolants, lubricants, and pesticides until they were banned in the 1970s. PCBs are pollutants that can persist in the environment and are regulated under the Toxic Substances Control Act.

Table 3-9 Asbestos-Containing Materials in Topsham Annex Housing Units

Unit Number	Housing Unit Type	Asbestos-Containing Material (ACM)
220 Congress Circle	Single Family	Joint compound, floor tiles, tile mastic, and pink sink coating
230 Congress Circle	Single Family	Joint compound and pink sink coating
208 Congress Circle	Duplex	Joint compound, sink coating, carport shed roof, floor tiles, and tile mastic
400 Liberty Circle	Duplex	Joint compound, sink coating, and carport shed roof
405 Liberty Circle	Duplex	Joint compound, sink coating, and carport shed roof
423 Liberty Circle	Duplex	Joint compound, sink coating, carport shed roof, floor tiles, and tile mastic
433 Liberty Circle	Duplex	Joint compound, sink coating, floor tiles, and tile mastic
470 Liberty Circle	Duplex	Joint compound, sink coating, and carport shed roof

Source: Department of the Navy BRAC Program Management Office 2006

A lead-based paint (LBP) inspection and risk assessment also were conducted in the Topsham Annex residential area in 2004. The purpose of an LBP inspection is to determine if lead is present in the paint, at what concentration, and locations. A risk assessment identifies the presence or absence of hazards associated with any LBP present. Because the housing units on Topsham Annex were constructed in 1961 all painted surfaces were assumed to contain lead unless a negative determination had been made (U.S. Department of the Navy BRAC Program Management Office 2006).

Two single-family and six duplex units were inspected for LBP. In both single-family units, LBP was identified on the door systems, laundry vent, and column base. In all six duplex units, LBP was identified on the utility room ladders, carport fascia systems, and carport storage shed doors.

An LBP risk assessment was conducted on three single-family and 24 duplex units. The risk assessment determined that LBP dust existed at two of the three single-family units because of deteriorating paint. Dust wipe samples collected at the single-family units did not identify a lead hazard. The risk assessment determined that all 24 duplex units had lead dust from deteriorating paint; however, no hazards were identified based on the results of dust wipe samples (U.S. Department of the Navy BRAC Program Management Office 2006). There were no recommended actions in the report for LBP.

3.7 Air Quality

3.7.1 Air Quality Regulations

National Ambient Air Quality Standards

The Clean Air Act (CAA) of 1970, 42 U.S.C. §7401 et seq., amended in 1977 and 1990, is the primary federal statute governing the control of air quality. In accordance with the CAA, the EPA Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, which are called “criteria” pollutants. The criteria pollutants include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), particulate matter

(PM_{10} and $PM_{2.5}$), ozone (O_3), and sulfur dioxide (SO_2). The NAAQS have been promulgated to protect public health and welfare (U.S. Environmental Protection Agency 2010a).

The CAA established two types of NAAQS. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (U.S. Environmental Protection Agency 2010a). Table 3-10 presents the primary and secondary NAAQS for each of the six pollutants. Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air ($\mu g/m^3$).

Areas where the ambient pollutant concentration exceeds one or more of the NAAQSs are designated as "nonattainment" for each criteria pollutant that is exceeded. The number of exceedances and their concentrations determine the nonattainment classification of an area. There are six classifications of O_3 nonattainment— transitional, marginal, moderate, serious, severe, and extreme; and two classifications of CO and PM_{10} nonattainment—moderate and serious. The CAA requires state and local air quality control agencies to adopt state implementation plans (SIPs) that prescribe measures to eliminate or reduce the severity of the number of NAAQS violations and to achieve and maintain attainment of the NAAQS. Maine has adopted these federal standards, and all counties in Maine are currently in attainment for all NAAQS (U.S. Environmental Protection Agency 2010b).

The 1990 Amendments to Section 176 of the CAA require the EPA to promulgate rules to ensure that federal actions conform to the appropriate SIP. These rules, known as the General Conformity Rule (40 CFR §§ 51.850-.860 and 40 CFR §§ 93.150-.160), require any federal agency responsible for an action in a nonattainment area to determine that the action conforms to the applicable SIP or that the action is exempt from the General Conformity Rule requirements. On January 29, 2008, the EPA approved the SIP revision submitted by the State of Maine, which demonstrates how Maine will maintain the ozone standard for the four separate 8-hour ozone maintenance areas in the state (Federal Register 2008).

Sagadahoc County is subject to a maintenance plan for ozone under Section 110(a)(1) of the CAA anti-backsliding provisions, which are intended to ensure that areas that have returned to attainment status remain in attainment (U.S. Environmental Protection Agency 2010c). Therefore, this action would be subject to the conformity threshold value established at 40 CFR 51.853(b)(1) of 50 tons per year for volatile organic compounds (VOCs) and 100 tons per year for nitrogen oxides (NO_X).

Table 3-10 National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	None	
	35 ppm (40 mg/m^3)	1-hour[1]		
Lead	0.15 µg/m^3	Rolling 3-month Average	Same as Primary	
	1.5 µg/m^3	Quarterly Average		
Nitrogen Dioxide	0.053 ppm[3] (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary	
	0.100 ppm	1-hour[4]	None	
Particulate Matter (PM_{10})	150 µg/m^3	24-hour[5]	Same as Primary	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual[6] (Arithmetic Mean)	Same as Primary	
	35 µg/m^3	24-hour[7]	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour[8]	Same as Primary	
	0.08 ppm (1997 std)	8-hour[9]	Same as Primary	
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m^3)	3-hour[1]
	0.14 ppm	24-hour[1]		
	75 ppb[11]	1-hour[1]	None	

Source: U.S. Environmental Protection Agency 2010a.

Notes:

1 Not to be exceeded more than once per year.

2 Final rule signed October 15, 2008.

3 The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard

4 To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

5 Not to be exceeded more than once per year on average over 3 years.

6 To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m3.

7 To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3 (effective December 17, 2006).

8 To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

9 (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) EPA is in the process of reconsidering these standards (set in March 2008).

10 (a) EPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").
(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is $\leq$ 1.

11 (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Key:

µg/m^3 = Micrograms per cubic meter.
mg/m^3 = Milligrams per cubic meter.
ppb = Parts per billion.
ppm = Parts per million.

However, in accordance with revisions to 40 CFR 93.153 published July 6, 2010, General Conformity requirements shall not apply to federal actions that involve the transfer of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of transfer, that would result in no emissions increase or an increase in emissions that is clearly *de minimis* (40 CFR 93.153(c)(2)(xiv).

3.7.2 Existing Air Quality

Air quality in the vicinity of the Topsham Annex is good; all counties in Maine are currently in attainment for all NAAQS. Reported ambient levels of particulates in Portland, Maine and ozone throughout the region have demonstrated compliance with the NAAQS (U.S. Environmental Protection Agency December 2, 2008).

3.8 Infrastructure

"Infrastructure" comprises the physical systems supporting the local population such as water supply, wastewater collection and treatment, storm water collection, and natural gas service.

3.8.1 Water Supply and Wastewater Collection and Treatment

3.8.1.1 Water Supply

Residents and employees at the Topsham Annex and the Brunswick-Topsham area obtain drinking water from four groundwater sources—three wells in Brunswick and one well in Topsham. The water is delivered to the Annex via a system constructed by the Navy in the 1940s. The primary delivery conduit is a 12-inch water main owned by the Brunswick and Topsham Water District (BTWD). The system includes a 586,000-gallon water storage tank and 8,700 linear feet of 8-, 10-, and 12-inch water mains. The BTWD has enough excess capacity to serve the Brunswick-Topsham area (Matrix Design Group December 2007). The BTWD allocates reserve-system capacity on a first-come, first-served basis.

3.8.1.2 Wastewater Collection and Treatment

Wastewater collection on the Topsham Annex property is via a gravity sewer system owned by the Navy and a pump station installed in 2000, which is owned by the Topsham Sewer District. Wastewater from the Annex is conveyed by the Topsham Sewer District's system to a wastewater treatment plant (WWTP) in Brunswick with an outfall into the Androscoggin River approximately one-half mile downstream from the Brunswick-Topsham bypass bridge. There are no combined sewer overflows.

The Brunswick Sewer District (BSD) operates the WWTP that treats domestic and commercial waste waters from the towns of Brunswick and Topsham (Topsham Sewer District). The Navy (NAS Brunswick and Topsham Annex) has a separate agreement with the BSD for the treatment of wastewater from its facilities. The BSD has a permitted treatment capacity of 3.85 million gallons per day (mgd) average and 11.1 mgd peak daily flows.

A report published by the Maine DEP indicated the Androscoggin River at the point of the outfall met use standards, with the exception of fishing (consuming fish) because of the presence of dioxin in fish tissue. The report also noted that the Maine DEP has no information on dioxin in wastewater discharged from the BSD WWTP and, therefore, the DEP does not indicate that the wastewater contributes to the fishing advisory for that segment of the Androscoggin River (MEPDES permit).

3.8.2 Storm Water Collection

The Topsham Annex storm water collection system, which includes collection and detention facilities and transportation lines, is separate from the wastewater collection system. The Annex currently has approximately 11.74 acres of impervious surface on the property, and storm water runoff eventually flows into the Cathance River, located approximately 1,000 feet north of the Annex. Using this acreage and Topsham's estimated 42.5 inches of annual precipitation (Natural Resources Conservation Service n.d.[b]), the developed area on Topsham Annex currently generates approximately 13.5 million gallons of precipitation runoff per year. A created wetland south of the commissary parking lot at Topsham Annex is part of the storm water infrastructure (U.S. Fish and Wildlife Service 2004; Matrix Design Group December 2007).

3.8.3 Natural Gas

Topsham Annex is currently served by a natural gas distribution system that is owned and maintained by Maine Natural Gas (MNG). All housing units at Topsham Annex use natural gas (Joy April 14, 2009). The natural gas distribution pipes were installed in 2001-2002 and meet all local standards (Matrix Design Group December 2007). No substantive upgrades are planned.

3.9 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966 ([Pub.L. 96-515), as amended (1980, 1992), and its implementing regulations (36 CFR 60, 63, and 800), requires federal agencies to protect significant cultural properties, including archaeological sites, historic structures, landscapes, and districts. Under Section 106, the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking is required to account for the impacts of this action on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP).

3.9.1 Archaeological Resources

In 1995, the DoD conducted a cultural resources assessment for NAS Brunswick and its associated property holdings, including Topsham Annex (U.S. Department of Defense January 1996). The assessment included a Phase IA archaeological investigation at NAS Brunswick and its associated properties from May 1 to May 4, 1995, with the goal of estimating the potential for the presence of prehistoric or historic archaeological sites (U.S. Department of Defense January 1996). A Phase I survey includes reviews of historical records, including known archaeological data and land-use history, and a field survey to determine whether

or not archaeological sites exist on a particular piece of land (Maine Historic Preservation Commission June 10, 2002).

The data analysis used a decision-tree model to rank the land as having either a low, moderate, or high potential for archaeological resources based on key criteria (U.S. Department of Defense January 1996). The model was used to evaluate prehistoric and historic archaeological resources separately. Prehistoric resources are defined as the time in America's history before European contact, and historic resources are those from the time of European contact (U.S. Department of Defense January 1996). The decision-tree model indicates that all of Topsham Annex has a low potential for prehistoric archaeological resources. The eastern side of Topsham Annex has a low potential for historic archaeological resources, and the western side has a moderate potential for historic archaeological resources because a period map shows that a property dating to 1858 may have been located in this portion of Topsham Annex (U.S. Department of Defense January 1996.). In a letter dated 11 January 1999, the Maine State Historic Preservation Office (SHPO) concurred with the archaeological findings of the cultural resources survey. In a programmatic agreement dated 27 September 2010, the Navy and the Maine SHPO agreed that no additional archaeological investigations are needed at Topsham Annex.

3.9.2 Historic Resources

Topsham Annex was founded as a U.S. Air Force station in 1956 with its mission focused on the operation of a semi-automatic ground environment (SAGE) facility (U.S. Department of Defense July 1996). SAGE was a computerized defense system for tracking and intercepting enemy aircraft and missiles during the Cold War and was one of the first military uses of computers for defense. During the early 1970s, the Air Force terminated all of its activities at the property and transferred the property to the Navy.

The architecture of the buildings is intended for functionality. The buildings are brick, one- and two-story, rectangular structures with overhanging flat roofs. The main SAGE building where the computers were located—a secured compound southeast of where the commissary now stands—no longer exists (U.S. Department of Defense July 1996).

The majority of the buildings were constructed from 1958 to 1962 (U.S. Department of Defense July 1996). According to a 2009 architectural survey report, one building is considered eligible for the NRHP: Building 333, the Flag Headquarters/Army Reserve Office. This building was designed by the Auburn, Maine-based architecture and engineering firm of Alonzo J. Harriman, Inc. In a letter dated 26 January 2010, the Maine SHPO determined the building exhibits distinctive characteristics under Criterion C as a 1950s modern institutional building; it retains integrity of location, design, setting, materials, and workmanship. The agency believes the building is eligible for its local architectural significance.

In a programmatic agreement dated 27 September 2010, the Navy and the Maine SHPO placed a preservation covenant on Building 333. The covenant requires

the Navy and all successors to the property to consult with the Maine SHPO before taking any action at Topsham Annex that would impact Building 333. The two parties shall consult in good faith to arrive at mutually agreeable mitigation measures. If such an agreement cannot be reached, the property owner must, at a minimum, adhere to Secretary of the Interior standards for proper recordation of the building. Routine maintenance activities such as painting, lawn maintenance, roof repair, and interior modifications are exempt from these consultation requirements. To the same extent that is required of the government, successors to the property are required to provide for the Building 333's security and stabilization to prevent deterioration.

3.10 Terrestrial Environment

3.10.1 Geology, Topography, and Soils

Surficial geology along the Maine coastline in the area of the Town of Topsham is characterized by low hills oriented southwest to northeast, following the orientation of folds and faults in the underlying bedrock. Topsham is located within the Norumbega fault zone, a system of major and minor faults extending along the Maine coastline. Bedrock in the region consists of metamorphosed volcanic rocks of the Cushing Formation, which range in age from Precambrian to Ordovician. Glacial-marine sediments, comprising sands overlying silt and clay, and glacial till sediments, comprising mixtures of sand, silt, clay, and stones, were deposited by successive glaciations in the late Pleistocene and Holocene epochs and cover the bedrock in most areas. Bedrock outcrops do occur in isolated areas, including in the hills on Annex property near Mount Ararat (Geo-Marine, Inc. 2001).

The highest elevations on Annex property, ranging from more than 100 feet to 240 feet above mean sea level (amsl), occur in the eastern part of the property on the hills and slopes around Mount Ararat. In the western part of the Annex property, glacial sediments overlie the bedrock, and the land slopes more gently. Elevations in the eastern part of the property range from 100 feet to 110 feet amsl (Maguire Group, Inc. July 10, 1998).

Eight soil types (Table 3-11) are found at Topsham Annex (National Cooperative Soil Survey n.d.). The most common soil on the property is Walpole fine sandy loam. Hollis fine sandy loam and Adams loamy sand also cover large areas of the property, while Belgrade very fine sandy loam, sand and gravel pits, Hollis very rocky fine sandy loam, Ninigret fine sandy loam, and Scantic silt loam are present over smaller areas.

Two soil types at Topsham Annex, Walpole fine sandy loam and Scantic silt loam, are included on the list of *Hydric Soils of the United States* (Natural Resources Conservation Service January 2009). Together, these two soil types cover approximately 31 acres of the Annex property. Hydric soils are soils that experience saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions (characterized by a lack of oxygen) in the upper layers (Natural Resources Conservation Service n.d.). Hydric soils may

indicate the presence of a wetland if hydrophytic vegetation and wetland hydrology are also present (National Cooperative Soil Survey n.d.[a]).

Table 3-11 Soils on Topsham Annex

Soil	Description	Hydric Soil	Prime Farmland
Adams loamy sand (AaB)	Occurs on glacial outwash terraces. Composed of sandy glaciofluvial deposits derived from crystalline rock. Somewhat excessively drained. Depth to water table is more than 80 inches.	--	Farmland of statewide importance
Belgrade very fine sandy loam (BgB)	Occurs in former lakebeds. Composed of coarse-silty glaciolacustrine deposits. Moderately well-drained. Depth to water table is about 18 to 30 inches.	--	Farmland of statewide importance
Sand and gravel pits (GP)	Sand with gravel.	--	--
Hollis fine sandy loam (HrB and HrC)	Occurs on hills. Composed of coarse-loamy glacial till derived from mica schist. Somewhat excessively drained. Depth to water table is more than 80 inches.	--	Farmland of statewide importance
Hollis very rocky fine sandy loam (HsC)	Occurs on hills. Composed of coarse-loamy glacial till derived from mica schist. Somewhat excessively drained. Depth to water table is more than 80 inches.	--	--
Ninigret fine sandy loam (NgB)	Occurs on glacial outwash terraces. Composed of coarse-loamy glaciofluvial deposits derived from slate. Moderately well-drained. Depth to water table is about 18 to 36 inches.	--	Prime farmland
Scantic silt loam (ScA)	Occurs on coastal plains. Composed of fine glaciolacustrine deposits. Poorly drained. Depth to water table is about 0 to 12 inches.	Hydric soil	--
Walpole fine sandy loam (Wa)	Occurs on glacial outwash plains. Composed of sandy glaciofluvial deposits. Poorly drained. Depth to water table is about 0 to 18 inches.	Hydric soil	--

Source: National Cooperative Soil Survey n.d.

Ninigret fine sandy loam has been designated by the U.S. Department of Agriculture as prime farmland. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, and fiber crops and is available for agricultural uses (National Cooperative Soil Survey n.d.). Excluding previously built, urban areas, these soils are regulated under the Farmland Protection Policy Act (7 U.S.C. §4201 et seq.), which restricts actions of the federal government that would cause the irreversible conversion of prime and unique farmland to nonagricultural uses. Ninigret fine sandy loam occurs over about 6 acres in the residential and parks and recreational areas.

Several soils at Topsham Annex, including Adams loamy sand, Belgrade very fine sandy loam, and Hollis fine sandy loam, are designated as farmland of statewide importance by the Maine Department of Agriculture. Farmlands of statewide importance include those that nearly meet the requirements for prime

farmland and economically produce high yields of crops when properly managed (National Cooperative Soil Survey n.d.). These soil types cover approximately 28 acres of the Annex property. Approximately 2.5 acres of prime farmland and farmland of statewide importance on the Annex property are currently developed (see Figure 3-6).

3.10.2 Water Resources

3.10.2.1 Surface Water

The Town of Topsham, located in Sagadahoc County, Maine, is in the Cathance River Watershed (Maguire Group, Inc. July 10, 1998) which is part of the Lower Androscoggin Watershed (U.S. Environmental Protection Agency December 23, 2008; National Atlas October 2008). The Cathance River originates northwest of Topsham at Bradley Pond and meanders in a general west to east direction, crossing the northern part of Topsham to the confluence with Androscoggin River at Merrymeeting Bay in the east. Together the Cathance River and the Androscoggin River join with the Kennebec River at Merrymeeting Bay, which empties into the Gulf of Maine in the south.

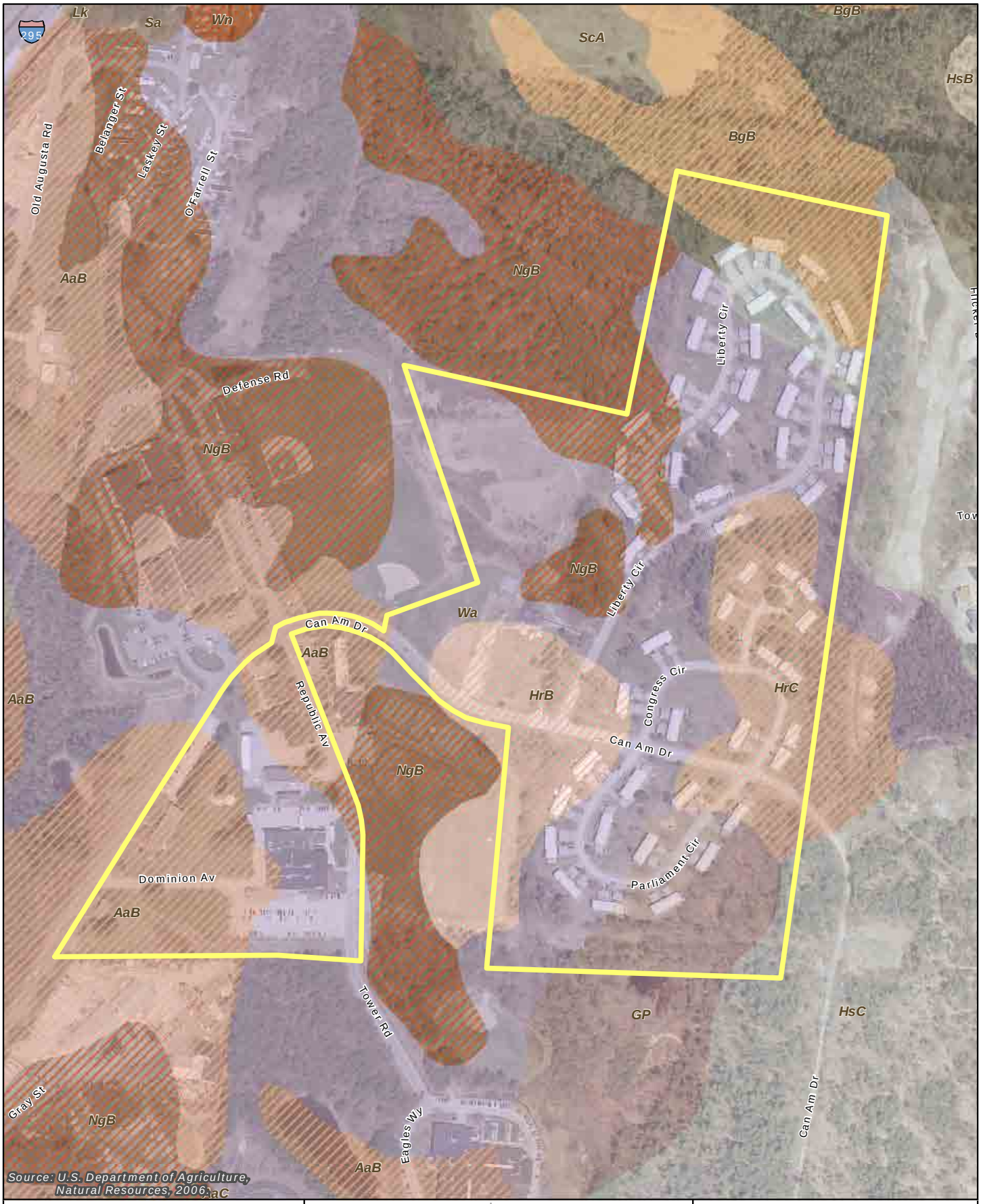
Topsham Annex is in the northern part of the Town of Topsham and its northern boundary is within about 1,000 feet of the Cathance River (Maguire Group, Inc. July 10, 1998). The majority of Topsham Annex slopes towards the Cathance River (Malcom Pirnie 2001), so the surface water run-off from the Annex discharges into the Cathance River. The Cathance River joins the Androscoggin River at Merrymeeting Bay.

Surface water features on the Annex property are limited to intermittent drainages associated with wetlands on the western and southeastern portion of the Annex. The nearest perennial surface water is to the west of the Annex, where there is a small stream that flows northward to the Cathance River (Maguire Group, Inc. July 10, 1998).

3.10.2.2 Groundwater

The shallow unconfined saturated groundwater unit beneath Topsham Annex is assumed to flow with the slope of the land west and northwest towards the Cathance River (Malcom Pirnie 2001). The depth to the water table ranges from 0 to 12 inches below ground surface (bgs) in some areas of the property to more than 80 inches bgs in other parts. The area beneath Topsham Annex is not considered to be a significant aquifer, i.e., it does not have the capacity to hold large volumes of water (Maguire Group, Inc. July 10, 1998). The Maine State Legislature (38 Maine Revised Statutes Annotated [MRSA] Chapter 3, Section 482, 4-D) defines a significant groundwater aquifer, as “a porous formation of ice-contact and glacial-outwash sand and gravel or fractured bedrock that contains significant recoverable quantities of water which is likely to provide drinking water supplies” (Maine Geological Survey October 6, 2005).

© Ecology & Environment, Inc. GIS Department Project #
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-5 Topsham Annex Soils.mxd



Source: U.S. Department of Agriculture, Natural Resources, 2006

Legend

Topsham Annex Surplus Property

Prime Farmland Soils

All areas are Prime Farmland

Farmland of Statewide Importance

N

0 100 200 400 600 800

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-6
Prime Farmland Soils
Topsham Annex, Maine

The closest significant aquifer is about 1,000 feet to the west-southwest of Topsham Annex and is separated from the property by a stream bed that most likely forms a hydrogeologic boundary (Maguire Group, Inc. July 10, 1998). There are no water supply wells on the Topsham Annex property; all water used by the Annex is supplied by the Brunswick-Topsham Water District public water supply (Maguire Group, Inc. July 10, 1998).

3.10.2.3 Floodplains

EO 11988 requires federal agencies to identify and consider practicable alternatives for locating incompatible facilities in areas identified as floodplains. Where practicable alternatives are not available, federal structures and facilities must be constructed in accordance with and consistent with the intent of the standards and criteria of the Federal Emergency Management Agency's (FEMA's) National Flood Insurance Program.

FEMA mapped floodplains at Topsham Annex in 1987. All of Topsham Annex is located in FEMA Zone X, which is an area of moderate to low flood risk where flood insurance purchase is not required (Federal Emergency Management Agency February 4, 2008). More specifically, Zone X designates an area of a 500-year flood or of a 100-year flood with an average depth of less than 1 foot (Federal Emergency Management Agency October 16, 1987). A 500-year floodplain is defined as an area that is statistically expected to flood once every 500 years, i.e., has a 0.2% chance of flooding in any given year (Federal Emergency Management Agency February 4, 2008). A 100-year floodplain is defined as an area with a statistical chance of flooding once every 100 years, i.e., a 1% annual chance of a flood (Federal Emergency Management Agency February 4, 2008).

3.10.2.4 Wetlands

Wetlands located in and around Topsham Annex are shown in Figure 3-7. A field reconnaissance of the Annex was conducted during the summer of 2008. The approximate boundaries of wetlands were identified based on wetland vegetation and surface hydrology. Two wetland communities were identified on the Annex. A small palustrine emergent (PEM) wetland covering approximately 0.87 acres was identified south of the commissary parking lot. The dominant vegetation in this wetland consists of cattails (*Typha latifolia*), sedges (*Carex* spp.), wool grass (*Scirpus cyperinus*), and other tall herbs and forbs. The second wetland identified during the field reconnaissance is located in the northeastern portion of the Annex in the parks and recreation area. This scrub-shrub wetland is a depressional wetland covering approximately 2.97 acres. Dominant vegetation consists of willow (*Salix sp*), sedges (*Carex sp*), raspberry (*Rubus sp*), speckled alder *(Alnus incana*), common herbs, and forbs.

National Wetlands Inventory (NWI) maps were reviewed to identify wetlands in the vicinity of Topsham Annex. Several small wetlands are located in the vicinity of the Annex, including two wetland areas immediately adjacent to the property (U.S. Fish and Wildlife Survey 2004). A palustrine forest wetland is located adjacent to the southwestern boundary of the property and is hydrologically connected to the PEM wetland described above. The second wetland is located

next to the property, south of the residential area, and is described as a palustrine broad-leafed deciduous scrub-shrub wetland with an unconsolidated bottom (PUB/SS1F) (U.S. Fish and Wildlife Service 2004).

To the north of Topsham Annex are various riverine and palustrine wetlands associated with the Cathance River, which is part of the Merrymeeting Bay Focus Area of Statewide Significance (Maine Natural Areas Program 2004a). The freshwater marshes along the river are composed predominantly of wild rice (*Zizania aquatica*) with lesser amounts of pickerelweed (*Pontederia cordata*), water parsnip (*Sium sauve*), soft-stem bulrush (*Schoenoplectus tabernaemontanii*), and river bulrush (*Bolboschoenus fluviatilis*) (Maine Natural Areas Program 2004b). Wetlands along the Cathance River are known to support rare plants such as estuary bur-marigold (*Bidens hyperborea*), spongy arrowhead (*Sagittaria calycina* ssp. *spongiosa*), Parker's pipewort (*Eriocaulon parkeri*), and Long's bittercress (*Cardamine longii*) (Maine Natural Areas Program 2004b).

3.10.3 Vegetation and Wildlife

Less than 20% of Topsham Annex is developed and vegetation covering the remainder of the property is predominantly maintained lawn or previously disturbed successional communities. Scattered shade and ornamental trees are located within the Military Triangle and the residential area. Narrow strips of natural vegetation, ranging from early successional scrub/brush communities to mature second and third growth woodlands, occur along the perimeter of the residential area (Maguire Group, Inc. July 10, 1998). Tree species typical of natural forests in the area include white pine, red pine, and hemlock (Maguire Group, Inc. July 10, 1998). A scrub/brush community covering several acres is in the 13-acre undeveloped area west of the existing housing.

Wildlife may be relatively sparse on Topsham Annex because most of the vegetated areas on the property are regularly maintained and provide little diverse habitat. As such, wildlife at Topsham Annex is limited to species adapted to urban/suburban conditions such as the eastern gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*) , striped skunk (*Mephitis mephitis*), American robin (*Turdus migratorius*), northern red cardinal (*Cardinalis cardinalis*), and black-capped chickadee (*Pecile atricapillus*). The extensive natural and rural areas surrounding the Annex support a large variety of animals that may travel onto Annex property, including white-tailed deer (*Odocoileus virginiana*), red fox (*Vulpes vulpes*), and coyote (*Canis latrans*).

3.10.3.1 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 is the primary legislation in the United States established to conserve migratory birds. The MBTA prohibits taking, killing, or possessing migratory birds unless permitted by regulation. The species of birds protected by the MBTA appear in 50 CFR 10.13.

To date, no migratory bird studies have been conducted at Topsham Annex. The Annex is located within the Atlantic flyway, which is a major migration route following the Atlantic coast of the United States. Coastal habitats in the region, including Merrymeeting Bay and the tidal portions of the Androscoggin and

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L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\February_2009\Figure 3-6 Topsham Annex Wetlands.mxd 04/08/2009

Legend

- Field-Identified Wetland Line*
- Field-Identified Wetland*
- NWI Wetland
- Topsham Annex Surplus Property

N

0 100 200 400 600 800

Feet

Aerial Photo Date: 03/01/2003 - 06/20/2005

Figure 3-7
Wetlands
Topsham Annex, Maine

Cathance Rivers, provide important stopover and feeding areas for migratory birds, including black duck (*Anas rubripes*), green-winged teal (*Anas carolinensis*), mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), osprey (*Pandion haliaetus*) and other species (Friends of Merrymeeting Bay 2009). Although migratory shorebirds and waterfowl are unlikely to occur at Topsham Annex because there is little suitable habitat, migratory passerines and other birds that feed in forest and field habitats may use the Annex property.

In a letter dated January 12, 2009, the U.S. Fish and Wildlife Service (USFWS) indicated that occasional transient bald eagles (*Haliaeetus leucocephalus*) may occur in the area; however, no bald eagle nests are located near the Annex. Although the bald eagle was removed from the federal threatened list in 2007, it is still protected under the Bald and Golden Eagle Protection Act and the MBTA.

3.10.3.2 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants and the habitats in which they are found. The Navy ensures that consultations are conducted as required under Section 7 of the ESA for any action that "may affect" a federally listed threatened or endangered species. In accordance with the Secretary of the Navy Instruction (Office of the Chief of Naval Operations Instruction [OPNAVINST] 5090.1C), the protection of non-federally listed species that are listed at the state level as threatened or endangered is not legally mandated. However, the Navy encourages cooperation with states to protect such species.

In the January 12, 2009 letter, the USFWS indicated that no federally listed threatened or endangered species are known to occur on Topsham Annex. No state-listed threatened or endangered species have been documented on the property to date. Additional consultations with the Maine Department of Inland Fisheries and Wildlife (DIFW) and the Maine Natural Areas Program were also conducted.

The USFWS indicated that the Atlantic salmon (*Salmo salar*), listed as endangered under the ESA, occurs in Merrymeeting Bay, located about 3 miles east of Topsham Annex. Although the Town of Topsham and Topsham Annex are located in the Merrymeeting Bay watershed, they have no areas containing critical habitat for salmon. Furthermore, Atlantic salmon have not been documented in the Cathance River, a tributary of Merrymeeting Bay, which is located approximately 1,000 feet north of Topsham Annex. No critical habitat for this species has been identified or proposed for any water body in the immediate vicinity of the Annex property (National Oceanic and Atmospheric Administration September 5, 2008).

4 Environmental Consequences

4.1 Introduction

This section describes the potential environmental impacts of the proposed action and alternatives on the existing environmental resources described in Section 3. The direct and indirect impacts of the two reuse alternatives and the No Action Alternative are compared by resource. While impacts associated with the reasonably foreseeable reuse of the property are considered indirect impacts, control over those impacts or associated mitigation would be outside the authority of the Navy. Recommended mitigation is included where necessary; however, the acquiring entity typically would be responsible for the mitigation.

4.2 Land Use, Coastal Zone, and Visual Setting

4.2.1 Land Use

4.2.1.1 Alternative 1 (Preferred Alternative) – Mixed Use

Implementation of the *Reuse Master Plan* under Alternative 1 would result in the redevelopment of the Annex into a mix of three land-use areas: business/ community use, residential, and parks and recreation (see Section 2, Figure 2-1). Redevelopment of the Annex in this way would generally be consistent with the existing zoning designations in these areas—Business Park 2 and Residential 4, respectively. The primary change resulting from redevelopment of the Annex property would be the conversion from military use to civilian use.

Business and community uses would be located on the Military Triangle, which the military currently uses for administrative and retail activity. The majority of the existing buildings on the Military Triangle are expected to be reused; however, a small undeveloped portion of the southwest corner of the Military Triangle could be developed for commercial/industrial uses (Matrix Design Group December 2007). New construction would be expected to be consistent with overall use of the parcel as a business park.

Under Alternative 1, the existing military residential area would be replaced by a civilian residential area. The existing military housing units could be reused, or these units could be demolished and the residential area could be redeveloped with a higher density of housing. Regardless, there would be no change to land use in the residential area. A portion of the parks and recreation area would be acquired by MSAD 75 and developed with athletic fields, potentially including football or soccer fields (Roedner January 29, 2009; Wilhelm January 29, 2009).

Implementation of Alternative 1 would incorporate the guiding principles and goals noted in the *Reuse Master Plan*: community development; consistency with the *Comprehensive Plan* and other development plans; realism; compatibility with existing neighborhoods; and environmental quality. The proposed redevelopment would have beneficial impacts on land use at the Annex property by promoting economic development via commercial uses that generate tax revenues and jobs, support local businesses, and provide market rate and workforce housing.

The area surrounding the Annex is zoned as the Upper Village (Town of Topsham, Maine November 18, 2008). The *Topsham Comprehensive Plan 2005* and the town's zoning code specify that the Upper Village will be developed as a mixed-use area with small-scale retail, restaurants, offices, and municipal services along Main Street surrounded by higher-density residential areas (Town of Topsham, Maine November 18, 2008). Implementation of Alternative 1 would support this goal through development of a mixed business/community services area with an adjacent medium- to high-density residential community to the east of the Military Triangle. The proposed reuse would complement existing adjacent land uses and would provide a beneficial impact for adjacent businesses.

4.2.1.2 Alternative 2 – Business Park

Implementation of Alternative 2 would result in redevelopment of the entire Annex into a business park. This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Under Alternative 2, all existing housing units and the slabs remaining from previously demolished housing units, plus all existing facilities on the Military Triangle, would be demolished. Existing roadways would be relocated to allow for better circulation on the property. Approximately 660,000 square feet of business/commercial floor space could be developed on the 74-acre property (Roedner December 5, 2008). The parking space needed for this level of development would cover 594,000 square feet.

The Military Triangle is currently used for military administrative activity, so a business park would be a similar land use. However, conversion of the residential area to a business park would be a change in land use and would be only partially consistent with the guiding principles and goals of the *Reuse Master Plan.* Under this alternative, community development and the proposed use would not be consistent with the local planning documents described in Section 3. Specifically, redevelopment of the entire Annex into a single-use business park would conflict with the Town of Topsham's goals for mixed land uses in the Upper Village. Furthermore the goals of the redevelopment plan to support a youthful population, recreational opportunities, and housing would not be fulfilled under Alternative 2.

4.2.1.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on land use.

4.2.2 Coastal Zone

4.2.2.1 Alternative 1 (Preferred Alternative) – Mixed Use

In its coastal consistency determination (CCD) letter dated May 12, 2009, the Navy determined the proposed reuse/redevelopment would be reasonably likely to affect the use of natural resources in Maine's coastal zone. However, the developer or reuse authority would conduct the development or reuse in a manner that is consistent with the Maine Coastal Program to the maximum extent practicable. The Navy's letter analyzed 19 policies or program areas to determine the potential for impacts resulting from the proposed action. The Maine Coastal Program (MCP) of the State Planning Office responded in a letter dated June 25, 2009. The MCP found that because there is no enforceable policy that applies to the proposed closure and disposal of the Annex, further federal consistency review of the action is not required. The MCP also stated that specific redevelopment activities would be subject to state environmental and land use laws and related permit requirements, as well as the potential for federal consistency reviews. Copies of the Navy's coastal consistency determination and comments from the MCP are included in Appendix A.

4.2.2.2 Alternative 2 – Business Park

The impacts of Alternative 2 on coastal zone management would be similar to the impacts described under Alternative 1. This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area.

4.2.2.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on coastal zone resources.

4.2.3 Visual Setting

Under all alternatives, the visual setting of the property and vicinity would not have any major changes. The proposed redevelopment/reuse of the property would be consistent with current land uses. The mixed use development mirrors the existing uses. The business park alternative is envisioned as a campus-like setting and would not be unusual in this area. Furthermore, the property is set back from the main access road (Route 201); because of the natural and man-made screening, redevelopment would not have a visual impact.

4.3 Socioeconomics

4.3.1 Population

Closure of Topsham Annex would result in an initial population loss in the town of about 225 people, or about 2.3% of the town's 2007 population of 9,873 people.

4.3.1.1 Alternative 1 (Preferred Alternative) – Mixed Use

Implementation of Alternative 1 would result in a slight increase in the population residing on Annex property and could result in a slight increase in the town's population. Under Alternative 1, up to 146 housing units would be developed in the residential area. As the average household size in Topsham is 2.62 people (U.S. Census Bureau n.d.[a]), approximately 338 individuals would be expected to populate the residential area upon full build-out and full occupancy. Some of these new residents would be expected to already reside in the Town of Topsham. As such, any increase in the town's population would likely be minor.

4.3.1.2 Alternative 2 – Business Park

Redevelopment of the Annex property into a business park under Alternative 2 could create approximately 660,000 square feet of business/commercial floor space. This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Approximately 1,320 permanent jobs could be supported by a business park of this size. It is likely that most of the people employed by the business park would be currently living in the region. In addition, any increase in population would be spread between the Town of Topsham and surrounding localities; therefore, the actual increase in the town's population from people relocating to Topsham under Alternative 2 would be minor.

4.3.1.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on local population.

4.3.2 Housing

4.3.2.1 Alternative 1 (Preferred Alternative) – Mixed Use

Under Alternative 1, the 129 existing housing units on the Annex would be either renovated and reused or demolished to provide space for new housing at a higher density. Up to 146 housing units could be constructed in the residential area, a slight increase of 19 units over existing conditions.

The most recent (2003) housing data for the Town of Topsham shows the vacancy rate in the town at 4%, which is lower than the vacancy rates in both the Town of Brunswick and Sagadahoc County. This rate and the total number of housing units in the town in 2006 (4,128 units) indicates that approximately 165 housing units are vacant. The increase in available housing could increase the town's vacancy rate to approximately 7.6% in the short-term; however, the town's vacancy rate would continue to be below the national average rate of 9%. Any impacts on the housing market would likely be dispersed across the region and across the 20-year build-out period, making it unlikely that redevelopment of Topsham Annex would have an effect on the local housing market.

4.3.2.2 Alternative 2 – Business Park

Under Alternative 2, all existing housing on Topsham Annex would be demolished, and the property would be redeveloped as a business park. This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area.

A business park of 660,000 square feet would likely draw potential employees from the region, including large cities such as Portland. The increase in employment and the relative affordability of housing in Topsham could result in a positive impact on the housing market with an increased demand for housing. People also could relocate from cities such as Portland.

4.3.2.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on housing.

4.3.3 Economy, Employment, and Income

Redevelopment of the Annex property is likely to result in several positive benefits for the community, including new jobs and an increased tax base.

4.3.3.1 Alternative 1 (Preferred Alternative) – Mixed Use

Implementation of the *Reuse Master Plan* under Alternative 1 would affect the regional economy in both the short-term and the long-term. Short-term effects of Alternative 1 would include minor negative impacts resulting from the loss of 80 permanent jobs and approximately $3 million in annual payroll following the closure of Topsham Annex. There would also be short-term, positive impacts on the local economy as funds are injected into the regional economy through expenditures on new construction and renovation projects during redevelopment. The *Reuse Master Plan* estimates that between $17.9 million and $40.6 million would be spent on renovation, demolition, construction, and infrastructure expenditures, including labor, under Alternative 1 (Matrix Design Group December 2007). Approximately 40% of the total renovation/construction budget could be spent on construction labor. Table 4-1 shows the estimated economic impacts resulting from construction projects under Alternative 1.

Alternative 1 would result in only a short-term positive economic impact from construction spending during redevelopment of the Annex property over the 20-year build-out period because these construction dollars represent a one-time expenditure. The positive impacts of spending on construction would last only a short time after the redevelopment is completed. Once these funds leave the regional economy through savings, taxes, or purchases of goods and services outside the region, the positive effects would no longer occur.

Table 4-1 Estimated Cost of Redevelopment at Topsham Annex under Alternative 1

	Low Estimate	High Estimate
Total Construction Cost	$17,900,000	$40,600,000
Labor Cost	$7,160,000	$16,240,000
Average Construction Wage	$31,356	$31,356
Person-years of employment[1]	228	518

Source: Matrix Design Group December 2007

Note:
[1] A person-year means one person is employed full-time for one year. For example, this could mean 1,000 people employed full-time for one year or 100 people employed full-time for ten years. Over the course of a 20-year build-out, it is impossible to make projections into the future or to determine how many people will be employed based on current employment.

Some new residents would likely relocate to the town from outside the area, resulting in a slight increase in expenditures on goods and services within the town and region and a subsequent positive impact on the local economy.

Alternative 1 includes renovation and reuse of most of the existing facilities on the Military Triangle, a total of approximately 70,000 square feet of mixed office and light industrial use. Assumptions about the square footage required per employee for various potential uses of Military Triangle facilities include:

- **Warehouse and distribution:** 900 to 1,500 square feet per employee
- **Office:** 250 to 400 square feet per employee
- **Shop/garage:** 400 to 600 square feet per employee (Matrix Design Group December 2007).

An estimate of 500 to 750 square feet per employee also has been included for the commissary, which has not been identified for a specific use (Matrix Design Group December 2007). Table 4-2 shows the number of employees that could be supported at each of the existing Military Triangle facilities, based on the above assumptions, and the approximate total number of employees that could be accommodated by the entire 70,000 square feet of floor space.

Renovation and reuse of the existing facilities on the Military Triangle could generate approximately 140 permanent jobs. Expansion of the existing facilities or construction of new facilities would increase the number of permanent jobs that could be supported.

The average annual income of approximately $37,000 for all occupations in Sagadahoc County was used to determine the average annual payroll dollars generated by redevelopment of the Military Triangle (Matrix Design Group December 2007). Based on this figure, the business park could generate between $4.44 million and $6.88 million in average annual payroll. A portion of this annual payroll would be spent on goods and services within the Town of Topsham and the region, which would generate long-term, positive impacts on the local economy. Depending upon the types of businesses that occupy the business park, the actual figure could be higher or lower.

Table 4-2 Estimated Number of Employees at the Military Triangle

Facility	Total Square Footage	Anticipated Facility Use	Lowest Number of Employees	Highest Number of Employees
Former Headquarters	13,240	Office	33	53
Commissary	33,700	--	45	67
Auto Maintenance	5,282	Shop/Garage	9	13
Warehouse	4,320	Warehouse/ Distribution	3	5
Marine Reserve	9,200	Office	23	37
Fire Station	4,284	Shop/Garage	7	11
Total	**70,026**	**--**	**120**	**186**

Source: Matrix Design Group December 2007.

4.3.3.2 Alternative 2 – Business Park

This alternative assumes that Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Short- and long-term impacts on the local economy under Alternative 2 would be similar to those described under Alternative 1. Short-term, negative impacts would result from the loss of approximately 80 permanent jobs at Topsham Annex. However, positive impacts on the local economy also would result from expenditures on demolition and construction projects during the 20 year build-out period. The cost of demolishing all existing buildings on the Annex property would be approximately $1.16 million (Frisman 2004).

Under Alternative 2, approximately $99 million would be spent to construct a 660,000 square foot business park. In addition to construction costs, approximately $5 million would be spent on updating and relocating infrastructure on the property (Matrix Design Group December 2007). Approximately 40% of the total demolition/ deconstruction and construction budget could be spent on construction labor. Table 4-3 shows the estimated economic impacts resulting from redevelopment of the Annex property under Alternative 2.

Table 4-3 Estimated Cost of Redevelopment at Topsham Annex under Alternative 2

	Cost
Total Construction Cost	$105,160,000
Labor Cost	$42,064,000
Average Construction Wage	$31,356
Person-years of employment[1]	1,341

Source: Matrix Design Group December 2007.

Note:
[1] A person-year of employment means one person is employed full-time for one year. For example, this could mean 1,000 people employed full-time for one year or 100 people employed full-time for ten years. Over the course of a 20-year build-out, it is impossible to make projections into the future or to determine how many people will be employed based on current employment.

As noted under Alternative 1, the positive impacts resulting from the above construction projects would last only a short time after the redevelopment is completed. Once these funds leave the regional economy through savings, taxes,

or purchases of goods and services outside the region, the positive effects would no longer occur.

To estimate the number of permanent employees that could be supported by a 660,000 square foot business park under Alternative 2, a figure of 500 square feet per employee was used. Using that calculation, the business park could support approximately 1,320 permanent employees. Given the average annual income of $37,000 per employee, the business park would generate approximately $50 million in average annual payroll. As noted under Alternative 1, a portion of this annual payroll would be spent on goods and services in the Town of Topsham and the region, which would generate long-term, positive impacts on the local economy.

4.3.3.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on the local economy.

4.3.4 Taxes and Revenues

4.3.4.1 Alternative 1 (Preferred Alternative) – Mixed Use

Because Topsham Annex is currently federally owned, the town does not receive revenue from property taxes. Under Alternative 1, the Annex property would no longer be under federal ownership, and any new development on the property would be subject to local property taxes.

Upon full build-out and occupancy of the residential area under Alternative 1, there would be an overall increase in the number of people living on the property. The occupancy of all 146 housing units would increase property tax revenue for the town. The increase in the total tax base from the residential area could range from $17 million to $28 million (Matrix Design Group December 2007).

Redevelopment of the Military Triangle into a business park would also generate new property tax revenue for the town. The value of the redeveloped properties on the Military Triangle could range from $70 to $100 per square foot (Matrix Design Group December 2007). Based on the total estimated square footage (70,026 square feet) of the redeveloped properties on the Military Triangle, the total valuation would range between $5 million and $7 million.

The closure of Topsham Annex and relocation of military employees and their families out of the region would result in the loss of federal impact aid provided to school districts with military dependents. For the 2009 academic year, MSAD 75 received $50,000 in impact aid, which represents 0.1% of the school district's total annual budget of $35,967,525 (Gray December 17, 2008; Gray January 28, 2009). Because the amount of impact aid provided to the school district is less than 1% of the total annual budget, the loss of impact aid would not significantly

impact the school district's or the Town of Topsham's revenues. Furthermore, the loss of impact aid would be offset by school taxes paid by new private residents.

Implementing Alternative 1 thus would result in an increase in the tax revenues generated and collected by the town and, thus, would have a long-term positive impact on the local tax base.

4.3.4.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the housing area. Demolition of the existing housing and redevelopment of the Annex property into a 660,000 square foot business park under Alternative 2 also would result in an increase in the town's tax revenue.

Using the same assumptions as under Alternative 1, the total valuation of the redeveloped properties would increase the town's tax base in the range of $46,200,000 to $66,000,000.

4.3.4.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. The Annex property would remain under federal ownership and no new property taxes would be generated.

4.3.5 Environmental Justice

This analysis focuses on the potential for minority, low-income, or populations aged 17 or younger to be disproportionately impacted by the closure or reuse of the property. Minority populations are considered to be present when either the minority population is greater than 50% or the minority population percentage is meaningfully greater than the minority population of a larger geographic population (Council on Environmental Quality December 10, 1997). A community threshold, where a similar income group of individuals live close to one another, was used for low-income populations (Council on Environmental Quality 1997). Census data were analyzed for the percentage of populations aged 17 years or younger. The threshold for this group was the percentage that is meaningfully greater than the group's percentage in a larger geographic population.

4.3.5.1 Alternative 1 (Preferred Alternative) – Mixed Use

Under Alternative 1, reuse of the property would be consistent with its current use; civilian use would replace military use. As discussed in Section 3.3.5, the minority population is well below 50% and is not meaningfully greater than the county or state levels. The poverty levels of the two census tracts are lower than the larger county population and there are no pockets of low-income populations that would be disproportionately impacted by the proposed action. Further, the percentage of the population aged 17 years or younger in the project area is not meaningfully greater than the percentage of the larger, county population.

Removal and disposal of hazardous materials, including lead-based paint and asbestos-containing materials, during renovation or demolition activities must comply with all federal, state, and local laws and regulations. Considering the nature of the action, the Navy has determined that implementation of Alternative 1 would have no disproportionately high or adverse health and safety or environmental impacts on low-income, minority, or aged 17 or younger populations.

4.3.5.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Under Alternative 2, the measures taken to ensure compliance with all applicable federal, state, and local laws and regulations during demolition and construction activities would be similar to those described under Alternative 1. Therefore, there would be no disproportionate or adverse human health and safety impacts or disproportionate environmental impacts on low income, minority, or aged 17 or younger populations.

4.3.5.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no disproportionate or adverse human health and safety impacts or environmental impacts on low income, minority, or aged 17 or younger populations.

4.3.6 Schools

MSAD 75 had approximately 2,800 total students as of October 2008 (Boundy December 9, 2008). In the short term, estimates show that the district would lose approximately 50 students upon closure of Topsham Annex (Maine School Administrative District No. 75 November 10, 2008a). This initial loss of students would occur regardless of the redevelopment alternative adopted.

The Merrymeeting Adult Education (MAE) program has approximately 1,000 students, about one-half of which are military-related. The MAE anticipates some military families remaining in the area, thereby reducing the potential impact. Currently, the program is expecting to lose approximately 25% or 250 students when NAS Brunswick and Topsham Annex close (Lowell April 2009).

4.3.6.1 Alternative 1 (Preferred Alternative) – Mixed Use

Under Alternative 1, the proposed civilian residential area would contain up to 146 residential units. Based on Census 2000 demographics (U.S. Census Bureau n.d.[a]) and full occupancy of the residential housing areas, approximately 96 school-age children would be residing in the new residential area. As such, implementation of Alternative 1 would result in a net gain of about 46 students. If these students were evenly distributed in age, about 21 of these students would be in elementary school, 11 would be in middle school, and 14 would be in high school. As shown in Section 3, Table 3-7, Topsham's elementary schools and

middle school are well below capacity and can easily support this increase in students. Mt. Ararat High School is nearing capacity, but it could support an increase in up to 20 students without exceeding its capacity.

Because the new students would be civilian students, the closure of Topsham Annex would result in the loss of impact aid, which the federal government provides to school districts with military dependents. Historically, MSAD 75 has received $150,000 in annual aid (Gray December 18, 2008). For the 2009 academic year the school district is receiving $50,000 (Gray December 17, 2008). Upon closure of Topsham Annex and loss of the remaining Annex military dependents, the school district is expected to lose all federal impact aid. However, given the 2009 budget of $35,967,525 (Gray January 28, 2009), the withdrawal of the federal impact aid represents a loss of only 0.1% of the school district's total annual budget. In addition, the loss of impact aid would be offset by new civilian residents paying local taxes that support the schools.

All of these factors indicate that there would be minor impacts on the MSAD 75 educational facilities under Alternative 1.

4.3.6.2 Alternative 2 – Business Park

This alternative assumes that Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. The school district would lose approximately 50 students upon the closure of Topsham Annex. Some new families could move to Topsham because new jobs would be available. However, these jobs would be created gradually over a period of 20 years and it is likely that some of these individuals already live within the MSAD 75 school district. As with Alternative 1, MSAD 75 would lose $50,000 of federal impact aid as a result of losing military dependents, which equates to a loss of approximately 0.1% of the total annual budget. These factors indicate that Alternative 2 would have minor direct or indirect impacts on MSAD 75 educational facilities.

4.3.6.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no change in the demand for public schools and, therefore, no impact.

4.4 Community Services

4.4.1 Police and Emergency Services

4.4.1.1 Alternative 1 (Preferred Alternative) – Mixed Use

Implementing Alternative 1 could result in an increase of about 163 people residing on the Annex property compared with baseline conditions. This represents less than 2% of the Town of Topsham's 2000 population, which was 9,100 (U.S. Census Bureau n.d.[a]). This increase in population would not be large enough to result in a significant change in the number of residents requiring

police and emergency services: as noted in Section 3, the Topsham Police Department has one chief of police, one lieutenant, two sergeants, six officers, one traffic officer, and one animal control officer (Town of Topsham, Maine n.d.[b]). The Topsham Fire and Rescue Department has eight officers, thirty-two firefighters, four EMS personnel, and five junior firefighters (Town of Topsham, Maine November 6, 2008). Thus, Alternative 1 would have no impact on these services.

4.4.1.2 Alternative 2 – Business Park

This alternative assumes that Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. The new business park proposed under Alternative 2 could support up to 1,320 employees. The availability of new jobs could bring some new families to Topsham. However, these jobs would be created gradually over a period of 20 years and many of the people filling these jobs would already live in Topsham and surrounding areas. These factors would reduce the number of new employees and families that could move into the region. A gradual increase in population over the 20-year period would allow gradual increases in the capacity of police and emergency services as needed. Thus, Alternative 2 would have minor impacts on Topsham's police and emergency services.

4.4.1.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no change in the demand for police and emergency services and, therefore, no impact.

4.4.2 Medical Services

4.4.2.1 Alternative 1 (Preferred Alternative) – Mixed Use

As noted in Section 3.3.2, the two hospitals closest to Topsham are Mid-Coast Hospital and Parkview Adventist Medical Center, both located in Brunswick. Together, these hospitals have 131 beds; they will have 149 once Mid-Coast Hospital finishes its expansion in 2010. The service area for these hospitals includes 77,000 people and encompasses the populations of Brunswick, Topsham, and surrounding areas (McCue 2009). A 2006 survey showed that the U.S. average number of hospital beds per 1,000 population is 2.7, and the Maine average is also 2.7 (Kaiser Family Foundation n.d.). The number of beds (including the beds in the hospital expansion as planned) per 1,000 population served by Mid-Coast Hospital and Parkview Adventist Medical Center is 1.9. However, many people in the service area use hospitals in Portland, Lewiston, and Augusta, which have specialty services. Because so many people in the service area use larger regional hospitals, Mid-Coast Hospital and Parkview Adventist Medical Center can support a smaller number of hospital beds per 1,000 population without creating over-capacity (McCue 2009). Currently Mid-Coast Hospital's average occupancy rate is 75% (McCue 2009). The hospital is adding new beds in order to better serve the population at times of peak hospital demand, which is variable, and to better serve an aging population (McCue 2009).

Redevelopment of the residential area could increase the number of people living on the Annex property by up to 163. This represents less than 0.2% of the hospital service area. This increase in population would not result in a significant change in the need for medical services. Therefore, Alternative 1 would have minor impacts on medical services.

4.4.2.2 Alternative 2 – Business Park

This alternative assumes that the Topsham Annex develop would have obtained the necessary development rights and permits for the housing area. The new business park proposed under Alternative 2 could support up to 1,320 employees. The availability of new jobs could bring some new families to Topsham. However, these jobs would be created gradually over a period of 20 years and many of the people filling these jobs would already live in Topsham and surrounding areas.

As noted above, the two hospitals closest to Topsham will have 149 beds once Mid-Coast Hospital finishes its expansion in 2010. The hospital service area for these hospitals includes 77,000 people; however, this population is also serviced by hospitals in Portland, Lewiston, and Augusta.

Because the number of new families that would move to the area for jobs at the proposed business park would be limited, the influx of the employees over 20 years would be slow, and because there is a wide variety of hospitals in the area with various specialties, implementing Alternative 2 would not have a significant impact on medical services in the area.

4.4.2.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no change in the demand for medical services and, therefore, no impact.

4.4.3 Parks and Recreation

4.4.3.1 Alternative 1 (Preferred Alternative) – Mixed Use

Approximately 14 acres would be designated as parks and recreation under Alternative 1. MSAD 75 has requested acquisition of this parcel for the development of athletic fields such as football or soccer fields (Roedner January 29, 2009; Wilhelm January 29, 2009). Following redevelopment, these ball fields would be open to the public. The creation of new recreational facilities at the Topsham Annex would have a positive impact on parks and recreational resources.

4.4.3.2 Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Redevelopment of the Topsham Annex into a single-use business park would not

increase parks and recreational facilities. In addition, current recreational space at Topsham Annex would be used to develop the business park. The loss of 225 residents currently residing in the housing area would create a slight decrease in the demand for parks and recreational resources in the Topsham area. The creation of up to 1,320 jobs could bring new families into the area; however, it is likely that the new jobs would be created gradually over the 20-year build-out period and would be filled by individuals who already live in Topsham. As such, Alternative 2 would not negatively impact parks and recreational resources but would also not increase the availability of such facilities as called for in the *Reuse Master Plan* goals.

4.4.3.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no change in the demand for parks and recreational services and, therefore, this alternative would not impact those resources. This alternative would not increase the availability of such facilities as called for in the *Reuse Master Plan* goals.

4.5 Transportation

The traffic study conducted for Topsham Annex (Gorrill-Palmer Consulting Engineers, Inc. May 2009) used trip generation and roadway capacity analyses to identify the potential increase in traffic, its effect on the road network, and mitigation recommendations for all three alternatives.

4.5.1 Methodology

The Institute of Transportation Engineers (ITE) publication *Trip Generation* (November 2003) was used as the source for determining trip generation. A review of the AADT history provided in publications from the Maine Department of Transportation indicated that the annual growth in traffic was approximately 1% on Route 196 in the study area and approximately 0.5% on Route 201 in the vicinity of Can Am Drive. Based on that history, the 2008 traffic volumes were projected to 2031. The 2031 seasonally and annually adjusted traffic volumes are shown in Appendix D.

Analysis of trip generation under Alternative 1 used Residential Planned Unit Development (Land Use Code [LUC] 270) for the 146 dwelling units and General Office (LUC 710) for the 70,000 square feet of office space. The Residential Planned Unit category was used instead of the Residential Condo/Townhouse category because the number of units would be more than the existing occupied 72 units and because non-military residential living would be expected to generate more trips per unit than a military residential unit. (Because there may be shared trips between the residential units and the office and/or schools, this trip generation may be conservative.) Under Alternative 2, Business Park (LUC 770) was used for the proposed 660,000 square feet of proposed development. The trip generation calculations are provided in Appendix D.

Table 4-4 lists the number of trips generated during morning and evening peak hours for Alternatives 1 and 2. As shown, the number of trips would increase under both alternatives. Alternative 1 would have a net increase in existing conditions of 124 trips in the morning and 135 in the evening. Alternative 2 would generate a net increase over existing conditions of 808 trips in the morning and 719 in the evening. Under either alternative, the developer would be required to obtain a Traffic Movement Permit from the Maine Department of Transportation (Gorrill-Palmer consulting Engineers, Inc. 2009). Any project that generates 100 or more passenger-car-equivalent trips during peak-hour traffic must file a permit with the Maine DOT. The developer would be responsible for obtaining the permit and implementing any required mitigation.

Table 4-4 Trip Generation Summary – Peak Hour of Adjacent Street Traffic

Use	Existing		Alternative 1 – Mixed Use		Alternative 2 – Business Park	
	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
Planned Residential Development – LUC 270 (146 Dwelling Units)	NA	NA	84	116	NA	NA
General Office – LUC 710 (70,000 SF)	NA	NA	141	157	NA	NA
Business Park – LUC 770 (660,000 SF)	NA	NA	NA	NA	909	857
Total	**101**	**138**	**225**	**273**	**909**	**857**

Key:
NA = Not Applicable

Capacity analysis was performed for:

- **Alternative 1 (Preferred Alternative) – Mixed Use.** At full build-out in 2031 with 146 dwelling units and 70,000 square feet of office space.
- **Alternative 2 – Business Park.** At full build-out in 2031 with 660,000 square feet of business park and no residential component.
- **No Action Alternative.** In 2031 with the site in caretaker status with the existing geometry of the intersections.

The tables for capacity analyses (see Appendix D) identify the level of service (LOS) for each of the intersections studied. The capacity analysis for each scenario assumes interconnection and optimization of the timing and phasing of the signalized intersections. The analysis forecasted traffic volumes for both the existing roadway network as well as with suggested mitigation.

Under Alternatives 1 and 2 all intersections would operate at LOS ‘D’ or better with mitigation, except for Eagles Way at Route 201. At this intersection exiting traffic would be delayed. However, this is not uncommon for an unsignalized STOP-controlled approach to a major roadway. A connection between Can Am Drive and the retirement community to the east may provide some relief in traffic congestion at the Route 201/196 intersection.

The traffic study estimated 10% of the traffic would use the connector (Gorrill-Palmer Consulting Engineers, Inc. May 2009). The LOS at this intersection under either alternative combined with the redevelopment of NAS Brunswick (with mitigation listed below) would still be a 'C' or 'D,' an acceptable level without the connector. It is important to note that the following mitigation measures are recommended because of existing roadway design deficiencies; the alternative scenarios, regardless of which is chosen, would not affect these recommendations (see Table 4-5 and Figure 4-1).

Table 4-5 Current Traffic Design and Recommended Traffic Mitigation

Figure	Intersection/ Roadway	Recommended Mitigation
4-1	Route 201 at Can Am Drive	■ Install a fully actuated traffic signal ■ Construct a 150-foot westbound right-turn lane ■ Extend the northbound right-turn lane to 150 feet ■ Convert the southbound 250-foot bypass lane to a dedicated left-turn lane
4-1	Route 201 at Eagles Way	■ Construct a 150-foot westbound right-turn lane ■ Construct a 150-foot northbound right-turn lane ■ Construct a 100-foot southbound left-turn lane
4-1	Route 201 at Route 196/Coastal Connector	■ Extend the eastbound left-turn lane from 250 feet to 350 feet ■ Extend the westbound right-turn lane from 250 feet to 350 feet ■ Construct a 250-foot northbound right-turn lane ■ Extend the southbound left-turn lane from 200 feet to 250 feet ■ Convert the outer southbound through/right-turn lane to an exclusive right-turn lane

4.5.2 Mitigation Recommendations

The projected traffic conditions and the recommended mitigation measures are based on the full build-out of the Annex. If the projected density of development does not occur, the need for the recommended mitigation measures would be reevaluated. If full build-out of the Annex occurs and the recommendations are not implemented, then traffic conditions would be expected to be worse.

Some traffic mitigation projects are recommended based on either current conditions or projected growth in the area without the redevelopment of the Annex. Other projects may be implemented by the developer in consultation with the Maine DOT and the town as warranted during development of the Annex.

4.5.2.1 Alternative 1 – Mixed Use

In addition to the mitigation recommended above, the following improvements would be recommended for Alternative 1 (see Table 4-6 and Figure 4-2).

4.5.2.2 Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. In addition to the mitigation recommended for existing deficiencies and normal long-term growth under the No Action alternative, the following improvements would be recommended for Alternative 2 (see Table 4-7 and Figure 4-3).

Table 4-6 Recommended Traffic Mitigation, Alternative 1

Figure	Intersection/ Roadway	Recommended Mitigation
4-2	Route 201 at Eagles Way	■ Extend the proposed southbound right-turn lane from 100 feet to 150 feet
4-2	Route 201 at Route 196/Coastal Connector	■ Extend the southbound left-turn lane from the proposed 250 feet to 300 feet

Table 4-7 Recommended Traffic Mitigation, Alternative 2

Figure	Intersection/Roadway	Recommended Mitigation
4-3	Route 201 at Can Am Drive	■ Construct a 250-foot westbound right-turn lane ■ Construct an additional 350-foot eastbound left-turn lane (for a total of two lanes) ■ Construct an additional northbound through lane
4-3	Route 201 at Eagles Way	■ Construct a 350-foot westbound right-turn lane ■ Construct an additional northbound through/right-turn lane ■ Construct a 150-foot southbound left-turn lane ■ Construct an additional southbound through lane
4-3	Route 201 at Route 196/Coastal Connector	■ Construct an additional 350-foot eastbound left-turn lane ■ Construct an additional northbound through lane ■ Extend the southbound left-turn lane from 200 feet to 300 feet ■ Construct an additional southbound 350-foot right-turn lane (for a total of two lanes)
4-3	Route 196 at I-295 Southbound On-Ramp	■ Extend the westbound left-turn lane storage to 300 feet

Based on the analysis, there would be some changes to the LOS compared with existing traffic conditions on some intersections, but none would be worse than LOS D, with mitigation, under either alternative. Alternative 1 would generate fewer traffic impacts compared with Alternative 2. The additional mitigation recommendations (above) for either Alternatives 1 or 2 would include minor changes to the recommendations that were previously made for current conditions. As a result, traffic mitigation undertaken as part of general growth in the town or as a requirement of the Traffic Movement Permit undertaken by the developer would reduce impact on traffic conditions to less than significant under either alternative.

4.6 Environmental Management

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) requires the federal government to take appropriate response or corrective actions related to petroleum products or their constituents and hazardous substances to protect human health and the environment on property that is to be transferred (U.S. Department of Defense March 1, 2006). This can be accomplished by retaining responsibility for response actions, entering into interagency agreements, or by the new owner implementing response actions (U.S. Department of Defense March 1, 2006).

There are no IRP sites located on the Topsham Annex property (U.S. Department of the Navy BRAC Program Management Office 2006); therefore, redevelopment of the property under either reuse alternative would not impact any IRP sites. However, several areas of concern have been identified at Topsham Annex that may require further investigation (Environmental Chemical Corporation December 2008). Before transfer or lease of BRAC property, the Navy will prepare a finding of suitability to transfer/lease (FOST/FOSL). The FOST/FOSL summarizes how the applicable requirements and notifications for hazardous substances, petroleum products, and other regulated materials have been satisfied and whether the property is environmentally suitable for transfer or lease. The document will also include any restrictions, notifications, or covenants in deeds to ensure the protection of human health and the environment in light of the intended use of the property. It will also contain information on any long-term remedies and the responsibilities for maintenance and reporting (U.S. Department of Defense March 1, 2006).

4.6.1 Alternative 1 (Preferred Alternative) – Mixed Use

- **Underground Storage Tanks.** As noted in Section 3.6, most of the USTs formerly located on Topsham Annex have been removed. Twelve USTs in the residential area were filled with concrete and abandoned-in-place in accordance with federal and Maine DEP regulations. The Navy currently has no plans to remove these abandoned USTs. Redevelopment of the Annex property under Alternative 1 may require removal of some or all of these USTs to accommodate laying foundations for new buildings or relocating utility lines. Future removal of these USTs by the property owner/developer may be required and would comply with all federal, state, and local laws and regulations.

- **Aboveground Storage Tanks.** Seven active ASTs that store heating oil are located on the Military Triangle. One of the ASTs is used to supply diesel fuel to the generator at Building 335 (the commissary). The Navy currently has no plans to remove these tanks. Redevelopment of the Annex property under Alternative 1 may require removal of some or all of these tanks to accommodate laying foundations for new buildings or relocating utility lines. Future removal of these tanks by the property owner/developer may be required and would comply with all federal, state, and local laws and regulations. Natural gas would be an alternative to fuel oil for heating systems, which would render the ASTs obsolete.

- **Areas of Concern.** Construction and demolition activities associated with redevelopment of the Annex property under Alternative 1 could occur within the areas of concern (see Section 3, Figure 3-5). The Navy is working with the Maine DEP to identify additional actions that may be required to address any remaining contaminants (described in Section 3.6) and to develop any institutional controls such as restrictive covenants for future property transfers (Environmental Chemical Corporation December 2008).

© Ecology & Environment, Inc. GIS Department Project #
L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\July_2009\Traffic_Section\Figure 4-1 No Action Alternative.mxd

Legend

- Existing Traffic Signal
- Proposed Traffic Signal
- Topsham Annex Surplus Property

Source: Gorril-Palmer, 2008.

Note: The mitigation shown in black font is projected to be needed to address population growth from the present to 2031.

0 100 200 400 600 800
Feet

Figure 4-1
Traffic Mitigation Recommendations
No Action Alternative
(Housing Reoccupied)
Topsham Annex, Maine

© Ecology & Environment, Inc. GIS Department Project #
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\July_2009\Traffic_Section\Figure 4-2 Alternative 1-Mixed Use.mxd

Legend

- Existing Traffic Signal
- Proposed Traffic Signal
- Topsham Annex Surplus Property

Source: Gorril-Palmer, 2008.

Note: The mitigation shown in black font is projected to be needed to address population growth from the present to 2031.

0 100 200 400 600 800
Feet

Figure 4-2
Traffic Mitigation Recommendations
Alternative 1 - Mixed Use
at 2031
Topsham Annex, Maine

© Ecology & Environment, Inc. GIS Department Project #
\L:\Buffalo\Brunswick\Maps\MXD\Tomsham_Annex\Draft_EA\July_2009\Traffic_Section\Figure 4-2 Alternative 1-Mixed Use.mxd

Legend

- Existing Traffic Signal
- Proposed Traffic Signal
- Topsham Annex Surplus Property

Source: Gorril-Palmer, 2008.

Note: The mitigation shown in black font is projected to be needed to address population growth from the present to 2031.

0 100 200 400 600 800
Feet

Figure 4-3
Traffic Mitigation Recommendations
Alternative 2 - Business Park
at 2031
Topsham Annex, Maine

- **Asbestos and Lead-Based Paint.** Future property owners will be notified regarding the environmental condition of the property. When appropriate, restrictions, notifications, or covenants in deeds may be necessary to ensure the protection of human health and the environment. Any modification, renovation, and/or demolition of the existing buildings on Topsham Annex would have to address ACM and LBP.

4.6.2 Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area.

- **Underground Storage Tanks.** Redevelopment of the Annex property under Alternative 2 may require removal of some or all of the 12 abandoned-in-place USTs to accommodate laying foundations for new buildings or relocating utility lines. Future removal of these USTs by the property owner/developer may be required and would comply with all federal, state, and local laws and regulations.

- **Aboveground Storage Tanks.** Seven active ASTs that store heating oil are located on the Military Triangle. One of the ASTs is used to supply diesel fuel to the generator at Building 335 (the commissary). The Navy currently has no plans to remove these tanks. Redevelopment of the Annex property under Alternative 1 may require removal of some or all of these tanks to accommodate laying foundations for new buildings or relocation of utility lines. Future removal of these tanks by the property owner/developer may be required and will comply with all federal, state, and local laws and regulations. Natural gas would be an alternative to fuel oil for heating systems that would render the ASTs obsolete.

- **Areas of Concern.** Construction and demolition activities associated with redevelopment of the Annex property under Alternative 2 could occur within the areas of concern (see Section 3, Figure 3-5). The Navy is working with the Maine DEP to identify additional actions that may be required to address any remaining contaminants (described in Section 3.6) and to develop any institutional controls such as restrictive covenants for future property transfers (Environmental Chemical Corporation December 2008).

- **Asbestos and Lead-Based Paint.** Future property owners will be notified regarding the environmental condition of the property. When appropriate, restrictions, notifications, or covenants in deeds may be necessary to ensure that human health and the environment are protected. Planned demolition of the existing buildings on Topsham Annex would have to address ACM and LBP.

4.6.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. As part of the building layaway

process, the ASTs would likely be emptied and permanently closed in accordance with spill prevention, control, and countermeasures (SPCC) regulations, thereby reducing environmental liability and eliminating inspection requirements. Periodic monitoring of the ACM and LBP within the Military Triangle will be required under this alternative.

4.7 Air Quality

Air quality impacts relevant to this EA are those associated with the two reuse alternatives; such impacts would be attributed to demolition of buildings, construction of new buildings, and increases in the number of personally owned vehicles.

Identifying the types of operations and associated emissions, if any, that future tenants might produce cannot be determined since future tenants are unknown. Therefore, a discussion of reasonably foreseeable adverse effects on air quality from emissions from potential (unknown) operations is not included.

The build-out period covers 20 years; total emissions were calculated as if the construction would occur within one year, based on the assumption that each 10-acre construction area would require dedicated construction equipment (see Appendix C). Annual emissions were then divided to provide estimates for a two-year, three-year, or five-year construction period. Particulate emissions were calculated based on square footage of demolition using factors developed in the Fugitive Dust Background Document (U.S. Environmental Protection Agency 1992). Vehicle combustion emissions from demolition activities are included in Table 4-8. Guidelines published by the El Dorado County, California Air Pollution Control District (February 2002) and EPA AP-42 (1995) were used to develop emission rates. This standard is applicable nationwide. These guidelines recommend the number and types of equipment to be used for construction activities on-site and are based on Richardson Engineering Services Process Plan Construction Estimating Standards and National Construction Estimator (El Dorado County February 2002). The guidelines provide daily emission factors for the use of equipment based on an 8-hour work day.

Emissions impacts associated with the privately owned vehicles of construction workers have not been included in this evaluation but would likely be negligible. Construction workers would be drawn from the regional population, which would not result in an increase in the number of privately owned vehicles in the region. Paving and painting operations would result in emissions of VOCs. Total VOC emissions from paving operations were calculated using El Dorado County Guidelines (February 2002), which assumes total direct and indirect VOC emissions from paving operations to be 2.62 lbs/acre. Emissions from painting activities were estimated based on paint VOC content and estimated painted surface square footage.

Table 4-8 Construction and Operating Emissions: Alternative 1

Activity	Emissions (tons per year)			
	NO_X	VOCs	CO	PM_{10}
Total Construction Emissions				
Construction Equipment	91.18	9.69	60.22	4.81
VOCs from Paving and Painting		13.41		
PM from Grading and Demolition				12.16
Total	**91.18**	**23.09**	**60.22**	**16.97**
Estimated Annual Construction Emissions				
2-Year Construction Period	45.59	11.55	30.11	8.48
3-Year Construction Period	30.39	7.70	20.07	5.66
5-Year Construction Period	18.24	4.62	12.04	3.39
Annual Operation Emissions				
Change in POV Emissions	0.42	0.42	4.06	0.04

Key:
CO = Carbon monoxide.
NOx = Nitrogen oxides.
PM_{10} = Particulate matter less than 10 microns in diameters.
VOCs = Volatile organic compounds.
POV = privately owned vehicles

4.7.1 Alternative 1 (Preferred Alternative) – Mixed Use

Under Alternative 1, approximately 20 acres would be disturbed during the renovation or construction of residential and commercial space. The increase in the number of housing units and business/community service uses could result in an increase in vehicles and a slight increase in vehicle emissions. Total projected construction and vehicle emissions are listed in Table 4-8. The proposed action would have a minor impact on air quality in the region because total projected emissions are below the General Conformity Rule *de minimis* threshold of 50 tons per year of VOCs and 100 tons per year for each of the other criteria pollutants.

4.7.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Under Alternative 2, all residential and commercial space would be demolished to develop a business park. Approximately 30 acres of demolition and new construction would likely increase vehicle use and vehicle emissions. Total projected construction and vehicle emissions are listed in Table 4-9. The proposed action would have a minor impact on air quality in the region because total projected emissions are below the General Conformity Rule *de minimis* threshold of 50 tons per year of VOCs and 100 tons per year for each of the other criteria pollutants.

Table 4-9 Construction and Operating Emissions: Alternative 2

Activity	Emissions (tons per year)			
	NO_X	VOC	CO	PM_{10}
Total Construction Emissions				
Construction Equipment	136.77	14.53	90.33	7.22
VOCs from Paving and Painting		18.35		
PM from Grading and Demolition				12.33
Total	**136.77**	**32.88**	**90.33**	**19.54**

Table 4-9 Construction and Operating Emissions: Alternative 2

Activity	Emissions (tons per year)			
	NO_X	VOC	CO	PM_{10}
Estimated Annual Construction Emissions				
2-Year Construction Period	68.39	16.44	45.16	9.77
3-Year Construction Period	45.59	10.96	30.11	6.51
5-Year Construction Period	27.35	6.58	18.07	3.91
Annual Operation Emissions				
Change in POV Emissions	3.43	3.39	33.05	0.29

Key:
CO = Carbon monoxide.
NOx = Nitrous oxides.
VOCs = Volatile organic compounds.
PM_{10} = Particulate matter less than 10 microns in diameters.
POV = Privately owned vehicle

4.7.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. The decrease in the number of vehicles traveling to and from the Annex for work would result in a minor reduction of air quality emissions compared with current conditions. Minimal air emissions associated with continued maintenance of the facility would be generated. Emissions associated with facility heating and tenant operations in the Military Triangle would decrease under this alternative.

4.7.4 General Conformity Rule

In accordance with revisions to 40 CFR 93.153 published July 6, 2010, General Conformity requirements shall not apply to federal actions that involve the transfer of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of transfer, that would result in no emissions increase or an increase in emissions that is clearly *de minimis* (40 CFR 93.153(c)(2)(xiv).

The transfer of properties under this action is exempt from Conformity Rule requirements under (40 CFR 93.153(c)(2)(xiv). In addition, VOC and NO_X emission changes resulting from actions under either Alternative 1 or Alternative 2 are below *de minimis* levels. Therefore, the General Conformity rule does not apply.

4.8 Infrastructure

The alternatives were evaluated to determine whether the water demand, wastewater generation, and storm water collection would overburden the existing systems.

4.8.1 Water Supply and Wastewater Collection and Treatment

4.8.1.1 Alternative 1 (Preferred Alternative) – Mixed Use

Implementation of Alternative 1 would increase the demand for potable water and sewage conveyance and treatment system capacity. As shown in Table 4-10, water consumption and wastewater generation under Alternative 1 would increase

approximately 90% over existing conditions. It was assumed for the purposes of this analysis that the full amount of water used is returned as wastewater. Under Alternative 1, the increase in the demand for water would amount to approximately 8% of the available water in the storage tank (586,000 gallons). Further, the amount of wastewater would increase over existing conditions by approximately 22,000 gallons per day, a small fraction (0.5%) of the 3.85 mgd treatment capacity of the Brunswick Sewer District WWTP.

Table 4-10 Estimated Water Consumption and Wastewater Generation

		Existing (2008)		Alternative 1		Alternative 2	
Use	Rate	Area (SF)	Water Consumption and Sewage Generation	Area (square feet)	Water Consumption and Sewage Generation	Area (square feet)	Water Consumption and Sewage Generation
Residential[1]	112 gpd per person	72 DUs[2]	21,000 gpd	146 DUs	43,120 gpd	N/A	N/A
Commercial/ Office	25 gpd/ employee[3]	70,000	3,500 gpd	70,000	3,500 gpd	660,000	33,000 gpd
		Subtotal	**24,500 gpd**		**46,620 gpd**		**33,000 gpd**
% Change in Water Consumption			**N/A**		**+90%**		**+35%**

Notes:
1 Number of residents assumes 2.6 persons per household (*Reuse Master Plan* p. 135).
2 There are 129 dwelling units at the Topsham Annex; 72 of them are occupied.
3 The *Reuse Master Plan* projects approximately 500 square feet of commercial floor space per employee (Exhibit 58, p. 134). Therefore, under existing conditions and Alternative 1 there would be 140 employees and under Alternative 2, 1,320 employees.

Key:
DU = Dwelling unit.
gpd = Gallons per day.
N/A = Not applicable.

An increase in wastewater associated with Alternative 1 would not cause the Brunswick Sewer District WWTP to exceed its design capacity or its MEPDES-permitted flow limit. A preliminary assessment of the water and wastewater collection system was conducted as part of the *Reuse Master Plan* planning process. The residential area was identified as likely requiring improvements to the existing gravity-collection system or replacement of the system to meet local standards. In addition, the utility infrastructure on the Military Triangle may need upgrading. With the age of the existing infrastructure, some improvements are likely. The extent and cost of such upgrades are unknown. As a result, implementation of Alternative 1 would be expected to have a moderate impact on infrastructure.

4.8.1.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Implementation of Alternative 2 would also increase the demand for potable water and sewage conveyance and treatment system capacity. As shown in Table 4-10, water consumption and wastewater generation under Alternative 2 would increase by approximately 35% over existing conditions. It was assumed for purposes of this analysis that the full amount of water used is returned as wastewater. Under Alternative 2, the increase in water supply would amount to approximately 6% of the available water in the storage tank (586,000 gallons).

Further, the amount of wastewater would increase by approximately 8,500 gallons per day, a small fraction (0.2%) of the 3.85 mgd treatment capacity of the Brunswick Sewer District WWTP. An increase in wastewater resulting from Alternative 2 would not cause the Brunswick Sewer District WWTP to exceed its design capacity or its MEPDES-permitted flow limit.

A preliminary assessment of the water and wastewater collection system was conducted as part of the *Reuse Master Plan* planning process. As in Alternative 2, the residential area and the Military Triangle were identified as likely requiring an upgrade to infrastructure. With the age of the existing infrastructure, some improvements are likely. The extent and cost of such upgrades are unknown. Thus, implementation of Alternative 2 would be expected to have a moderate impact on infrastructure.

4.8.1.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. The amount of potable water used and wastewater generated would be reduced from existing levels under the No Action Alternative. This would be beneficial since it would provide additional capacity available for other users.

4.8.2 Storm Water Collection

4.8.2.1 Alternative 1 (Preferred Alternative) – Mixed Use

The existing storm water collection system may require modifications, depending on the amount of redevelopment and project phases. Although most existing structures would be reused, new storm water infrastructure may be necessary to offset new impervious surfaces associated with redevelopment under this alternative. All future development will be required to meet the requirements of Maine storm water regulations.

Disturbance of more than 1 acre of land requires adherence to the standards set forth in Maine's Stormwater Management Law (38 MRSA § 420-D) and the submittal of a Notice of Intent (NOI) and an erosion and sediment control plan (ESCP) to the Maine DEP. If demolition and construction activities under Alternative 1 were to disturb more than 1 acre, they would be subject to these requirements. These impacts will be minimized or avoided by incorporating best management practices (BMPs) for erosion and sediment control during the construction process, in accordance with the Maine storm water management guidelines. Erosion and sediment control BMPs could include:

- **Retention ponds.** Permanent structures designed to allow time for sediments to settle and water to infiltrate the ground.

- **Temporary sediment basins.** Structures designed to detain sediment-laden runoff from disturbed areas long enough for sediments to settle out.

- **Silt fencing.** A temporary erosion and sediment control structure used to prevent dirt from entering waterways before bare soil is stabilized with vegetation.

- **Berms.** Temporary erosion and sediment control that physically prevents polluted runoff from entering nearby storm drain inlets and waters.

Full build-out under Alternative 1 would result in an increase in impervious surface from approximately 11.7 acres to approximately 18.1 acres. As noted in Section 3.8, the Annex currently generates approximately 13.5 million gallons of annual precipitation runoff. At full build-out, Alternative 1 would generate approximately 20.9 million gallons of annual runoff, or 7.4 million more gallons of annual runoff than currently exists. Future development at the Annex would require compliance with Maine storm water management rules and regulations, and the storm water management plans developed for the improvements would consider water quality and storm water runoff associated with any new impervious surfaces. With proper implementation of an ESCP and the appropriate BMPs during construction, impacts on surface waters from erosion and off-site sedimentation would be minor.

4.8.2.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Full build-out of Alternative 2 would result in an increase in impervious surface from approximately 11.7 acres to approximately 30 acres. Alternative 2 would generate approximately 34.6 million gallons of annual runoff—21.1 million gallons more than currently exist. Similar to Alternative 1, future development at the Annex would require compliance with Maine storm water management rules and regulations. Storm water management plans developed for reuse of the land would need to consider water quality and the quantity of storm water runoff associated with any new impervious surfaces. With proper implementation of an ESCP and the appropriate BMPs during construction, impacts on surface waters from erosion and off-site sedimentation would be minor.

4.8.2.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no new impervious surfaces and no impact on storm water runoff and collection.

4.8.3 Natural Gas

4.8.3.1 Alternative 1 (Preferred Alternative) – Mixed Use

Maine Natural Gas (MNG) has sufficient reserve capacity to accommodate the type of future development specified in the *Reuse Master Plan*. The delivery system is in excellent operating condition, although modifications of the metering and pressure-regulation station located on the property may be necessary to meet future demands. MNG would serve any future development on the Annex.

Therefore, reuse or redevelopment of the property would have no consequences for the natural gas supply or delivery system.

4.8.3.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. The impacts on natural gas supplies under Alternative 2 would be similar to Alternative 1.

4.8.3.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on natural gas supply or delivery.

4.9 Cultural Resources

4.9.1 Archaeological Resources

4.9.1.1 Alternative 1 (Preferred Alternative) – Mixed Use

Analysis of data from a Phase IA archaeological investigation (see Section 3.9) resulted in the determination that Topsham Annex has a low potential for prehistoric archaeological resources (U.S. Department of Defense January 1996). Redevelopment of the Topsham Annex property under Alternative 1 thus would have no effect on prehistoric archaeological resources. The Phase I archaeological investigation also determined that the eastern side of Topsham Annex has a low potential for historic archaeological resources and the western side has a moderate potential. Redevelopment of the Military Triangle area under Alternative 1 could potentially affect historic archaeological resources if any new facilities are constructed. Renovation and reuse of existing buildings on the Military Triangle would have no effect on historic archaeological resources. The Maine SHPO concurred with these findings (see Appendix B).

4.9.1.2 Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Redevelopment of the Topsham Annex property under Alternative 2 would have no effect on prehistoric archaeological resources. Demolition of the existing buildings on the Military Triangle and construction of new facilities could potentially affect historic archaeological resources. If Alternative 2 is selected, the developer will need to consult further with the Maine SHPO. The Maine SHPO concurred with these findings (see Appendix B).

4.9.1.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new

development under this alternative, there would be no impact on archaeological resources.

4.9.2 Historic Resources

4.9.2.1 Alternative 1 (Preferred Alternative) – Mixed Use

As described in Section 3.9.2, Building 333 is considered eligible for listing on the NRHP. The Navy and the Maine SHPO have agreed to a preservation covenant that requires the Navy and all successors to the property to consult with the Maine SHPO before taking any action that could impact Building 333. If the redevelopment of Topsham Annex results in disturbance to Building 333, the property owner would be required to adhere to Secretary of the Interior standards for proper recordation of the building. Therefore, this preservation covenant encourages the protection of Building 333 and requires, at a minimum, mitigation in the form of proper historic recordation, but does not entirely preclude the possibility of an effect to this historic resource.

4.9.2.2 Alternative 2 – Business Park

As noted above, the preservation covenant on Building 333 encourages protection and requires, at a minimum, mitigation in the form of proper recordation, but does not entirely preclude the possibility of an effect to this historic resource.

4.9.2.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no effect on historic resources.

4.10 Terrestrial Environment

4.10.1 Geology, Topography, and Soils

4.10.1.1 Alternative 1 (Preferred Alternative) – Mixed Use

Most of the Annex property is fairly level and would not require extensive grading to implement the *Reuse Master Plan*. The eastern part of the property, where slopes are steeper, could require moderate grading during construction. Areas of exposed bedrock would be avoided through site design. Renovation of existing structures and some new construction under Alternative 1 would cause minor impacts on topography because some grading would be necessary.

Demolition of existing housing units on Topsham Annex and construction of new housing units would disturb soils. Construction activities (clearing, grading, landscaping, and movement of equipment, material, and vehicles) would expose soils to wind and storm water erosion, compaction, and rutting. Erosion and sediment control measures would be employed at construction sites in accordance with Maine's Erosion and Sediment Control Law (38 MRSA § 420-C) and other applicable state laws (see Section 4.10.2.1, Surface Water, for additional discussion). The Erosion and Sediment Control Law requires that sediment control measures be placed at the downgradient side of the construction before work begins and remain in place and functional until the site is permanently

stabilized (Maine Department of Environmental Protection, Bureau of Land and Water Quality 2005b). Sediment control measures that may be used at construction sites could include silt fences, hay bales, or temporary vegetation or mulching.

Additionally, the Maine DEP requires a Maine Construction General Permit (MCGP) for construction projects that disturb more than 1 acre of soil in a given watershed. Prior to approval of an MCGP, the Maine DEP requires submittal of an NOI and an ESCP (Maine Department of Environmental Protection March 2003). The Maine DEP provides descriptions of standard erosion control guidelines, or BMPs,[7] that should be incorporated into the ESCP (Maine Department of Environmental Protection March 2003).

As noted in Section 3.10.1, hydric soils cover approximately 31 acres, or almost half, of the Annex property. Reuse of the existing housing and operational/ support facilities at Topsham Annex would have no impact on hydric soils. However, new construction under Alternative 1 could affect up to 24 acres of hydric soils.

Maine statutes (38 MRSA Article 6, Site Location of Development) require that proposed developments be constructed on soil types that are suitable for the type of development. The developer would submit an application for approval to the Maine DEP that would include a soil map indicating the soil types present on the proposed construction site and all major limitations to construction presented by the characteristics of soils on the site. The application would also include the techniques that would be used to overcome identified limitations (Maine Revised Statutes n.d.). Two hydric soils occur on Topsham Annex: Scantic silt loam and Walpole fine sandy loam. Both soils have severe limitations for building foundations. Limiting characteristics of Scantic silt loam include a high water table, low shear strength, and frost heaving, while Walpole fine sandy loam is limited by a very high water table (U.S. Department of Agriculture Soil Conservation Service and University of Maine Agricultural Experiment Station November 1970). Appropriate engineering techniques would be used to mitigate soil limitations before any construction began.

Land with hydric soils that does not possess the other two characteristics of wetlands (hydrophytic vegetation and wetland hydrology) is not considered a jurisdictional wetland. Potential impacts on wetlands are discussed under Section 4.10.2.4, Wetlands, below. No mitigation is required for hydric soils affected as a result of new construction under Alternative 1.

Similarly, reuse of the existing housing and operational/support facilities on the Annex would have no impact on soils designated as prime farmland or farmland of statewide importance, while new construction could have impacts, depending on site design. Topsham Annex has 4 acres of prime farmland and 22 acres of farmland of statewide importance that could potentially be affected. Because the

[7] Best management practices during and after construction include the use of erosion control measures such as silt fencing, geotextiles, seeding, and sediment basins.

Annex property is currently developed with urban land uses, redevelopment of the property would not be subject to review under the Farmland Protection Policy Act. In addition, development of land designated as farmland of statewide importance is not regulated in Maine. Therefore, no mitigation is required for soils designated as prime farmland or farmland of statewide importance that would be affected by new construction under Alternative 1.

4.10.1.2 Alternative 2 – Business Park

This alternative assumes that the developer of the Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Most of the Annex property is fairly level and would not require extensive grading. The eastern part of the property, where slopes are steeper, could require moderate grading during construction. Demolition of all existing structures and new construction under Alternative 2 would cause moderate impacts on topography because of the additional disturbance and grading.

Demolition of existing housing units and buildings on Topsham Annex and construction of a new business park would result in disturbance of soils. Construction activities (clearing, grading, landscaping, and movement of equipment, material, and vehicles) would expose soils to wind and storm water erosion, compaction, and rutting. Soil erosion would be minimized or avoided through use of standard soil erosion and sedimentation control techniques by the contractor during construction and appropriate revegetation techniques upon completion.

The acres of hydric soils, prime farmland, and farmland of statewide importance affected under Alternative 2 would vary, depending on site design, but would not exceed the acreages described under Alternative 1. Impacts on these soils under Alternative 2 would be the same as those described under Alternative 1, above.

4.10.1.3 No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on geology, topography, or soils on the site.

4.10.2 Water Resources

4.10.2.1 Surface Water

The principal surface waters in the vicinity of Topsham Annex include the Cathance River and its tributaries. Two small drainages are located at Topsham Annex and are associated with the wetland communities described in Section 3.10.2.4.

As noted above in Section 4.10.1, the developer would submit a notice and erosion/sedimentation control plan under the requirements of the construction general permit. The ESCP would incorporate BMPs to minimize or avoid sedimentation impacts on surface waters. In addition, impacts on surface waters

are regulated in Maine under the Maine Natural Resources Protection Act, the Site Location Development Act, the Stormwater Management Law, and the Waste Discharge Law (Maine Department of Environmental Protection, Bureau of Land & Water Quality 2005a).

- The Maine Natural Resources Protection Act (NRPA) stipulates that a permit is required when an activity is "located in, on, or over any protected natural resource" or located adjacent to a significant coastal or freshwater wetland (http://www.maine.gov/dep/blwq/docstand/nrpapage.htm).

- The Site Location Development Act requires the "review of developments that may have a substantial effect upon the environment" (http://www.maine.gov/dep/blwq/docstand/sitelawpage.htm). This includes developments occupying more than 20 acres.

- The Maine Storm Water Management Law (38 MRSA § 420-D) stipulates standards for projects disturbing more than 1 acre of land. Per Maine's regulations, a storm water management plan would be required for Alternatives 1 and 2.

The Clean Water Act (33 U.S.C. 1251 et seq.) establishes a basic structure for regulating discharges of pollutants into the waters of the United States. According to the act, it is unlawful for any person to discharge a pollutant from a point source into navigable waters without a permit. Requirements for discharges of storm water and wastewater to waters of the United States are set by the National Pollutant Discharge Elimination System (NPDES), which is administered by the EPA in partnership with state agencies. Under a Memorandum of Agreement effective January 12, 2001 between the EPA and the Maine DEP, the Maine DEP is the primary authority in operating the NPDES within its state boundaries (Maine Department of Environmental Protection 2005b). Consequently, any activities under Alternative 1 or 2 that would result in the discharge of pollutants from point sources to navigable waters would require a permit from the Maine DEP.

Alternative 1 (Preferred Alternative) – Mixed Use

The *Reuse Master Plan* was developed with the goal of minimizing impacts on natural resources such as surface waters (Matrix Design Group December 2007). Implementation of Alternative 1 would not have direct impacts on surface waters; however, indirect impacts could result from construction activities and changes in impervious surfaces on the site. Short-term, minor impacts on water quality could result during construction from the discharge of sediments. Impacts would be mitigated through compliance with federal and state regulations and implementation of BMPs (see Section 4.8.2).

Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Under Alternative 2, there would be no direct impacts on surface waters. Similar to Alternative 1, indirect impacts could result from construction and an increase in

on-site impervious surfaces. Alternative 2 would require the demolition of the existing houses and construction of new facilities. During construction there could be short-term, minor impacts on water quality from the discharge of sediments. BMPs such as those previously noted in Section 4.8.2 would be used during this construction phase to mitigate impacts on surface water.

The business park proposed in Alternative 2 would result in a larger area of impervious surface than currently exists at the site. The increased impervious surface would generate a long-term increase in precipitation runoff into the Cathance River. A 30-acre business park would generate approximately 34.6 million gallons of annual precipitation runoff. Because the Annex currently generates approximately 13.5 million gallons, this would result in an increase of approximately 21.1 million gallons annually.

Implementation of Alternative 2 would be subject to Maine's storm water management rules. The storm water management plans developed for the improvements would consider water quality and storm water runoff associated with any new impervious surfaces. With proper implementation of an ESCP and the appropriate BMPs during construction, impacts on surface waters from erosion and off-site sedimentation would be minor.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no additional impacts on surface water compared with existing conditions.

4.10.2.2 Groundwater

Alternative 1 (Preferred Alternative) – Mixed Use

Construction in the residential area could extend below the ground surface to a depth that could directly impact the underlying water table. Standard construction procedures for dewatering would be used by the developer to minimize impacts on groundwater. Groundwater beneath the Topsham Annex is not used for drinking water supply purposes. No significant aquifers exist beneath the Topsham Annex and no groundwater wells are located on-site (Maguire Group, Inc. July 10, 1998).

Potential spills of fuels or other chemicals could occur during construction activities; however, immediate cleanup of spills would prevent any infiltration into area groundwater resources. A spill prevention, control, and countermeasures plan would minimize the impact of any spill and provide procedures for clean-up efforts.

During operation, the developer would be required to comply with Maine's storm water management rules and implement BMPs, to control surface water runoff on the property that could contribute to groundwater contamination.

Before transfer or lease of BRAC property, the Navy will prepare a FOST/FOSL. The FOST/FOSL summarizes how the applicable requirements and notifications for hazardous substances, petroleum products, and other regulated materials have been satisfied and whether the property is environmentally suitable for transfer or lease. The document will also include any restrictions, notifications, or covenants in deeds to ensure the protection of human health and the environment in light of the intended use of the property. It will also contain information on any long-term remedies and the responsibilities for maintenance and reporting (U.S. Department of Defense March 1, 2006).

The Navy is working with the Maine DEP to identify additional actions that may be required to address any remaining contaminants (described in Section 3.6) and to develop institutional controls such as restrictive covenants for future property transfers or ground-disturbing activities.

Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Under Alternative 2, the existing housing would be demolished and a new office park would be constructed at the Topsham Annex site. Groundwater impacts would be the same as those described under Alternative 1.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on groundwater resources.

4.10.2.3 Floodplains

Alternative 1 (Preferred Alternative) – Mixed Use

All of Topsham Annex is located in a FEMA Zone X, i.e., outside the 100-year floodplain. Such areas have a moderate to low flood risk and flood insurance purchase is not required (Federal Emergency Management Agency February 4, 2008). Because all of Topsham Annex is outside the 100-year floodplain, redevelopment of the Topsham Annex property according to the *Reuse Master Plan* would have no impacts on floodplains.

Alternative 2 – Business Park

This alternative assumes that the developer of Topsham Annex would have obtained the necessary development rights and permits for the PPV housing area. Since all of Topsham Annex is located in a FEMA Zone X, which is outside the 100-year floodplain, Alternative 2 would have no impacts on floodplains.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on floodplains.

4.10.2.4 Wetlands

EO 11990, Protection of Wetlands, directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands on their property and mandates review of proposed actions on wetlands.

Alternative 1 (Preferred Alternative) – Mixed Use

The *Reuse Master Plan* was developed with the goal of minimizing impacts on natural resources such as wetlands (Matrix Design Group December 2007). Two wetland communities were identified within the business and community area and the parks and recreation area (see Section 3, Figure 3-7). Indirect impacts on wetlands on-site and adjacent to the site resulting from construction activities would be minimized by implementing Maine's BMPs for erosion and sediment control.

In accordance with Section 4 of EO 11990, during the property conveyance process the Navy will note uses that are restricted under identified federal, state, or local wetland regulations. All disturbances of wetlands would be regulated under the Maine NRPA and the federal Clean Water Act (CWA). The NRPA regulates activities within or adjacent to freshwater wetlands. Wetlands with an obvious hydrological connection to waters of the U.S. are regulated under the CWA. Section 404 of the CWA authorizes the U.S. Army Corps of Engineers (USACE) to issue permits regulating the discharge of dredged or fill materials into the waters of the U.S., including wetlands.

Any wetland disturbances resulting from implementing Alternative 1 would require coordination with the Maine DEP and the USACE. In addition, per the NRPA, any encroachment within a 75-foot buffer around a wetland would be prohibited without a permit. Wetland permit applications would require a surveyed wetland boundary, an alternatives analysis, a mitigation plan, impact analysis, and a storm water management analysis. Given the above, impacts on wetlands under Alternative 1 would be allowed only by issuance of a permit and mitigation and therefore would be minor.

Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Similar to Alternative 1, all disturbances of wetlands or within 75 feet of a wetland would be regulated under Maine's NRPA and Section 404 of the CWA. Coordination with the Maine DEP and the USACE would be anticipated. Adherence to Maine BMPs during construction, as noted under Alternative 1 above, would minimize indirect impacts on wetlands. Given the above, impacts on wetlands under

Alternative 2 would be allowed only by issuance of a permit and mitigation and therefore would be minor.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on wetlands.

4.10.3 Vegetation and Wildlife

Alternative 1 (Preferred Alternative) – Mixed Use

Impacts on vegetation would result from removing or clearing vegetation for development under Alternative 1. The physical layout described in the *Reuse Master Plan* would concentrate future development primarily in currently developed areas. Impacted vegetation would consist primarily of maintained lawn in the residential area. Individual shade and ornamental trees could be removed.

Given that most of the vegetation on the Annex property is either regularly maintained or has been previously disturbed, long-term impacts from a loss of vegetation during construction would be minor.

Implementation of Alternative 1 may cause temporary displacement of wildlife during construction when noise and human activity levels increase. However, once construction has been completed, wildlife such as songbirds and small mammals that use the limited habitat at the Annex should return to these peripheral areas.

Long-term impacts on wildlife would be related to habitat loss and habitat fragmentation. As noted in Section 3.10.3, Topsham Annex does not provide suitable habitat to support diverse or abundant wildlife populations because of a relative lack of vegetative cover and habitat diversity. In addition, there are no large habitat blocks on the Annex that could be fragmented by development. Given that the land uses and development intensities proposed under Alternative 1 are similar to existing conditions, there would be no long-term adverse impacts on wildlife as a result of implementing Alternative 1.

Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Impacts on vegetation would result from removing or clearing vegetation for development under Alternative 2. Under this scenario, development would not be concentrated in currently developed areas. Vegetation would be temporarily impacted by being removed during construction or by damage caused by construction vehicles. Upon completion of demolition and construction activities, these areas would be revegetated with grass and ornamental species similar to those currently on the Annex property. Impacts on wetland vegetation would be regulated in accordance

with state and federal regulations and mitigation would most likely be required. Given that most of the vegetation on the Annex property is either regularly maintained or has been previously disturbed, long-term impacts from a loss of vegetation during construction would be minor.

Implementation of Alternative 2 may cause temporary displacement of wildlife during construction when noise and human activity levels increase. However, once construction has been completed, wildlife such as the songbirds and small mammals that use the limited habitat at the Annex should return to these peripheral areas.

Long-term impacts on wildlife would be related to habitat loss and habitat fragmentation. As noted in Section 3.10.3, Topsham Annex does not provide suitable habitat to support diverse or abundant wildlife populations due to a relative lack of vegetation cover and habitat diversity. In addition, there are no large habitat blocks on the Annex that could be fragmented by development.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impact on vegetation or wildlife.

4.10.3.1 Migratory Birds

Alternative 1 (Preferred Alternative) – Mixed Use

Migratory shorebirds and waterfowl are unlikely to occur at Topsham Annex because suitable habitat is limited. Under Alternative 1, there would be no direct impact on coastal habitats such as Merrymeeting Bay and the tidal portions of the Androscoggin and Cathance rivers, which are used as stopover and feeding areas by migratory birds. Impacts on migratory bird species that would be likely to use the forest, scrub-shrub, and maintained lawn habitats on the Annex property would be similar to those described above. Short-term impacts would include temporary displacement of birds in the vicinity of the construction sites. Long-term impacts would include loss of a small area of maintained lawn and scrub-shrub habitat. Because of the proximity of large areas of undisturbed habitat at the Cathance River Nature Preserve and Mount Ararat, these impacts would be minor.

Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Impacts on migratory birds under Alternative 2 would be similar to the impacts described under Alternative 1 above.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impacts on migratory birds.

4.10.3.2 Threatened and Endangered Species

Alternative 1 (Preferred Alternative) – Mixed Use

No federally listed or state-listed threatened or endangered species are currently documented at Topsham Annex. In a letter dated January 12, 2009, the USFWS indicated that no further action is required under Section 7 of the ESA. The Maine Department of Conservation commented in a letter of January 14, 2009 that no rare botanical features have been documented within the project area. No response was received from the Maine DIFW.

Although the Atlantic salmon is not present on Topsham Annex property, the species is found in nearby Merrymeeting Bay, at the mouth of the Cathance River. Storm water runoff from the Annex property by way of the Cathance River could potentially affect water quality in Merrymeeting Bay. Activities that disturb land on Annex property that are larger than 1 acre would require the developer to submit a notice of intent and an erosion and sedimentation control plan to the Maine DEP. With proper implementation of the plan and use of appropriate BMPs during construction activities, impacts on surface water quality due to erosion and off-site sedimentation would be minimized (see Section 4.10.2.1, Surface Water). In addition, redevelopment activities on the Annex property would not alter the species' physical habitat or prevent its upstream movement. Furthermore, no in-stream activities or reduction in riparian vegetation are anticipated. Therefore, the proposed action would not affect the Atlantic salmon population or habitat.

Alternative 2 – Business Park

This alternative assumes that the Topsham Annex developer would have obtained the necessary development rights and permits for the PPV housing area. Potential impacts on threatened and endangered species under Alternative 2 would be the same as those described under Alternative 1 above.

No Action Alternative

The No Action alternative is the retention of the Topsham Annex property by the U.S. government in caretaker status. No reuse or redevelopment would occur at the installation under this alternative. The existing PPV residential housing is expected to be occupied per the lease agreement. Since there would be no new development under this alternative, there would be no impacts on threatened or endangered species.

4.11 Unavoidable Adverse Impacts

Selection of either of the development alternatives would likely result in some localized adverse environmental effects. The magnitude of these effects would be minimized by adherence to Maine's planning and land use laws. Any development of the Topsham Annex property, however, will create temporary increases in sediment, dust, vehicle emissions, increase in noise, and changes in the visual landscape.

These adverse effects would be localized and restricted to the Topsham Annex property or the immediate area. Some adverse effects, such as those related to construction, would cease or abate over time. Although these impacts cannot be totally eliminated, they can be minimized or mitigated to acceptable levels.

4.12 Irreversible and Irretrievable Commitments of Resources

The fuel and energy used to construct either of the development alternatives would be irreversibly lost. Many of the construction materials would also represent irreversible losses, but some would be recycled during and after the life of the development. Neither the energy expended nor the construction materials used are expected to be locally or regionally significant. Also, considering that the Annex property is already developed and similar in nature to other land uses in the area, changes to the property from either development alternative are not considered significant.

5 Cumulative Impacts

5.1 Introduction

The focus of this cumulative impact assessment is on military and non-military actions in the local communities surrounding Topsham Annex. A geographic study area has been defined for each of the resources analyzed for potential cumulative effects. If the proposed action does not result in a direct or indirect impact on a resource area, then no further analysis of potential cumulative effects is necessary.

The time frame for cumulative impacts in the project area would start in 2011 and end in 2031. This is the same time frame evaluated in the environmental consequences sections.

Public documents prepared by state and local agencies were the primary sources of information for identifying reasonably foreseeable actions for this analysis. Local government agencies were also contacted to determine proposed development and transportation projects that could pose cumulative impacts when considered with the proposed action.

5.1.1 The Town of Topsham

To determine which projects should be included in the cumulative impacts analysis, the Navy interviewed the Midcoast Business Development and Planning staff (Holmes January 12, 2009) and reviewed the following community planning documents:

- *Topsham Comprehensive Plan 2005*, adopted May 19, 2005
- Topsham Planning Board Meeting Minutes 2008
- Brunswick MSAD No. 75 Task Force Meeting Minutes 2008.

Based on discussions with the MRRA and review of the documents listed above, the following projects were evaluated for potential cumulative impacts with the proposed action:

- An increase in local housing stock

Approximately 70 to 100 units of new housing have been constructed in Topsham each year since 2003. Construction of new housing units has been concentrated in the Cathance area of the town, which is bounded by U.S. Route 201 and State Route 24. Large residential developments such as Topsham Annex and The Highlands and Highland Green retirement communities are located in this area. Expansion at The Highlands has recently added about 140 units of new housing to the town's housing stock, and planned expansion phases at Highland Green could result in a total of approximately 600 residential units at this retirement community at full build-out. An additional subdivision (Topsham Crossing) with 60 units of housing planned at full build-out will also be constructed in the Cathance area (Town of Topsham Land Evaluation January 2007).

5.1.2 The Town of Brunswick

To determine which projects should be included in the cumulative impacts analysis, the Navy interviewed Midcoast Business Development and Planning staff (Holmes January 12, 2009) and reviewed the following community planning documents:

- *Brunswick 2008 Comprehensive Plan Update*, adopted by the Brunswick Town Council on September 15, 2008
- Brunswick Capital Improvement Program, Fiscal Years Ending 2006 – 2010
- Brunswick/MSAD No. 75 Task Force Meeting Minutes 2008
- School Enrollment Projections for Brunswick Final Report 2007
- Planning Decisions Memo Re: Brunswick Enrollment Projections 2007.

Based on discussions with the MRRA and review of the documents listed above, the following projects were evaluated for potential cumulative impacts with the proposed action:

- **Stowe Elementary School, McKeen Street.** Construction of this facility began in September 2009 and is scheduled for completion in September 2011.
- **Safe Routes to School.** The Maine Department of Transportation has a program to improve bicycle trails and sidewalks.
- **Brunswick Maine Street Station Redevelopment.** This mixed-use redevelopment project is situated on approximately 23 acres in downtown Brunswick and includes the development of retail/office space, hotel, residential condominiums, and a train station. Full build-out would include 122 residential units, 110,000 square feet of commercial/retail space, 60 hotel rooms, train station, and 710 parking spaces.
- **Industrial Parkway Redevelopment.** This project includes redeveloping and expanding on-site parking, adding fenced storage area for Maine Natural

Gas, and improving access. The proposed development will be serviced by municipal water and sewer.

- **Brunswick Nursing Home.** The7-acre nursing home project includes a 38,000 square foot building, 63 parking spaces, and indoor and outdoor common areas. The proposal and final plan was approved by the Planning Board in 2009.

- **Brunswick Commerce Center.** The town planning board approved this project in June 2009; it consists of a 94-acre, 19-lot, mixed-use subdivision. The purpose of the Commerce Center is to attract qualified employees from Portland, Augusta, Lewiston, and Bath, all located within a half-hour commuting distance.

- **Disposal and reuse of NAS Brunswick.** A separate EIS has been prepared for the disposal and reuse of NAS Brunswick.

A total of 8,720 housing units were located in the Town of Brunswick in 2000; of these, approximately 350 were vacant (Town of Brunswick September 15, 2008). Since 2000, more than 100 units of new housing have been constructed each year in the town. This rate of growth is projected to continue through 2010. The town's projected housing stock in 2010 is anticipated to be more than 9,500 units (Town of Brunswick September 15, 2008).

The disposal and reuse of NAS Brunswick could add an additional 2,763 units to the town's housing stock over a 20-year build-out period. The BRAC Commission recommended closure of NAS Brunswick on September 8, 2005. The recommendation to close NAS Brunswick was approved by President Bush and accepted by Congress on November 9, 2005. By law, the station must be closed before September 15, 2011. The Brunswick Local Redevelopment Authority was established in 2005 to prepare a redevelopment plan for the installation. Following adoption of the *Brunswick Naval Air Station Reuse Master Plan* (Brunswick Local Redevelopment Authority 2007) in 2007, the MRRA was established to implement the plan.

An EIS has been prepared to analyze the potential human and environmental effects resulting from the disposal of NAS Brunswick by the Navy and reuse by the MRRA in a manner consistent with the *Brunswick Reuse Master Plan.* The EIS evaluated two alternatives. The preferred alternative provided for a mix of land-use types and densities, preserved open space and natural areas, incorporated SmartGrowth principles such as pedestrian-friendly transportation, and retained the existing airfield for private aviation. The other alternative was a high-density residential and mixed use redevelopment scenario that also preserved open space and SmartGrowth principles but did not include reusing the airfield. Direct, indirect, and cumulative effects of the closure and reuse of NAS Brunswick were addressed in the EIS.

5.2 Cumulative Impact Analysis

5.2.1 Housing

5.2.1.1 Description of the Geographic Study Area

The geographic study area for housing impacts includes the towns of Topsham and Brunswick.

5.2.1.2 Cumulative Impact Assessment

Disposal and reuse of Topsham Annex and NAS Brunswick would increase the housing stock in both towns over the 20-year period between 2011 and 2031. Implementation of the *Topsham Annex Reuse Master Plan* could result in the construction of up to 146 housing units on the Annex property, while implementation of the *Brunswick Naval Air Station Reuse Master Plan* could result in the construction of up to 2,763 housing units on the NAS Brunswick property. The addition of a total of up to 2,911 housing units to the regional housing stock would result in cumulative effects on the regional housing market, including potential increases in the towns' vacancy rates. Adverse cumulative effects could be mitigated by introducing new housing into the regional housing market in phases over the 20-year build-out period, as well as by the MRRA making job-generating reuses a priority, especially in the near-term.

None of the other planned projects for the Town of Brunswick would increase the housing stock in the area.

5.2.2 Schools

5.2.2.1 Description of the Geographic Study Area

The geographic study area for educational infrastructure includes MSAD No. 75, which encompasses Topsham as well as the towns of Bowdoin, Bowdoinham, and Harpswell, and the Brunswick School Department, which serves the Town of Brunswick.

5.2.2.2 Cumulative Impact Assessment

MSAD No. 75 and the Brunswick School Department will each lose students as a result of the closure and reuse of Topsham Annex and NAS Brunswick. Total kindergarten through grade 12 (K-12) enrollment in MSAD No. 75 was approximately 2,800 students in October 2008 (Boundy December 9, 2008). In the short term, it is projected that MSAD No. 75 will lose approximately 50 students due to the closure of Topsham Annex alone and up to an additional 150 students due to the closure of NAS Brunswick (Maine School Administrative District 75 November 10, 2008a). Total K-12 enrollment in the Brunswick School Department was approximately 3,100 students in October 2008 (Oikle 2008). Following closure of NAS Brunswick it is projected that the Brunswick School Department would lose approximately 625 to 690 students (MSAD 75 November 10, 2008b; Planning Decisions, Inc. April 2007). Most of the decline in enrollment is expected in the high school grades (Planning Decisions, Inc. June 19, 2007).

Due to the loss of military family students, both schools would lose federal impact aid provided for financial assistance to school districts that have lost property tax

revenue due to the presence of tax-exempt federal property, such as military installations, within their jurisdictions (U.S. Department of Education 2008). MSAD No. 75 receives approximately $150,000 in federal impact aid annually (Gray December 18, 2008); this amount will be reduced to $50,000 during fiscal year 2009 (Gray December 17, 2008). The Brunswick School Department received an average of $956,600 annually between 1999 and 2008. The amount of federal impact aid provided to the Brunswick School Department increased from $537,000 in fiscal year 1999 to $1,447,000 in fiscal year 2008. Both school districts will lose their federal impact aid following closure of Topsham Annex and NAS Brunswick.

The loss of military students and federal impact aid in both school districts will result in cumulative effects in the short-term. To study potential mitigation strategies, the school districts have created the Brunswick/MSAD No. 75 Task Force. Proposals under investigation include sharing resources at the high school level through creation of a magnet school or magnet program and collaboration between the two school districts in the areas of purchasing, transportation, special education, administration, technology, and summer programming (Maine School Administrative District 75 November 10, 2008a).

Planning Decisions, Inc. prepared a report for the Brunswick School Department in 2007, *School Enrollment Projections for Brunswick Final Report 2006-07*. The report presented three sets of enrollment projections:

- The **2006-2007 "best fit" model** is based on historical birth and enrollment trends in the Town of Brunswick and does not take into account the closure of NAS Brunswick.

- The **"NAS Brunswick Closing Scenario 1"** assumes a rapid out-migration of military and civilian personnel that would begin to impact school enrollment in the 2007-2008 academic year and would fully impact school enrollment before the 2012-2013 academic year.

- The **"NAS Brunswick Closing Scenario 2"** assumes a slower out-migration of base personnel that would begin to impact school enrollment in the 2008-2009 academic year and would fully impact school enrollment before the 2013-2014 academic year (Planning Decisions, Inc. April 2007).

Both base disposal scenarios described above project a rebound in enrollment in Brunswick schools by the 2016-2017 academic year to similar numbers projected in the "best fit" model—approximately five to six years following disposal of NAS Brunswick in 2011 (Planning Decisions, Inc. April 2007). Because MSAD No. 75 schools would be losing fewer military students than Brunswick schools (approximately 200 in MSAD No. 75 compared with up to 690 in Brunswick), it can be assumed that enrollment numbers in MSAD No. 75 would also rebound by the 2016-2017 academic year or earlier. The disposal of Topsham Annex and NAS Brunswick thus would result in short-term adverse cumulative impacts on the local school districts. However, as noted above, these cumulative impacts

would eventually be negated through general population growth in the area and successful reuse of the closed properties.

5.2.3 Transportation

5.2.3.1 Description of the Geographic Study Area

The geographic study area for transportation infrastructure includes highways and major arterial roadways in the vicinity of Topsham Annex (Interstate 295, U.S. Route 201, and State Route 196).

5.2.3.2 Cumulative Impact Assessment

This section describes the projected cumulative traffic impacts of the Topsham Annex reuse when combined with the reuse of the Brunswick Naval Air Station as described in the *Traffic Impact Study* (Gorrill-Palmer Consulting Engineers, Inc. May 2009). The purpose of the study was to evaluate the existing roadway network and to identify impacts and any mitigation that may be necessary to accommodate traffic associated with implementation of the reuse of Topsham Annex and NAS Brunswick.

The capacity analysis (level of service [LOS]) for the intersections was completed using the Synchro/SimTraffic Version 6 analysis software package. Levels of service rankings range from ‘A’ to ‘F,’ where ‘A’ is very good and ‘F’ indicates very poor conditions. A level of service of ‘D’ or higher is desirable for a signalized intersection. At an unsignalized intersection, if the level of service falls below a ‘D,’ an evaluation should be made to determine if mitigation is warranted.

The cumulative capacity analysis included:

- **Alternative 1 in 2031.** The combination of 146 dwelling units and 70,000 square feet of office space at Topsham Annex and implementation of the preferred reuse plan for NAS Brunswick in the adjacent town.

- **Alternative 2 in 2031.** 660,000 square feet of business park and no residential component at Topsham Annex and implementation of the preferred reuse plan for NAS Brunswick in the adjacent town.

The capacity analyses for each of the two Topsham Annex alternatives occurring simultaneously with the preferred reuse alternative at NAS Brunswick showed a double to triple increase in the projected traffic volumes along the Route 196 to I-295 corridor. As a result, cumulative traffic impacts would be expected, so both alternatives would require mitigation to maintain an acceptable level of service. The cost of additional transportation improvements beyond accommodating population growth would be borne by the redevelopment authority or the developer.

5.2.3.3 Mitigation Recommendations

The following mitigation recommendations encompass conditions under Topsham Annex’s Alternative 1 along with the conditions that would exist if the NAS Brunswick Preferred Reuse Plan were implemented simultaneously.

Topsham Annex Alternative 1 with the NAS Brunswick Preferred Reuse Plan

The mitigation shown below was previously identified as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031.

- **Route 201 at Route 196/Coastal Connector**
  - Extend eastbound left-turn lane from 250 feet to 350 feet.
  - Extend westbound right-turn lane from 250 feet to 350 feet.
  - Convert outer southbound through/right-turn lane to an exclusive right-turn lane.

- **Route 201 at Can Am Drive**
  - Install a fully actuated traffic signal.
  - Convert southbound 250-foot bypass lane to a dedicated left-turn lane.

Additional suggested mitigation under Topsham Annex Alterative 1 and NAS Brunswick reuse includes the following:

- **Route 201 at Route 196/Coastal Connector**
  - Construct an additional 350-foot eastbound left-turn lane.
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Construct two additional westbound through lanes (for a total of four lanes).
  - Construct an additional northbound through lane.
  - Extend the southbound left-turn lane from 200 feet to 350 feet.
  - Construct an additional southbound 350-foot left-turn lane.

- **Route 201 at Eagles Way**
  - Construct a 350-foot westbound right-turn lane.
  - Construct an additional northbound through/right-turn lane.
  - Construct a 150-foot southbound left-turn lane.
  - Construct an additional southbound through lane.

- **Route 201 at Can Am Drive**
  - Construct a westbound 350-foot right-turn lane.
  - Construct an additional northbound through lane.

- **Route 196 at Hamilton Court**
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Construct two additional westbound through lanes (for a total of four lanes).

- **Route 196 at Mallet Drive/Crooker Access**
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Construct two additional westbound through lanes (for a total of four lanes).

- **Route 196 at Topsham Fair Mall Road**
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Transition the outer westbound left-turn lane to an inner through lane east of the intersection (i.e., at Mallet Drive).
  - Construct an additional westbound through lane (for a total of three lanes).

- **Route 196 at I-295 Northbound Ramps**
  - Construct an additional westbound through lane (for a total of three lanes).
  - Extend the eastbound right-turn lane from 150 feet to 500 feet.
  - Construct an additional westbound through lane (for a total of three lanes).
  - Construct an additional 200-foot northbound right-turn lane (for a total of three lanes).

- **Route 196 at I-295 Overpass**
  - Widen bridge to accommodate an additional westbound through lane.

- **Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound**
  - Install a fully actuated traffic signal.
  - Modify ramp geometry as needed to accommodate widening and signalization.
  - Construct an additional 300-foot northbound approach lane from the ramp (for a total of two lanes).

- **Route 196 at I-295 Southbound On-Ramp**
  - Install a fully actuated traffic signal.
  - Construct a 200-foot eastbound right-turn lane.
  - Extend the westbound left-turn lane storage to 300 feet for the existing lane.
  - Construct an additional 300-foot westbound left-turn lane.

- **Route 196 west of I-295**
  - Extend the two-lane section for westbound traffic to improve lane utilization.

Topsham Annex Alternative 2 with the NAS Brunswick Preferred Reuse Plan

The recommended mitigation shown below would most likely be needed to address existing deficiencies and normal traffic growth to the year 2031.

- **Route 201 at Route 196/Coastal Connector**
  - Extend the eastbound left-turn lane from 250 feet to 350 feet.
  - Extend the westbound right-turn lane from 250 feet to 350 feet.

- **Route 201 at Can Am Drive**
  - Install a fully actuated traffic signal.
  - Convert the southbound 250-foot bypass lane to a dedicated left-turn lane.

Additional mitigation suggested for cumulative impacts associated with implementation of Topsham Annex Alternative 2 and reuse of NAS Brunswick is as follows:

- **Route 201 at Eagles Way**
  - Construct a 350-foot *(increase of 200 feet from Alternative 1)* westbound right-turn lane.
  - Construct a 150-foot *(increase of 50 feet from Alternative 1)* southbound left-turn lane.

- **Route 201 at Can Am Drive**
  - Construct a westbound 350-foot right-turn lane.
  - Construct an additional northbound through lane.
  - Construct an additional 350-foot eastbound left-turn lane (for a total of two).

- **Route 196 at Hamilton Court**
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Construct two additional westbound through lanes (for a total of four lanes).

- **Route 196 at Mallet Drive/Crooker Access**
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Construct two additional westbound through lanes (for a total of four lanes).

- **Route 196 at Topsham Fair Mall Road**
  - Construct an additional eastbound through lane (for a total of three lanes).
  - Transition the outer westbound left-turn lane to an inner through lane east of the intersection (i.e., at Mallet Drive).
  - Construct an additional westbound through lane (for a total of three lanes).

- **Route 196 at I-295 Northbound Ramps**
  - Construct an additional westbound through lane (for a total of three lanes).
  - Extend the eastbound right-turn lane from 150 feet to 500 feet.
  - Construct an additional westbound through lane (for a total of three lanes).
  - Construct an additional 200-foot northbound right-turn lane (for a total of three lanes).

- **Route 196 at I-295 Overpass**
  - Widen the bridge to accommodate an additional westbound through lane.

- **Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound**
  - Install a fully actuated traffic signal.
  - Modify ramp geometry as needed to accommodate widening and signalization.
  - Construct an additional 300-foot northbound approach lane from the ramp (for a total of two lanes).

- **Route 196 at I-295 Southbound On-Ramp**
  - Install a fully actuated traffic signal.
  - Construct a 200-foot eastbound right-turn lane.
  - Extend the westbound left-turn lane storage to 300 feet for the existing lane.
  - Construct an additional 300-foot westbound left-turn lane.

- **Route 196 west of I-295**
  - Extend the two-lane section for westbound traffic to improve lane utilization.

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A Agency Correspondence

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

5090
BPMO NE/TS
Ser 09-069
January 8, 2009

Mr. Steve Timpano
Environmental Coordinator
Maine Department of Inland Fisheries and Wildlife
41 State House Station
Augusta, ME 04333-0041

Dear Mr. Timpano:

The BRAC Program Management Office Northeast is preparing an Environmental Assessment (EA) on behalf of the Navy for the disposal and reuse of Topsham Annex, a non-contiguous component of the Naval Air Station (NAS) Brunswick, in Topsham Sagadahoc County, Maine. The Annex will be closed in accordance with the Base Closure and Realignment Act of 1990, as amended in 2005, and it will be reused in a manner consistent with the Topsham Annex Reuse Master Plan. (A map depicting this facility is included as Attachment 1). We are requesting your office to identify populations of federally listed or candidate rare, threatened, or endangered species, or other significant features within project areas. The U.S. Fish and Wildlife Service is also being contacted to obtain similar information regarding federally-listed species and critical habitats.

The EA will analyze potential environmental impacts resulting from the disposal and reuse of Topsham Annex in accordance with the Base Closure and Realignment Act of 1990 and reuse of the surplus property in accordance with the *Topsham Annex Reuse Master Plan*. The property is shown on the attached portion of the USGS 7.5' quadrangle for Brunswick, Maine.

Topsham Annex occupies approximately 74 acres in the town of Topsham, Maine, north of Route 196 and east of Interstate 295. The largest part of the property, approximately 61 acres, contains 129 units of existing military housing and 48 units that have been demolished or identified for demolition. The remaining 13 acres contain a commissary, a training facility, office space, and a fire station. In addition to Navy facilities, the 13-acre "Military Triangle" operational area also includes a Department of Defense (DoD) reserve and recruiting center that serves the midcoast Maine region.

The EA will assess two alternatives for reuse of the 74-acre annex property, including a Mixed Use Scenario (Alternative 1) and a Business Park Scenario (Alternative 2), and the No Action Alternative. Alternative 1, the preferred alternative, is

the redevelopment scenario presented in the Reuse Master Plan and includes a combination of residential, parks and recreation, and business and community land uses. The Reuse Master Plan proposes development of approximately 60 acres (81%) of the total Annex property. Approximately 14 acres (19%) of the Annex would be dedicated to a variety of active and passive uses, including recreation, open space, and natural areas. At full build-out, the Annex property would be divided into four distinct land use areas (see Attachments 2 and 3):

- **Residential – Medium Density.** The 31 acres of existing residential housing north of Can Am Drive would be designated as medium-density residential land (up to four units per acre). The housing units could be renovated existing units or new construction.
- **Residential – High Density.** The 15 acres of existing residential housing south of Can Am Drive would be designated as higher-density residential land (up to 8 units per acre).
- **Parks and Recreation.** The 13-acre area located north of Can Am Drive and west of the existing housing area is intended to provide a mix of active and/or passive recreation and open space uses that are coordinated with and complement the adjacent athletic facilities owned by the local school district.
- **Business and Community.** The 14-acre Military Triangle area would include a mix of office, commercial, retail, light industrial, and other similar uses that would be consistent with adjacent residential and educational land uses. The business and community designation would also permit community and civic land uses such as governmental, cultural, human services, and parks and open space.

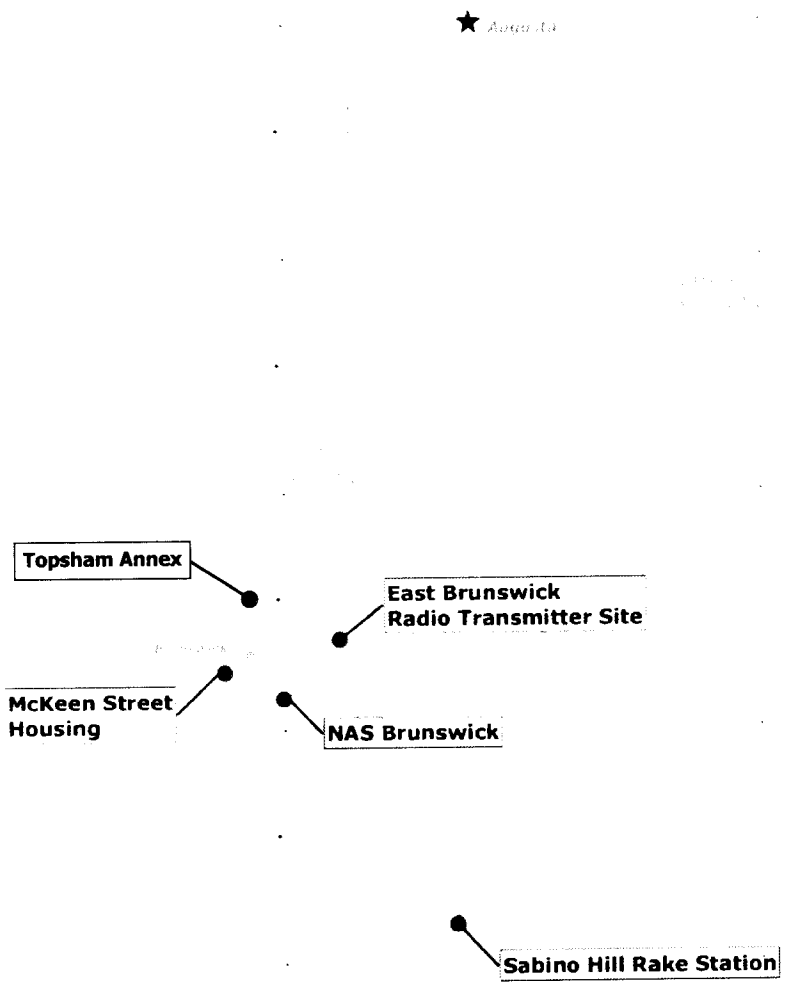
We would appreciate a response within 30 days to this request. If you have any questions, please contact Tom Stephan at (215) 897-4916.

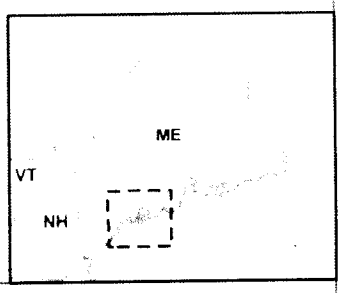
Thank you for your attention and prompt response.

Sincerely,

David Drozd
Director

Copy to:
NAVFAC MIDLANT (C. Hendrickson)
NASB (L. Joy)





NAS Brunswick
Managed Properties

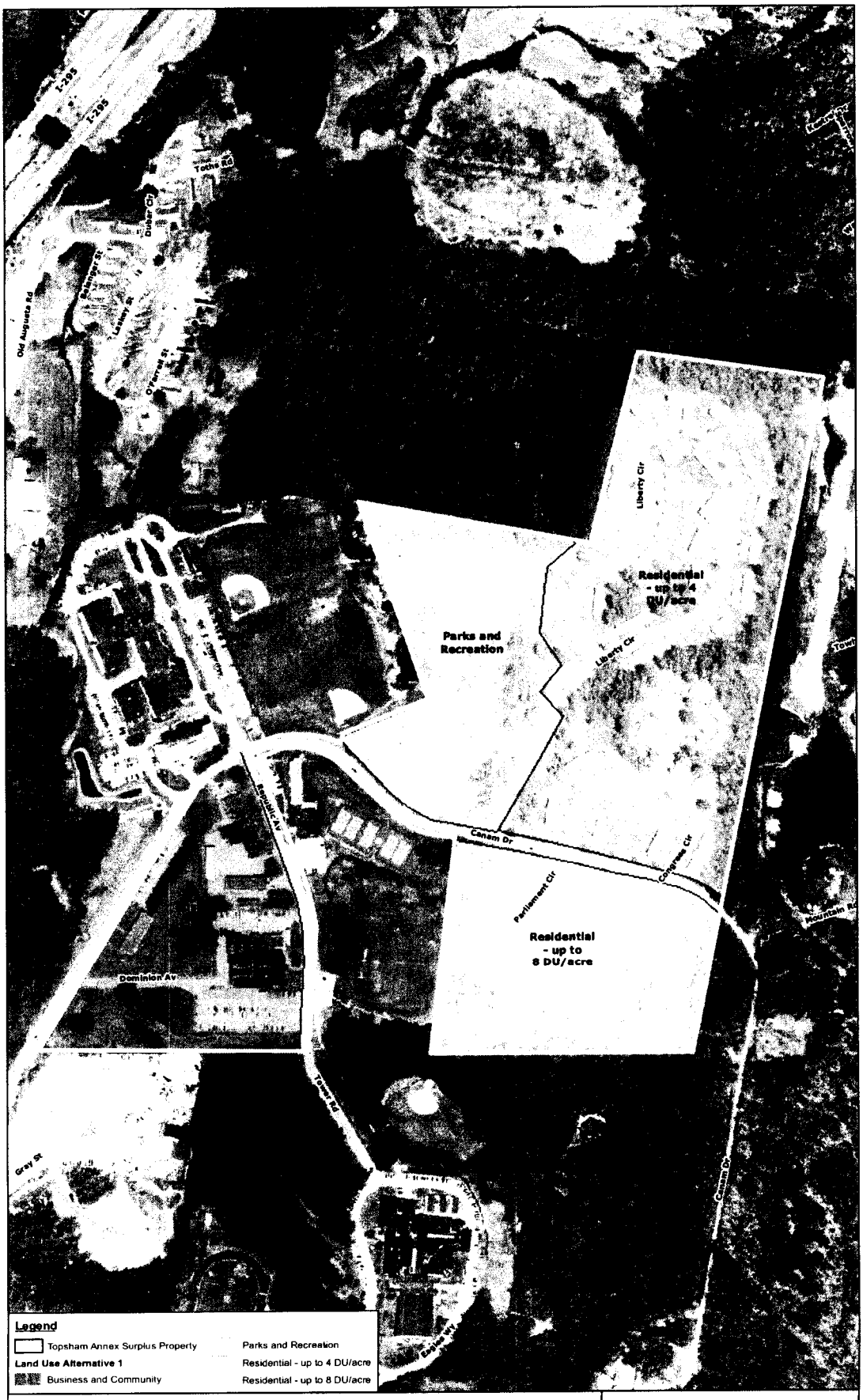
Major Highway

County Boundary

Attachment 1
NAS Brunswick Facilities, Maine

0 2.5 5 10 15 20

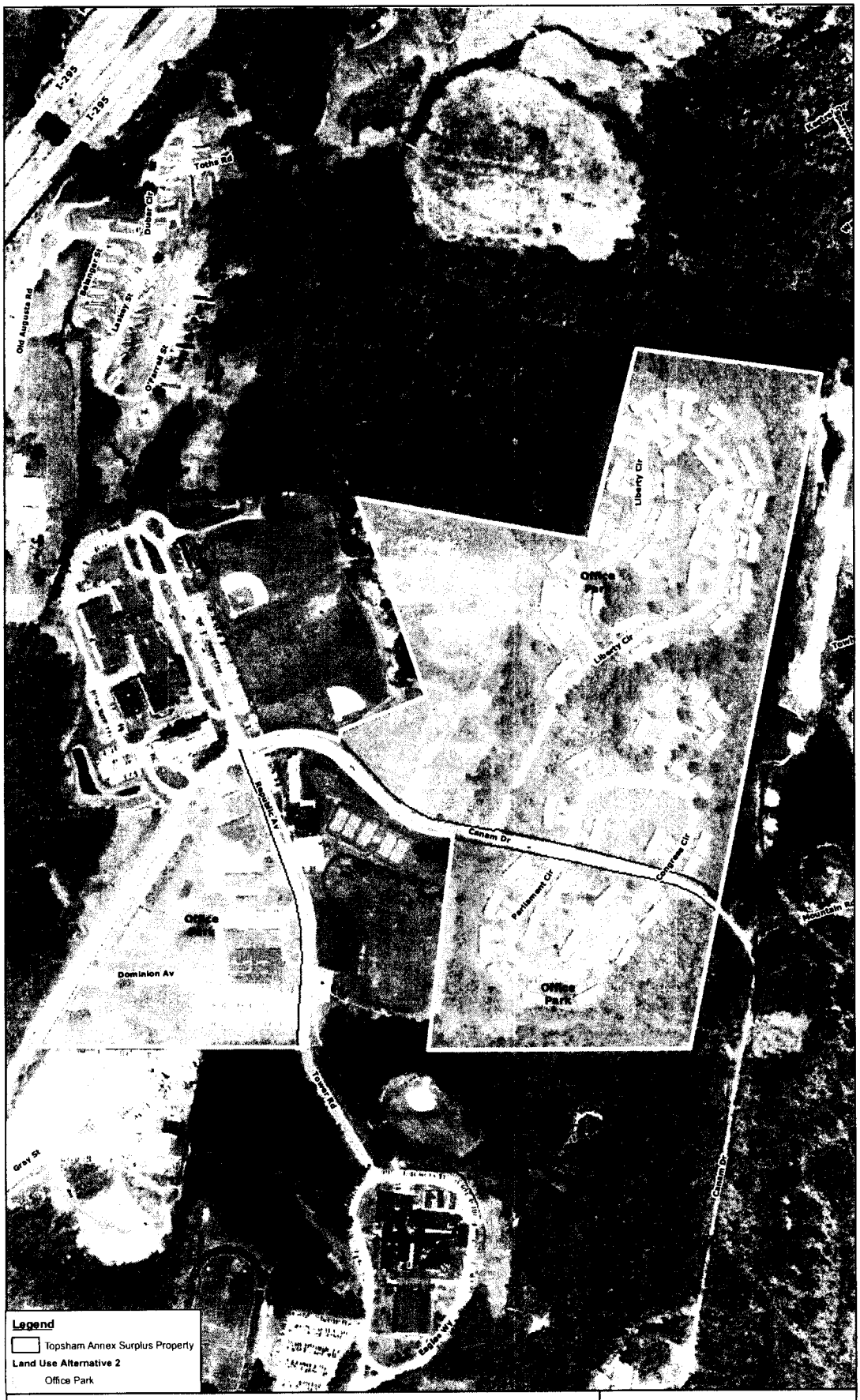
Miles



Attachment 2

0 100 200 400 600 800
Feet

Topsham Annex Site
Land Use Alternative #1
NAS Brunswick, Maine



Attachment 3

0 100 200 400 600 800
Feet

Topsham Annex Site
Land Use Alternative #2
NAS Brunswick, Maine

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maine Field Office – Ecological Services
1168 Main Street
Old Town, ME 04468
(207) 827-5938 Fax: (207) 827-6099

In Reply Refer To: 53411-2009-TA-0111
FWS/Region5/ES/MEFO

January 12, 2009

David Drozd, Director
Department of the Navy
Base Realignment and Closure
Program Management Office, Northeast
4911 South Broad Street
Philadelphia, PA 19112-1303

Dear Mr. Drozd,

Thank you for your letter dated January 8, 2009 requesting information or recommendations from the U.S. Fish and Wildlife Service. This letter provides the Service's response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250) and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location: Brunswick Naval Air Station EA, Topsham Annex

Federally listed species

Based on the information currently available to us, no federally threatened or endangered species under the jurisdiction of the Service are known to occur in the project area. Accordingly, no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

Other protected species

We have not reviewed this project for state-threatened and endangered wildlife, wildlife species of special concern, and significant wildlife habitats protected under the Maine Natural Resources Protection Act. I recommend that you contact the Maine Department of Inland Fisheries and Wildlife:

TAKE PRIDE® IN AMERICA

Steve Timpano
Maine Department of Inland Fisheries and Wildlife
284 State St.
State House Station 41
Augusta, ME 04333-0041
Phone: 207 287-5258

Atlantic salmon may occur in the project area. I recommend that you contact the Department of Marine Resources for additional information:

Norm Dube
Maine Department of Marine Resources
650 State St.
Bangor, ME 04401

I recommend that you contact the Maine Natural Areas Program for additional information on state-threatened and endangered plant species, plant species of special concern, and rare natural communities:

Lisa St. Hilaire
Maine Natural Areas Program
Department of Conservation
93 State House Station
Augusta, ME 04333
Phone: 207 287-8046

Bald eagles

Occasional, transient bald eagles (*Haliaeetus leucocephalus*) may occur in the area. Based on the information currently available to use, there are no bald eagle nests near your project. The bald eagle was removed from the federal threatened list on August 9, 2007 and is now protected from take under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. "Take" means to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. The term "disturb" under the Bald and Golden Eagle Protection Act was recently defined within a final rule published in the Federal Register on June 5, 2007 (72 Fed. Reg. 31332). "Disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

Further information on bald eagle delisting and their protection can be found at http://www.fws.gov/migratorybirds/baldeagle.htm.

Please consult with our new national bald eagle guidelines, which can found at http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

These Guidelines are voluntary and were prepared to help landowners, land managers and others meet the intent of the Eagle Act and avoid disturbing bald eagles. If you believe your project will result in taking or disturbing bald or golden eagles, please contact our office for further guidance. We encourage early and frequent consultations to avoid take of eagles.

If you have any questions, please call Mark McCollough, endangered species biologist, at (207) 827-5938 ext.12.

Sincerely,

Lori Nordstrom, Project Leader
Maine Field Office

STATE OF MAINE
DEPARTMENT OF CONSERVATION
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

JOHN ELIAS BALDACCI
GOVERNOR

PATRICK K. MCGOWAN
COMMISSIONER

January 14, 2009

David Drozd
Department of the Navy
Base Realignment and Closure
Program Management Office, Northeast
4911 South Broad Street
Philadelphia, PA 19112-1303

Re: Rare and exemplary botanical features, Topsham Annex, Brunswick Naval Air Station, Topsham, Maine.

Dear Mr. Drozd:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request of January 8, 2009 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in the Town of Topsham, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct

MAINE NATURAL AREAS PROGRAM
MOLLY DOCHERTY, DIRECTOR

PHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Janet Gannon
Associate Information Manager
Maine Natural Areas Program
207-287-8044

Janet.Gannon@maine.gov

Enclosures

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Mimulus ringens var. colpophilus Estuary Monkeyflower	1990-10-03	G5T2Q	S2	SC	Shores, meadows, and wet places
Carex vestita Clothed Sedge	1999-08-05	G5	S1	E	Dry sandy woods and clearings
Cypripedium reginae Showy Lady's-slipper	1907-07-09	G4	S3	T	Circumneutral peatlands (often at edges) or sunlit openings of mossy woods.
Aletris farinosa Unicorn Root	1884	G5	SX	PE	Dry or moist peats, sands and gravels
Carex vestita Clothed Sedge	1898-06-15	G5	S1	E	Dry sandy woods and clearings
Sassafras albidum Sassafras	1906	G5	S2	SC	Woods and thickets.
Lonicera dioica Mountain Honeysuckle	1933-09	G5	S2	E	Rocky banks, dry woods and thickets.

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Mikania scandens Climbing Hempweed	1916-08	G5	SH	PE	Thickets, swamps, and banks of streams.
Eleocharis rostellata Beaked Spikerush	1921-07-12	G5	S1	SC	Saline, limy or brackish marshes.
Lobelia siphilitica Great Blue Lobelia	1900	G5	SX	PE	Rich low woods and swamps
Bidens eatonii Eaton's Bur-marigold	1921-09-17	G2G3	S2	SC	Tidal shores.
Silver maple floodplain forest Silver Maple Floodplain Forest	2005-06-23	GNR	S3		Forests of floodplains of larger streams and river. Silver maple dominant. Soils alluvial and mineral. Soil surface may be dry during much of growing season. Variants: berms along the
White oak - red oak forest White Oak - Red Oak Forest	1995-09-08	GNR	S3		Deciduous to mixed forests dominated by red oak and white oak. White pine is occasional. Low heath shrubs and woodland sedge are characteristic flora of the forest floor.
Freshwater tidal marsh Freshwater Tidal Marsh	2006-09-26	G4?	S2		Intertidal areas where inflow of freshwater creates lower salinity than in brackish marshes. Often near the head of tide. Substrate mud or gravelly mud.

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Freshwater tidal marsh Freshwater Tidal Marsh	2006-09-26	G4?	S2		Intertidal areas where inflow of freshwater creates lower salinity than in brackish marshes. Often near the head of tide. Substrate mud or gravelly mud.
Alder shrub thicket Alder Thicket	1995-09-08	G4G5	S5		Tall, often dense shrubs on the borders of water bodies or open wetlands, in mineral soil or muck. Seasonally flooded, usually remaining saturated.
Bidens eatonii Eaton's Bur-marigold	1995-08-15	G2G3	S2	SC	Tidal shores.
Bidens hyperborea Estuary Bur-marigold	1995-08-15	G4	S3	SC	Localized in fresh to brackish estuaries.
Bidens hyperborea Estuary Bur-marigold	2005-09-08	G4	S3	SC	Localized in fresh to brackish estuaries.
Crassula aquatica Pygmyweed	1991-07-17	G5	S2S3	SC	Margins of pools and on fresh to tidal shores.
Crassula aquatica Pygmyweed	1991-09-14	G5	S2S3	SC	Margins of pools and on fresh to tidal shores.

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Samolus valerandi ssp. parviflorus Water Pimpernel	1991-09-14	G5T5	S3	SC	Shallow water and wet soils.
Limosella australis Mudwort	1991-09-14	G4G5	S3	SC	Fresh to brackish shores and wet sands.
Mimulus ringens var. colpophilus Estuary Monkeyflower	1990-08-14	G5T2Q	S2	SC	Shores, meadows, and wet places
Mimulus ringens var. colpophilus Estuary Monkeyflower	1990-09-25	G5T2Q	S2	SC	Shores, meadows, and wet places
Mimulus ringens var. colpophilus Estuary Monkeyflower	1990-10-06	G5T2Q	S2	SC	Shores, meadows, and wet places
Sagittaria calycina var. spongiosa Spongy Arrow-head	1990-09-25	G5T4	S3	SC	Tidewater marshes and streams.
Sagittaria calycina var. spongiosa Spongy Arrow-head	1991-09-14	G5T4	S3	SC	Tidewater marshes and streams.

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Sagittaria calycina var. spongiosa Spongy Arrow-head	1992-07-30	G5T4	S3	SC	Tidewater marshes and streams.
Sagittaria rigida Stiff Arrow-head	2000-10-25	G5	S2	T	Calcareous or brackish mud or water.
Lipocarpha micrantha Dwarf Bulrush	1995-08-16	G5	S1	T	Sandy borders of ponds and streams.
Eriocaulon parkeri Parker's Pipewort	1998-09-10	G3	S3	SC	Fresh to brackish tidal mud and estuaries.
Eriocaulon parkeri Parker's Pipewort	1995-08-16	G3	S3	SC	Fresh to brackish tidal mud and estuaries.
Eriocaulon parkeri Parker's Pipewort	1990-09-25	G3	S3	SC	Fresh to brackish tidal mud and estuaries.
Cardamine longii Long's Bitter-cress	1998-09-10	G3	S2	T	Tidal estuary.

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Bidens hyperborea Estuary Bur-marigold	1998-09-10	G4	S3	SC	Localized in fresh to brackish estuaries.
Sagittaria calycina var. spongiosa Spongy Arrow-head	1998-09-10	G5T4	S3	SC	Tidewater marshes and streams.
Bartonia paniculata Screwstem	2001-09-30	G5	S1	T	Wet peat and sand.
Eleocharis aestuum Tidal Spikerush	2000-08-27	G3	S2	SC	
Streamshore ecosystem Streamshore Ecosystem	2001-09-19	GNR	S4		Communities bordering and directly influenced by the open-water portion of a stream. Most are palustrine because streams are too small to exert much of an effect on
Carex siccata Dry Land Sedge	2002-09-26	G5	S2	SC	Dry, sterile or sandy soil, in open places in light shade
Sagittaria filiformis Narrow-leaf Arrowhead	2002-07-19	G4G5	S2	SC	

Rare and Exemplary Botanical Features in the Project Vicinity

1/14/2009

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Lycopodiella alopecuroides Foxtail Bog-clubmoss	2000-11-29	G5	S1	E	
Cardamine longii Long's Bitter-cress	2000-10	G3	S2	T	Tidal estuary.
Bidens eatonii Eaton's Bur-marigold	1998-09-10	G2G3	S2	SC	Tidal shores.
Bidens eatonii Eaton's Bur-marigold	2005-06-22	G2G3	S2	SC	Tidal shores.
Carex vestita Clothed Sedge	2001-06-01	G5	S1	E	Dry sandy woods and clearings
Carex siccata Dry Land Sedge	2001-06-01	G5	S2	SC	Dry, sterile or sandy soil, in open places in light shade
Little bluestem - blueberry sandplain grassland Sandplain Grassland	2007-05-08	GNR	S1		Open grassland and shrubland on excessively well-drained soils of outwash deposits. Lowbush blueberry and grasses (especially little bluestem) dominant. These occur in

Rare and Exemplary Botanical Features in the Project Vicinity

Documented within a Four-Mile Radius of the Topsham Annex, Topsham, Maine.

Scientific Name / Common Name	Last Seen	Global Rarity Rank	State Rarity Rank	State Protection Status	Habitat Description
Carex vestita Clothed Sedge	2008-06-13	G5	S1	E	Dry sandy woods and clearings

STATE RARITY RANKS

S1	Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
S2	Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
S3	Rare in Maine (20-100 occurrences).
S4	Apparently secure in Maine.
S5	Demonstrably secure in Maine.
SH	Known historically from the state, not verified in the past 20 years.
SX	Apparently extirpated from the state, loss of last known occurrence has been documented.
SU	Under consideration for assigning rarity status; more information needed on threats or distribution.
S#?	Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program.

GLOBAL RARITY RANKS

G1	Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
G2	Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
G3	Globally rare (20-100 occurrences).
G4	Apparently secure globally.
G5	Demonstrably secure globally.
GNR	Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E	ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
T	THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC	SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
PE	Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

Visit our website for more information on rare, threatened, and endangered species!
http://www.mainenaturalareas.org/docs/rare_plants/factsheets.php

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

January 26, 2009

David Drozd, Director
Department of the Navy
Base Realignment and Closure
Program Management Office, Northeast
4911 South Broad Street
Philadelphia, PA 19112-1303

Project: MHPC #2430-08 - Environmental Assessment for Disposal and Reuse of Topsham Annex; Naval Air Station (NAS) Brunswick
Town: Topsham, ME

Dear Mr. Drozd:

In response to your recent request, I have reviewed the information received December 18, 2008 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act.

With regard to archaeological resources, the Commission concurs with the conclusions of the Navy's prior studies that there is only low to moderate archaeological sensitivity in the Topsham Annex property. Thus, we conclude that there is no need to conduct further archaeological investigations.

With regard to architectural resources, and in accordance with the recommendations of the prior cultural resource investigations, we believe that additional survey information will be necessary only for those properties (if any) that have or will reach the 50 year old threshold in the course of the undertaking. Any such properties will need to be evaluated in accordance with our survey guidelines and associated forms, which are both downloadable from our website: www.maine.gov/mhpc/project_review (see tabs in the white box on the left side of the webpage under Project Review). Please also find attached our revised photographic policy to be referenced in lieu of the policy in our on-line survey manual. Any computer generated template other than that provided by MHPC must be approved by MHPC prior to submission. No changes to the survey forms are to be made without consulting MHPC.

Once the information mentioned above is received, we will forward a response regarding the results of our evaluation. Please contact Robin Stancampiano of our staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

Enc.

PHONE: (207) 287-2132

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FAX: (207) 287-2335

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JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

Maine Historic Preservation Commission

Photographic Policy

Supplement to the Guidelines for Identification: Architecture and Cultural Landscapes Survey Manual. 26 June 2008

Architectural Survey

The following is required of grant funded, MDOT, and Federal agency surveys and encouraged with volunteer surveys.

A. Black and White Film.

Each resource shall be photographed with black and white film. This film shall be developed and a contact print made from the negatives. The negatives and contact print shall be indexed to the survey forms and the corresponding digital images (see below) and submitted with the survey.

If the facilities are available, surveyors may choose to print each film image, utilizing a true black and white photographic process and printed preferably on non-resin coated fiber based paper. The finished photographs need to be thoroughly washed, printed with borders, and measure 3 ½ x 5 inches. These photographs may be mounted on the survey forms using archivally safe adhesive, such as Elmer's Glue. Photographs attached with paperclips or staples will not be accepted.

B. Digital Images

An identical (or nearly identical) image shall be taken of each resource with a digital camera. The original image size must be no smaller than 1600 x 1200pixels at 300 pixles per inch. The digital images shall be saved in RGB color format. All digital images shall be burned onto a CD-R Gold or DVD-R Gold disk, and labled with project name/ pin #/ surveyor name and date. The individual images must be labeled in a manner that allows them to be linked to the specific survey form.

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State House Station 65
Augusta, Maine 04333

Each digital image shall be uploaded onto survey form in the MHPC/MDOT Survey website, (once it is on-line). A test image, in black and white, shall then be digitally printed directly onto a blank survey form (using the required cover-stock). If the printed image is clear (no bleeding), then all the survey images can be printed directly onto the forms (in black and white), when the forms are printed from the website. If the test image is not clear, then all the digital images should be printed onto photographic paper as specified below and this image will then be affixed to the submitted copy of the survey using archivally safe adhesive. The digital images shall be indexed to the survey forms and the black and white negatives.

Digital image printing: The following printer/ink/paper combinations have been found to meet a 75 year archival standards. All digital images printed for architectural surveys must meet this standard.

__NOTE__: The list below includes products known at this time to meet the minimum documentation specifications established for the submission of architectural surveys. The list is not intended to be restrictive or comprehensive, and does not constitute, and shall not be taken as, endorsement by the Maine Historic Preservation Commission of any of the specific products or manufacturers identified.

Epson Stylus Photo 1400	Epson ClariaA Hi-Definition Inks@	Premium Presentation Paper Matte Epson Ultra Premium Glossy Photo Paper Epson
Epson Style Mate	Epson Picture Mate Pigment Inks	PictureMate Paper
Epson Stylus CX4800 (contains scanner)	Epson DURABrite Ultra Pigmented Inks	Premium Presentation Paper Matte Epson Ultra Premium Glossy Photo Paper Epson
Hewlett-Packard Photosmart 325 and 475	HP Vivera 95 dye-based Inks	HP Premium Plus Photo Paper
Hewlett-Packard Photosmart 8450	HP Vivera dye-based Inks	HP Premium Plus Photo Paper
Hewlett-Packard Photosmart B9180	HP Vivera Pigment Inks	HP Advanced Photo Paper Glossy HP Photo Matte Paper
Hewlett-Packard Photosmart C6180 (all in one series)	HP Vivera Inks	HP Premium Plus Photo Paper
Lexmark Home Photo Center P6250	Lexmark Evercolor Dye/ Pigment Hybrid Photo Inks	Lexmark Premium Photo Paper High Gloss

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National Register Photographs.

All photographs provided to MHPC for submission with a National Register of Historic Places nomination must conform to the National Register Photographic Policy as stated by the National Park Service. This policy is available on line at:
http://www.nps.gov/history/nr/policyexpansion.htm

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

BPMO NE/TS
Ser 09-147
May 12, 2009

Ms. Kathleen Leyden
Maine Coastal Program Director
State Planning Office
38 State House Station
187 State Street
Augusta, Maine 04333-0038

Dear Ms. Leyden:

This office is preparing an Environmental Assessment (EA) for the closure and reuse of property at Topsham Annex. We are requesting your review of the enclosed Coastal Consistency Determination and respond with your confirmation of potential project impacts.

The EA will analyze potential environmental impacts resulting from the closure and reuse of Topsham Annex in accordance with the Base Closure and Realignment Act of 1990 and reuse of the surplus property in accordance with the *Topsham Annex Reuse Master Plan*.

The EA will assess two alternatives including a Mixed Use Scenario (Alternative 1) and a Business Park Scenario (Alternative 2), as well as a No Action Alternative. Alternative 1, the preferred alternative, is the redevelopment scenario presented in the Reuse Master Plan and includes a combination of residential, parks and recreation, and business and community land uses.

If you have any questions, please contact Tom Stephan at (215) 897-4916.

Thank you for your attention and prompt response.

Sincerely,

David Drozd
Director

Enclosure:
Coastal Consistency Determination

Copy to:
NAVFAC MIDLANT (C. Hendrickson)
NASB (L. Joy)

DEPARTMENT OF THE NAVY
BRAC PROGRAM MANAGEMENT OFFICE-NE

COASTAL ZONE MANAGEMENT ACT OF 1972
COASTAL CONSISTENCY DETERMINATION

CLOSURE AND REUSE OF PROPERTY AT TOPSHAM ANNEX
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

11 May 2009

Proposed Federal Agency Activity

The Navy proposes to close and dispose of the Topsham Annex, a 74-acre property associated with Naval Air Station (NAS) Brunswick, Maine, as required by the Base Closure and Realignment Act (BRAC) of 2005.

Topsham Annex is located in the northern portion of the Town of Topsham in Sagadahoc County, Maine. The annex is located approximately 1 mile north of the Androscoggin River and approximately 2.7 miles north-northwest of NAS Brunswick (see attached figure). The 74-acre property is comprised of a housing area (approximately 61 acres) and an operational area (approximately 13 acres) called the Military Triangle. The housing area is further divided into three subareas: an undeveloped property on the western side north of Can Am Drive, existing residential housing north of Can Am Drive, and existing residential housing south of Can Am Drive.

The Topsham local redevelopment authority (TLRA) and the citizens of the Topsham identified the preferred redevelopment/reuse alternative as mixed use. This includes redevelopment of the annex with a combination of residential, parks and recreation, and business and community land uses.

The preferred redevelopment/reuse alternative would include the following components:

Residential - Medium Density. The 31 acres of existing residential housing north of Can Am Drive would be designated as medium-density residential, with up to four residential units per acre. This parcel would have a net development area of approximately 19 acres comprised of a total of 76 dwelling units.

Residential - High Density. The 15 acres of existing residential housing south of Cam Am Drive would be designated as higher-density residential land, with up to eight residential units per

acre. This parcel would have a net development area of approximately 9 acres comprised of a total of 72 dwelling units.

Business and Community. The 14-acre Military Triangle area would include a mix of office, commercial, retail, light industrial, and other similar uses that could be consistent with adjacent residential and educational land uses. Redevelopment would include the renovation and/or reuse of the majority of the existing buildings on the property (approximately 70,000 square feet of mixed business space). The former auto storage facility (approximately 2,986 square feet) would be demolished. The open space created by this demolition and an additional small area of existing undeveloped space could potentially be available for new construction.

Parks and Recreation. The 13-acre area located north of Can Am Drive and west of the existing housing area would provide a mix of active and/or passive recreation and open space uses.

Infrastructure. In addition, the proposed action would require infrastructure improvements including on-site roadway upgrades, replacement of water distribution and wastewater collection systems, and installation of new storm water systems. If the need warrants, a parking lot, approximately 180,000 square feet (4 acres), would be constructed in the Military Triangle area.

Background

The Coastal Zone Management Act of 1972 (CZMA), codified in 16 U.S. Code Section 1451 *et seq.*, and administered by the Secretary of Commerce through the Office of Coastal Resources Management of the National Oceanic and Atmospheric Administration, established a comprehensive regulatory scheme for effective management, beneficial use, protection, and development of the coastal zone and its natural resources. CZMA encourages coastal states and provides a mechanism for them to develop, obtain federal approval for, and implement a broad-based coastal management program (CMP).

Federal approval of a state CMP triggers an obligation for federal executive agencies, under CZMA Section 307, to make coastal consistency determinations for their activities. Section 307 applies to federal agency activity in a state's coastal zone and also to federal agency activity outside the coastal zone, if the activity affects a land or water use in or natural resources of the coastal zone. Federal agency activity

includes activity performed by a federal agency, approved by a federal agency, or for which a federal agency provides financial assistance. Such activity, whether direct, indirect, or cumulative, must be demonstrated to be consistent with the enforceable policies of the state's CMP, that is, fully consistent with those policies, unless full consistency is otherwise prohibited by federal law. There are no categorical exemptions to or exclusions from Section 307.

Federally owned property is excluded from a state coastal zone; however, federal agency activity on federal property that is reasonably likely to affect use or natural resources of a state coastal zone, is subject to the federal consistency obligation.

Maine has a federally approved Coastal Zone Management Program known as the Maine Coastal Program (MCP). The enforceable policies of the MCP are contained in the following twenty "core laws:" (1) Natural Resources Protection Act; (2) Mandatory Shoreland Zoning Law; (3) Site Location of Development Law; (4) Erosion Control and Sedimentation Law; (5) Storm Water Management Law; (6) Subdivision Law; (7) Maine Rivers Act; (8) Maine Waterway Development and Conservation Act; (9) Coastal Management Policies Act; (10) Protection and Improvement of Air Law; (11) Protection and Improvement of Waters Act; (12) Nutrient Management Act; (13) Land Use Regulation Law; (14) Maine Hazardous Waste, Septage and Solid Waste Management Act; (15) Nuclear Facility Decommissioning Laws; (16) Oil Discharge and Pollution Control Law; (17) Maine Resources Law; (18) Coastal Barrier Resources System Act; (19) Maine Endangered Species Act; and (20) Fee Schedule.

The State of Maine's federally approved coastal zone extends from the inland boundary of all 147 coastal towns that contain tidal waters to the outer limit of the State's territorial jurisdiction, which is 5.6 km (3 NM) into the Atlantic Ocean.

This Coastal Consistency Determination is submitted under the CZMA and its implementing regulations, and Chief of Naval Operations Instruction 5090.1C, "Navy Environmental Readiness Program Manual."

Analysis of Enforceable Policies

Natural Resources. This policy, based on Maine's Natural Resources Protection Act, has four parts: wetlands and water bodies, coastal sand dunes, significant wildlife habitat

(including vernal pools), and scenic impacts. The proposed redevelopment/reuse is not reasonably likely to affect wetlands and water bodies, coastal sand dunes, or significant wildlife habitat in Maine's coastal zone, or to have scenic impacts on Maine's coastal zone. The Reuse Master Plan was developed to avoid or minimize impacts on natural resources such as wetlands. A three-acre wetland was identified in the area planned for parks and recreation, which will not be developed. A smaller wetland (<1 acre) was identified along the property boundary south of the commissary parking lot. Indirect impacts on wetlands on-site and adjacent to the site resulting from construction activities would be minimized by using Maine's BMPs for erosion and sediment control.

In the manner and to the extent required by federal law other than CZMA, the redevelopment authority or the developer is responsible for obtaining and complying with state permits or approvals applicable to regulated activity affecting wetlands and water bodies and significant wildlife habitat. Compliance with any such permits and approvals will achieve consistency with this program to the maximum extent practicable.

Shoreland Zoning. This policy is based on Maine's Mandatory Shoreland Zoning Act. Zoning ordinances adopted by the Town of Topsham under or in conformity with the Mandatory Shoreland Zoning Act are applicable to the proposed activity. The proposed activity is therefore consistent with this program to the maximum extent practicable. Full consistency is precluded because of the doctrine of federal supremacy.

Site Location of Development. This policy is based on Maine's Site Location of Development Law. Due to the size and nature of the potential activities, the proposed redevelopment/reuse is not reasonably likely to affect traffic movement or roads in Maine's coastal zone, or to cause or involve unreasonable adverse effects on air quality, unreasonable alteration of climate, unreasonable alternation of natural drainage ways, unreasonable effect on storm water run-off, erosion or sedimentation, unreasonable adverse effect on surface water quality, unreasonable adverse effect on ground water quality, unreasonable adverse effect on ground water quantity, buffer strips, excessive noise, historic sites, unusual natural areas, access to direct sunlight, unreasonable effects on scenic character, or wildlife and fisheries in Maine's coastal zone. Additionally, the proposed activity does not involve storage of

petroleum products or excavation of rock, borrow, topsoil, clay, or silt.

In the manner and to the extent required by federal law other than CZMA, the redevelopment authority or the developer is responsible for obtaining and complying with state permits and approvals applicable to regulated activity affecting air and water quality, storm water management, erosion and sediment control, cultural resources, and wildlife and fisheries. Compliance with any such permits or approvals will achieve consistency with this program to the maximum extent practicable.

Erosion Control and Sedimentation. This policy is based on Maine's Erosion Control and Sedimentation Law. The proposed action will involve redevelopment/reuse that may affect the use or natural resources of Maine's coastal zone. Erosion and sedimentation control would be the responsibility of the developer or the redevelopment authority. The proposed activity would be fully consistent with this policy.

Storm Water Management. This policy is based on Maine's Storm Water Management Law. The redevelopment would involve a land disturbance of greater than one acre. In the manner and to the extent required by federal law other than CZMA, the redevelopment authority or the developer will be required to obtain and comply with state permits applicable to regulated activity affecting storm water management. Compliance with any such permits would achieve consistency with this program to the maximum extent practicable.

Subdivisions. This policy is based on Maine's Subdivision Law. Subdivision ordinances adopted by the Town of Topsham under or in conformity with the Maine Subdivision Law are applicable to the proposed redevelopment/reuse. Redevelopment of the property under the TLRA plan would be required to comply with state and local subdivision requirements.

Rivers. This policy is based on the Maine Rivers Act, the enforceable policies of which provides special protection for outstanding rivers, and requires a comprehensive river resource management plan for each watershed with a hydropower project licensed, or to be licensed, under the Federal Power Act. The proposed redevelopment/reuse will not involve the disturbance of any rivers, and will not create a new dam or diversion project constituting a hydropower project. The proposed redevelopment/reuse would be fully consistent with this policy.

Waterway Development and Conservation. This policy is based on the Maine Waterway Development and Conservation Act, which regulates application and permitting for the construction of hydropower projects and for the reconstruction or structural alteration of certain projects, including water storage projects. The proposed redevelopment/reuse will not involve any hydropower or water storage development or repair. The proposed redevelopment/reuse would have no effect on a use or natural resources covered by this policy.

Coastal Management Policies. This policy is based on Maine's Coastal Management Policies Act. The Act contains the following nine policies: port and harbor development, marine resource management, shoreline management and access, hazard area development, state and local cooperative management, scenic and natural areas protection, recreation and tourism, water quality, and air quality. In the manner and to the extent required by federal law other than CZMA, the developer or redevelopment authority will take into consideration all the policies included in this program, ensuring the proposed redevelopment/reuse is consistent to the maximum extent practicable. As a result, the proposed redevelopment/reuse would have no effect on some of the uses or natural resources covered by this policy, and would be fully consistent with the applicable portions of the policies.

Protection and Improvement of Air. This policy is based on Maine's Protection and Improvement of Air Law. The proposed redevelopment/reuse is a BRAC action; therefore, consideration of conformity with the Clean Air Act is not required because the redevelopment/reuse is not a federal action. Thus, no Record of Non-Applicability (RONA) with the Clean Air Act or Conformity Determination is required.

Air emissions, however, were calculated and compared with the National Ambient Air Quality Standards (NAAQS) to ensure that air quality in the region will not be significantly affected by the proposed redevelopment/reuse.

The air quality analysis indicated that potential construction and vehicle emissions from redevelopment/reuse would have a negligible impact on air quality in the region. Under the No Action alternative, there would be minimal air emissions generated resulting from the continued maintenance of the facility.

The proposed redevelopment/reuse would therefore be fully consistent with this policy.

Protection and Improvement of Waters. This policy is based on Maine's Protection and Improvement of Waters Act, the enforceable policies of which include aquatic nuisance species control, pollution control requirements, enforcement provisions, and a water classification program. The Act makes it unlawful to dispose of any pollutants, either alone or in conjunction others, "in such manner as will, after reasonable opportunity for dilution, diffusion or mixture with the receiving waters or heat transfer to the atmosphere, lower the quality of those waters below the minimum requirements of such classifications." The proposed redevelopment/reuse is not anticipated to contribute to the discharge of pollutants into the waters of the State. The proposed redevelopment/reuse would be fully consistent with this policy.

Nutrient Management. This policy is based on Maine's Nutrient Management Program Act, which regulates farms with livestock or crops for which nutrients are kept on site. The proposed redevelopment/reuse will not contribute to any nutrient increases to nearby surface waters or require a nutrient management plan. The proposed redevelopment/reuse would have no effect on a use or natural resources covered by this policy.

Land Use Regulation. This policy is based on Maine's Land Use Regulation law, and deals with issues related to planning, zoning and subdivision control. The proposed redevelopment/reuse is subject to planning, zoning or subdivision requirements. Redevelopment of the property under the TLRA plan would be required to comply with Maine land use regulations.

Hazardous Waste, Septage and Solid Waste Management. This policy is based on Maine's Hazardous Waste, Septage and Solid Waste and Management Act. The Act regulates asbestos abatement, hazardous and solid waste management, tire stockpiles, hazardous matter control, the Maine Hazardous Waste Fund, waste oil, uncontrolled hazardous substance sites, sale and distribution of brominated flame retardants, electronic waste, mercury-added products and services, municipal recycling, facility siting and development, and toxics use and hazardous waste reduction. The proposed redevelopment/reuse may require asbestos abatement and hazardous waste management. Future property owners would be notified regarding environmental conditions of the property, including Areas of Concern, asbestos-containing material, and lead-based paint. The Navy is working with the Maine DEP to identify additional actions that may be required to address

remaining contaminants in the soil and the need to develop institutional controls such as restrictive covenants for future property transfers. Proper notification and use of certified personnel would occur with respect to abatement activities. If any other waste is generated, it will be managed by the developer or reuse authority in accordance with this policy. The proposed redevelopment/reuse would therefore be fully consistent with this policy.

Nuclear Facility Decommissioning. This policy is based on Maine's Nuclear Facility Decommissioning Laws. The proposed redevelopment/reuse will not involve any nuclear facility decommissioning activities. The proposed redevelopment/reuse would, therefore, have no effect on a use or natural resources covered by this policy.

Oil Discharge Prevention and Pollution Control. This policy is based on Maine's Oil Discharge Prevention and Pollution Control Law. The program deals with the hazards posed by transfers of oil, petroleum products, and their by-products. It requires the prompt containment and removal of pollution occasioned by such transfers and related activity; provides procedures whereby persons suffering damage from those occurrences may be promptly made whole; and establishes a fund to provide for the inspection and supervision of those activities and guarantees payment of reasonable damage claims.

The Navy has prepared an Environmental Condition of Property (ECP) Report documenting existing hazardous materials and waste located on Topsham Annex. Also, a Site Management Plan was prepared to describe the current status of remediation projects and areas of environmental concern.

There are no Installation Restoration Program (IRP) sites located on the Topsham Annex property; therefore, redevelopment of the property would not impact any IRP sites. There are several areas of concern that have been identified that may require further investigation. Prior to transfer or lease of BRAC property, the Navy will prepare a Finding of Suitability to Transfer/Lease (FOST/FOSL). The FOST/FOSL summarizes how the applicable requirements and notification for hazardous substances, petroleum products, and other regulated materials have been satisfied and whether the property is environmentally suitable for transfer or lease. The document will also contain information on any long term remedies and the responsibilities for maintenance and reporting. Therefore, the proposed activity

would have no effect on a use or natural resources covered by this policy.

Marine Resources. This policy is based on Maine's Marine Resources Law. Maine defines marine resources as "all renewable marine organisms and the entire ecology and habitat supporting those organisms." The Marine Resources Law establishes regulations to conserve and develop marine and estuarine resources; to conduct and sponsor scientific research; to promote and develop the Maine coastal fishing industries; and to advise and cooperate with local, state, and federal officials concerning activities in coastal waters. The proposed redevelopment/reuse will not involve any activities that would affect fisheries, marine organisms, shellfish, or any other activities covered by this law. The proposed activity would therefore have no effect on a use or natural resources covered by this policy.

Coastal Barrier Resources System. This policy is based on Maine's Coastal Barrier Resources System Act, which limits expenditure of state funds to encourage or support activities incompatible with the ability of certain coastal barrier areas within the state. The proposed redevelopment/reuse of the property involves no coastal barrier resources. Therefore, the proposed activity would be fully consistent with this policy.

Endangered Species. This policy is based on Maine's Endangered Species Act. There are no known threatened or endangered species at Topsham Annex (Department of the Navy BRAC Program Management Office 2006). Consultations with USFWS, Maine Department of Inland Fisheries and Wildlife, and Maine Department of Conservation Natural Areas Program confirmed that there are no threatened or endangered species or habitat for those species at the Topsham Annex. The majority of the Topsham Annex is developed, and the vegetation that does exist consists primarily of maintained lawn with scattered trees. The areas planned for redevelopment have been previously developed, and are not considered significant natural areas, nor do they possess significant scenic value.

The proposed redevelopment/reuse of the property would, therefore, be fully consistent with this policy.

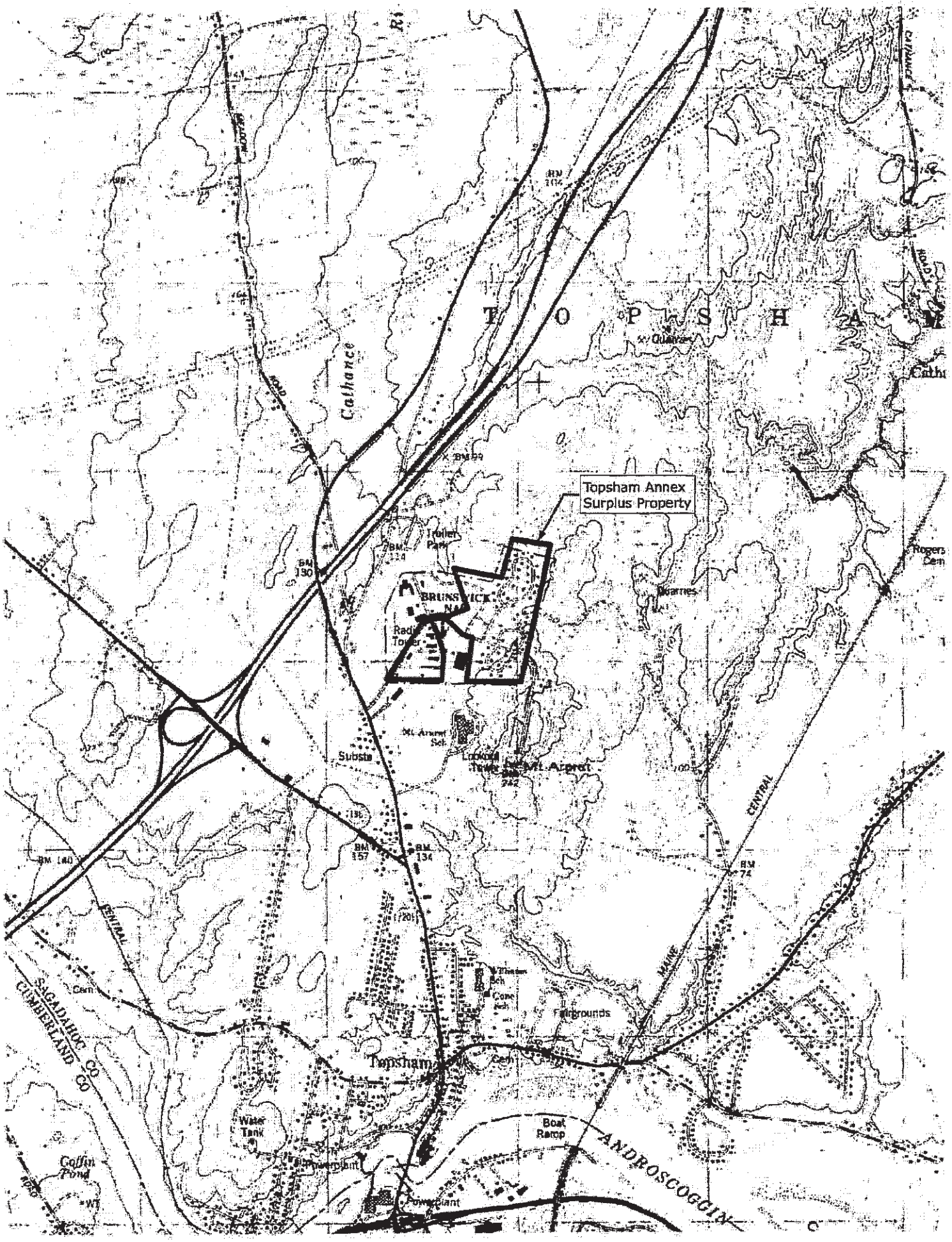
Fee Schedule. This policy is based on Maine's Fee Schedule. The policy establishes procedures to charge applicants for costs incurred in reviewing license and permit application. The developer or reuse authority would be subject to such fees and,

therefore, would be consistent with this program to the maximum extent practicable.

Conclusion. Based on the foregoing analysis, the proposed redevelopment/reuse is reasonably likely to affect use of natural resources of Maine's coastal zone, but would be conducted by the developer or reuse authority in a manner that is consistent with the MCP to the maximum extent practicable.

DAVID DROZD
Director
BRAC PMO, NE

Date


Topsham Annex
Surplus Property
T O P S H A M
Cathance
Quarries
Trailer Park
BRUNSWICK
Radio Tower
Mt. Arpret
Substa
Lookout Tower
Mt. Arpret
Fairgrounds
Topsham
Water Tank
Powerplant
Boat Ramp
ANDROSCOGGIN
SAGADAHOC CO
CUMBERLAND CO
Coffin Pond
CENTRAL
MAINE
Rogers Cem

SPO Maine State Planning Office
Executive Department

JOHN ELIAS BALDACCI
Governor

MARTHA E. FREEMAN
Director

June 25, 2009

David Drozd, Director
Department of the Navy
Base Realignment and Closure
Program Management Office, Northeast
4911 South Broad Street
Philadelphia, Pennsylvania 19112-1303

RE: CZMA consistency determination; Closure and Reuse of Topsham Annex

Dear Mr. Drozd:

This letter is in response to your letter dated May 12, 2009, providing the Navy's determination pursuant to Section 307 of the Coastal Zone Management Act that its proposed action, closure and disposal of the Topsham Annex ("Annex"), a 74-acre property associated with Brunswick Naval Air Station, is consistent to the maximum extent practicable with the enforceable policies of the Maine Coastal Program ("MCP"). The MCP does not have an enforceable policy that applies to the proposed closure of the Annex and its disposal through transfer to another entity. Accordingly, further federal consistency review of this action is not required.

As noted in your consistency determination, subsequent, specific actions to redevelop the former Annex will be subject to state environmental and land use laws and related permit requirements, as well as federal consistency review potentially, as applicable.

Please contact Todd Burrowes on my staff (tburrowes@maine.gov; 207-287-1496) if you have questions or need additional information.

Thanks for your prompt attention to this matter.

Sincerely,

Kathleen Leyden
Director, Maine Coastal Program

OFFICE LOCATED AT: 184 STATE STREET, 38 STATE HOUSE STATION, AUGUSTA MAINE
PHONE: (207) 287-6077 Internet: www.maine.gov/spo FAX: (207) 287-6489

B

Maine Historic Preservation Commission Agency Programmatic Agreement and Correspondence

PROGRAMMATIC AGREEMENT (PA)

BETWEEN THE UNITED STATES NAVY AND THE MAINE STATE HISTORIC PRESERVATION OFFICER (SHPO) ON THE LEASE AND PROPERTY TRANSFER OF PROPERTIES LOCATED AT NAVAL AIR STATION BRUNSWICK, MAINE AND TOPSHAM ANNEX, TOPSHAM, MAINE

WHEREAS, the United States Navy (Navy) is responsible for implementation of applicable provisions of the Defense Base Closure and Realignment Act of 1990 (Pub. L. 101-510), as amended in 2005, and the Navy is proceeding with the closure and disposal of excess and surplus property in a manner consistent with the "2005 Report to the President of Defense Base Closure and Realignment Commission," dated 8 September 2005; and

WHEREAS, the Navy has determined that the disposal of Naval Air Station (NAS) Brunswick and the McKeen Street Housing Annex, East Brunswick Radio Transmitter Site, and Topsham Annex in a manner consistent with the NAS Brunswick & Topsham Reuse Master Plans may have an effect upon historic properties, which may be eligible for inclusion in the National Register of Historic Places (NRHP); and

WHEREAS, the Navy has consulted with the Maine State Historic Preservation Officer (SHPO) pursuant to 36 CFR § 800.2 implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f); and

WHEREAS, the Navy has consulted with the Passamaquoddy (Indian Township and Pleasant Point Reservations), the Aroostook Band of the Micmac, the Penobscot, and the Houlton Band of the Maliseet tribes, to identify if they have religious or cultural interest in the Area of Potential Effects (APE) and,

WHEREAS, the Navy has consulted with the: Pejepscot Historical Society, and the towns of Brunswick and Topsham pursuant to 36 CFR § 800.2 implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f); and

WHEREAS, the Navy has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect and invited comment from the ACHP and after consultation ACHP has elected not to be a signatory to this PA; and

WHEREAS, the Navy is providing the Federal Aviation Administration, the United States Coast Guard, the United States Army and other potential property recipients the opportunity to acquire properties at NAS Brunswick to support their reuse plans; and

WHEREAS, the Navy has prepared detailed evaluations of eligibility of the buildings and structures pursuant to the National Register of Historic Places (NRHP) at NAS Brunswick and

Topsham Annex in the documents titled "Historic Architecture Comprehensive Survey Update of Buildings and Structures at NAS Brunswick, ME" dated May 2010; and "Comprehensive Architectural Survey of 14 buildings in the Military Triangle of Topsham Annex of NAS Brunswick, Maine" May 2010; and

WHEREAS, the Navy has previously identified five Ammunition magazines as eligible for inclusion in the NRHP. Navy's current survey efforts documented an additional 76 architectural resources falling within the period of significance of NAS Brunswick and its associated five remote annexes (WW II and Cold War). 15 of the newly evaluated resources are eligible for listing in the NRHP under the Program Comment for WW II and Cold War Era (1939-1974) Ammunition Storage Facilities (2006) for a total of 20; and,

WHEREAS, the remaining 61 architectural resources within NAS Brunswick have been determined, in consultation with the SHPO to be not eligible for inclusion in the NRHP; and,

WHEREAS, The Navy has conducted comprehensive survey of the Military Triangle of Topsham Annex and has determined, in consultation with the SHPO, that Facility 333 is individually eligible for inclusion in the NRHP; and,

WHEREAS, the Navy has conducted a comprehensive archaeological identification survey on NAS Brunswick, the findings of which are contained in "Comprehensive Archaeological Identification Survey at NAS Brunswick, Brunswick, Maine" dated February 2010, and "Modification 01: Comprehensive Archaeological Identification Survey at NAS Brunswick, Brunswick, Maine" dated June 30 2010; and

WHEREAS, the Navy's Archaeological survey efforts have been completed, the Navy has, in consultation with the SHPO determined that the 706 acres surveyed represent a completed survey; and

WHEREAS, the Navy's survey efforts resulted in the recordation of 35 archaeological sites, 27 of which are recommended for evaluative testing pursuant to Maine State Archaeological guidelines.

NOW, THEREFORE, the Navy and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations to take into account effect of the undertaking on the historic properties, and evidences compliance with Section 106 of the NHPA in accordance with 36 CFR 800.6(c) and 36 CFR 800.14.

I. STIPULATIONS

NAS BRUNSWICK, BRUNSWICK, ME

A. The Navy prepared and forwarded to the SHPO the final report titled "Historic Architecture Comprehensive Survey Update of Buildings and Structures at NAS Brunswick, ME" dated May 2010, and "Comprehensive Archaeological Identification Survey at NAS Brunswick, Brunswick Maine" dated August 2010.

1. The Maine SHPO has reviewed the "Historic Architecture Comprehensive Survey Update of Buildings and Structures at NAS Brunswick, ME" received on 14 June 2010 to continue consultation pursuant to Section 106 of the National Historic Preservation Act, as amended. The final report conforms to the SHPO's requirements for architectural survey projects in Maine. The SHPO concurs with the findings regarding the eligibility of historic resources at NAS Brunswick.
2. The Maine SHPO has reviewed the "Comprehensive Archaeological Identification Survey at NAS Brunswick, Brunswick , Maine" dated August 2010 (received on 14 June 2010) to continue consultation pursuant to Section 106 Of the National Historic Preservation Act, as amended. The final report conforms to the SHPO's requirements for archaeological survey projects in Maine. The SHPO concurs with the findings regarding the eligibility of historic resources at NAS Brunswick.

B. Due to the potential adverse effect to NAS Brunswick on identified archaeological sites or historic resources from the disposal and reuse of these properties, property recipients shall be required to contact the SHPO prior to any development that may affect these sites. In order to ensure the further protection of the historic properties, the covenants attached as Attachment A will be included in any long-term lease in furtherance of conveyance and/ or deed of transfer by the Navy on which any archaeological sites or historic resources are located. The covenants provide for enforcement by either the Navy or the SHPO, and shall be binding on all property recipients and future transferees. (Figures 1 and 2)

TOPSHAM ANNEX, TOPSHAM, ME

A. The Navy prepared and forwarded to the SHPO the final report titled "Comprehensive Architectural Survey of 14 buildings in the Military Triangle of Topsham Annex of NAS Brunswick, Maine" May 2010.

1. The Maine SHPO has reviewed the "Comprehensive Architectural Survey of 14 buildings in the Military Triangle of Topsham Annex of NAS Brunswick, Maine", May 2010, to continue consultation pursuant to Section 106 of the National Historic Preservation Act, as amended. The final report conforms to the SHPO's requirements for architectural survey projects in Maine. The SHPO concurs with the findings regarding the eligibility of historic resources at Topsham Annex.

2. In consultation with SHPO, it has been determined that no additional archaeological investigations are warranted for Topsham Annex.

B. Due to the potential adverse effects to the eligible historic property located at Topsham Annex, (Building 333), property recipients shall be required to contact the SHPO prior to any development that may affect this site. In order to **ensure long-term preservation of the property's historic significance,** the covenants attached as Attachment A will be included in any long-term lease in furtherance of conveyance and/ or deed of transfer by the Navy. The covenants provide for enforcement by either the Navy or the SHPO, and shall be binding on all property recipients and future transferees. (Figure 3)

II. RESOLVING OBJECTIONS

A. Should any party object to any action or recommendation pertaining to the implementation of this PA the parties shall consult for no more than fifteen (15) calendar days to resolve the objection. If the Navy determines that the objection cannot be resolved, the Navy shall forward all documentation relevant to the objection to the SHPO including the Navy's proposed resolution of the objection. Within thirty (30) calendar days following receipt of all pertinent documentation, the SHPO shall exercise one of the following options:

i. Advise the Navy the SHPO concurs in its proposed resolution of the objection, whereupon the Navy shall resolve the objection accordingly; or

ii. Provide the Navy with recommendations, which the Navy shall take into account in reaching a final decision regarding its proposed resolution of the objection; or

iii. Notify the Navy it will comment pursuant to 36 CFR § 800.6(b), and proceed to comment. The resulting comment shall be taken into account by the Navy in accordance with 36 CFR § 800.6(c)(2).

B. Should the SHPO not exercise one of the foregoing options within thirty (30) calendar days following receipt of all pertinent documentation, the Navy may assume the SHPO concurrence in its proposed resolution of the objection.

C. The Navy shall take into account any SHPO recommendation or comment provided in accordance with this stipulation with reference only to the subject of the objection; the Navy's responsibility to carry out all actions under this PA that are not the subject of the objection shall remain unchanged.

D. At any time during implementation of the measures stipulated in this PA should an objection to any measure within this PA or its manner of implementation be raised by a

member of the public, the Navy shall consider the objection and consult as needed with the objecting party, the SHPO, and other parties to this PA.

III. AMENDMENTS AND NON-COMPLIANCE

A. If either of the parties to this PA believes the terms of the PA cannot be carried out or the PA should be amended, that party shall immediately consult with the other party to develop amendments to the PA. The process of amending the PA shall be the same as that used in creating the original PA. If the parties cannot agree upon an amendment, the disagreement shall be addressed pursuant to Stipulation IV.

B. If the terms of this PA are not carried out, the Navy shall immediately notify the SHPO and shall consult to determine if amendments are necessary. If the terms of this PA are not carried out, the Navy shall not take or sanction any action which would cause an adverse effect to the historic property or any action that would foreclose the SHPO consideration of modifications or alternatives to the Undertaking.

C. Execution of this PA by the Navy and the SHPO, and implementation of its terms, evidence that the Navy has afforded the Maine SHPO an opportunity to comment on the effect of this Undertaking and its effects on the historic properties.

IV. SIGNATURES

9-27-10

BRAC PMO NE — DATE

9/23/10

State Historic Preservation Officer, Maine — DATE

Attachment A

TO BE INCLUDED IN ALL NAS BRUNSWICK LEASES IN FURTHERANCE OF CONVEYANCE AND DEEDS WHERE ARCHAEOLOGICAL SITES ARE LOCATED:

Covenant re: Archeological Matters: As more fully described in the document attached to this Quitclaim Deed and incorporated herein as Exhibit A, areas within NAS Brunswick ME have been identified and are referred to within, collectively, as Archeological Sites. GRANTEE, its successors, and its assigns hereby covenant at all times to the Maine State Historic Preservation Officer ("ME SHPO") to maintain and preserve the Archeological Site as follows:

1. No disturbance of the ground surface or any other thing shall be undertaken or permitted to be undertaken on the Archeological Sites that would affect the physical integrity of the Archeological Site without first obtaining the prior written permission of the ME SHPO (signed by a fully authorized representative thereof). Should the ME SHPO require, as a condition to granting of such permission, that GRANTEE conduct a Phase II survey, archeological data recovery operations or other activities designed to mitigate the adverse effect of the proposed activity on the Archeological Site, GRANTEE shall at its own expense conduct such activities in accordance with the Secretary of the Interior's Standards and Guidelines for Archeological Documentation (48 FR 447344-37) and such standards and guidelines as ME SHPO may specify (including, but not limited to, standards and guidelines for research design, field work, analysis, preparation and dissemination of reports, disposition of artifacts and other materials, consultation with Native American or other organizations, and re-interment of human remains).

2. GRANTEE shall make every reasonable effort to prohibit any person from vandalizing or otherwise disturbing the Archeological Site and shall promptly report any such disturbance to the ME SHPO.

3. GRANTEE will allow the ME SHPO or his/her designee, upon reasonable advance notice to GRANTEE, an annual inspection of the Archeological Sites in order to ascertain whether GRANTEE is complying with the conditions of this preservation covenant.

4. In the event of a violation of this covenant, and in addition to any remedy now or hereafter provided by law, GOVERNMENT, or (upon 60

days prior notice to GOVERNMENT) ME SHPO, may, following reasonable written notice to GRANTEE, institute a suit to enjoin said violation, seek damages, return of any Archeological artifacts removed, require, if appropriate, the restoration of the Archeological Site or to seek any other remedy available at law or equity.

5. The failure by GOVERNMENT or by the ME SHPO to exercise any right or remedy granted under this covenant shall not have the effect of waiving or limiting the exercise by GOVERNMENT or by the ME SHPO of any other right or remedy or the use of such right or remedy at any other time.

6. This covenant shall be binding on GRANTEE, its successors, and its assigns in perpetuity. The restrictions, stipulations, and covenants contained herein shall be inserted by GRANTEE, its successors, and its assigns, verbatim or by express reference in any deed or other legal instrument by which such party divests itself of either the fee simple title or any lesser estate in the archeological site or any part thereof.

7. This covenant shall be a binding servitude upon the real property that includes the Archeological Site and shall be deemed to run with the land. Recording this Quitclaim Deed shall constitute conclusive evidence that GRANTEE agrees to be bound by the foregoing conditions and restrictions and to perform the obligations herein set forth.

TO BE INCLUDED IN ALL NAS BRUNSWICK AND TOPSHAM ANNEX LEASES IN FURTHERANCE OF CONVEYANCE AND DEEDS WHERE HISTORIC RESOURCES ARE LOCATED:

Covenant re: Historic Preservation: NAS Brunswick and Topsham Annex have been identified as containing historic structures eligible for listing in the National Register of Historic Places (collectively, "Historic Resources"). GRANTEE, on behalf of itself, its successors, and its assigns, hereby covenants to the ME SHPO to preserve and maintain the Historic Resources in a manner that preserves and maintains the attributes that contribute to the eligibility of the Historic Resources for listing in the National Register of Historic Places. Such attributes include exterior features (including facades and fenestration, scale, color, materials, and mass), interior features determined significant in consultation with the ME SHPO, and views from, to, and across the property.

1. All parcels on which historic resources are situated within NAS Brunswick and Topsham Annex as described below in the document attached

to this Quitclaim Deed and incorporated herein as Exhibit A, will be preserved and maintained in accordance with The Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (National Park Service). No construction, alteration, rehabilitation, remodeling, demolition, disturbance of the ground surface, or other action shall be undertaken or permitted to be undertaken within NAS Brunswick and Topsham Annex that would materially affect the integrity or the appearance of the attributes described above without prior approval by the ME SHPO and a record of such.

2. To ensure that the long-term preservation of the property's historic significance will be preserved, all parcels on which historic resources are situated within NAS Brunswick and Topsham Annex as identified in Exhibit A, will be maintained in accordance with The Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (National Park Service). No construction, alteration, rehabilitation, remodeling, demolition, disturbance of the ground surface, or other action that would materially affect the integrity or the appearance of the attributes described above of that property situated within NAS Brunswick ME and Topsham Annex ME shall take place without prior notice to and consultation with the ME SHPO in accordance with paragraphs 2.A through 2.C below. Such notice shall describe in reasonable detail the proposed undertaking and its expected effect on the integrity or appearance of the property situated within NAS Brunswick ME and Topsham Annex ME.

A. Within thirty (30) calendar days of the ME SHPO's receipt of notification provided by GRANTEE pursuant to the foregoing provisions of this paragraph 2, the ME SHPO will respond to GRANTEE in writing as follows:

(i) that GRANTEE may proceed with the proposed undertaking without further consultation; or

(ii) that GRANTEE must initiate and complete consultation with the ME SHPO before GRANTEE may proceed with the proposed undertaking.

B. If the ME SHPO fails to respond to GRANTEE's written notice, as described in the above paragraph 2.A, within thirty (30) calendar days of the ME SHPO's receipt of the same, GRANTEE may proceed with the proposed undertaking without further consultation with the ME SHPO.

C. If the response provided to GRANTEE by the ME SHPO pursuant to the above paragraph 2.A requires consultation with the ME SHPO, both parties shall so consult in good faith to arrive at mutually agreeable and appropriate measures that GRANTEE will implement to mitigate any adverse effects associated with the proposed undertaking. If the parties are unable to arrive at such mutually agreeable mitigation measures, GRANTEE shall, at a minimum, undertake recordation for the concerned property in accordance with the Secretary of Interior standards for recordation and any applicable state standards for recordation, or in accordance with such other standards to which the parties may mutually agree prior to proceeding with the proposed undertaking. Pursuant to this covenant, any mitigation measures to which GRANTEE and the ME SHPO mutually agree, or any recordation that may be required, shall be carried out solely at the expense of GRANTEE.

3. Upon acquisition of NAS Brunswick ME and Topsham Annex ME, GRANTEE shall take prompt action to secure the Historic Resources from the elements, vandalism, and arson, and shall undertake any stabilization that may be required to prevent deterioration. GRANTEE will be responsible for this security and stabilization, to the same extent required of GOVERNMENT, at the time of deed transfer. GRANTEE will make every effort to retain or reuse, to the extent practicable, the historic structures.

4. In the event that archeological materials are encountered during construction or ground disturbance activities, work shall cease in the immediate area until the ME SHPO is consulted and provides written permission to recommence work. Should the ME SHPO require, as a condition of the granting of such permission, that GRANTEE conduct archeological phase II survey, data recovery operations or other activities designed to mitigate the potential adverse effect of the proposed activity on the archeological site, GRANTEE shall at its own expense conduct such activities in accordance with the Secretary of the Interior's Standards and Guidelines for Archeological Documentation (48 FR 447344-37) and such standards and guidelines as the ME SHPO may specify, including, but not limited to, standards and guidelines for research design, field work, analysis, preparation and dissemination of reports, disposition of artifacts and other materials, consultation with Native American or other organizations, and re-interment of human remains.

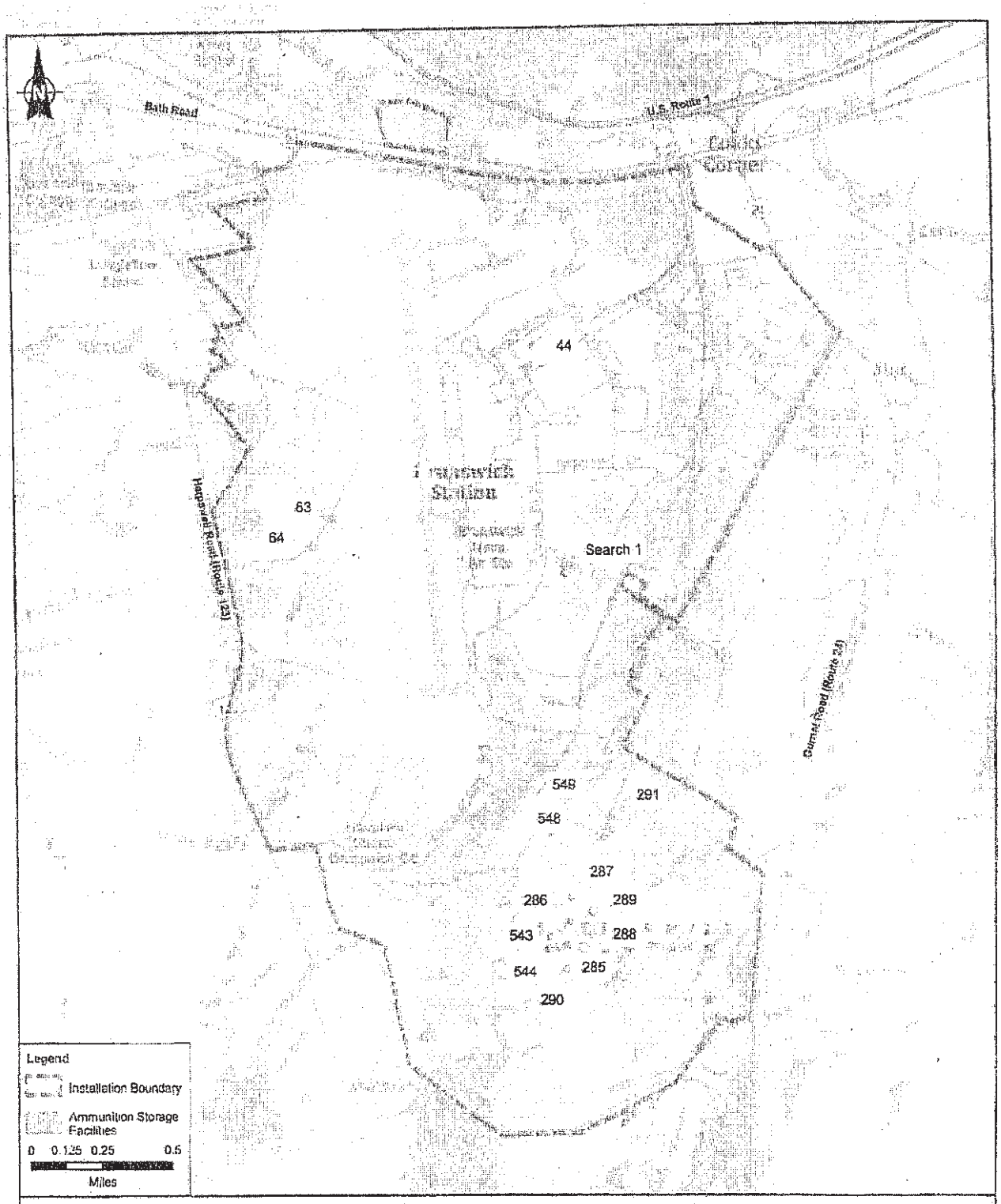
5. GRANTEE will allow the ME SHPO or his/her designee, upon reasonable advance written notice to GRANTEE, to conduct an annual inspection of the Historic Resources in order to ascertain whether GRANTEE is complying with the conditions of this preservation covenant.

6. GRANTEE will provide the ME SHPO with a written summary of actions taken to implement the provisions of this preservation covenant within one (1) year after the effective date of the transfer of NAS Brunswick ME and Topsham Annex ME. Similar reports will be submitted to the ME SHPO biannually thereafter until the Navy has disposed the excess portions of the NAS Brunswick ME and Topsham Annex ME properties.

7. In the event of a violation of this covenant, and in addition to any remedy now or hereafter provided by law, GOVERNMENT, or (upon 60 days prior notice to GOVERNMENT) ME SHPO, may, following reasonable written notice to GRANTEE, institute a suit to enjoin said violation, seek damages, require the restoration of the Archeological Site or to seek any other remedy available at law or equity.

8. The failure of GOVERNMENT or the ME SHPO to exercise any right or remedy granted under this covenant shall not have the effect of waiving or limiting the exercise by GOVERNMENT or the ME SHPO of any other right or remedy or the use of such right or remedy at any other time.

9. This covenant is binding on GRANTEE, its heirs, successors and assigns in perpetuity. The restrictions, stipulations and covenants contained herein shall be inserted by GRANTEE, its successors and assigns, verbatim or by express reference in any deed or other legal instrument by which it divests himself/herself/itself of either the fee simple title or any lesser estate in NAS Brunswick ME and Topsham Annex ME or any part thereof.



Note: An additional five ammunition magazines (59, 60, 62, 71, and 626) (not shown) were not documented as part of the 2010 Historic Architecture Comprehensive Survey Update, but are eligible for listing in the NRHP under the 2006 Program Comment for World War II and Cold War Era (1939-1974) Ammunition Storage Facilities.

Figure 1
Historic Resources
NAS Brunswick, Maine

Source: Historic Architecture Comprehensive Survey Update of Buildings and Structures at NAS Brunswick, Maine SEARCH, May 2010.
ESRI World Topographic Map, USGS, FAO, NPS, EPA, NRCAN, GeoBase, ESRI, DeLorme, TANA AND, other suppliers.

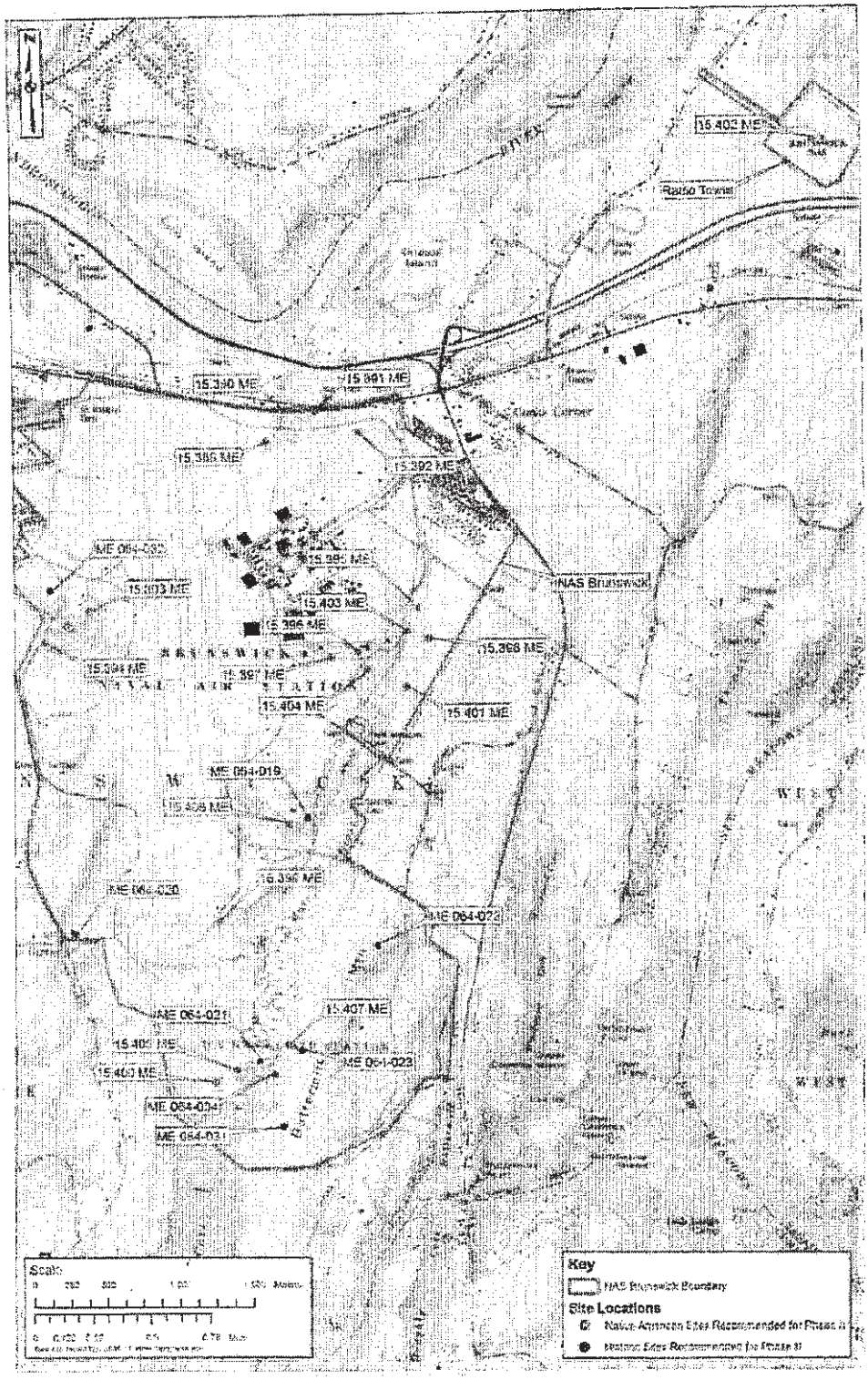
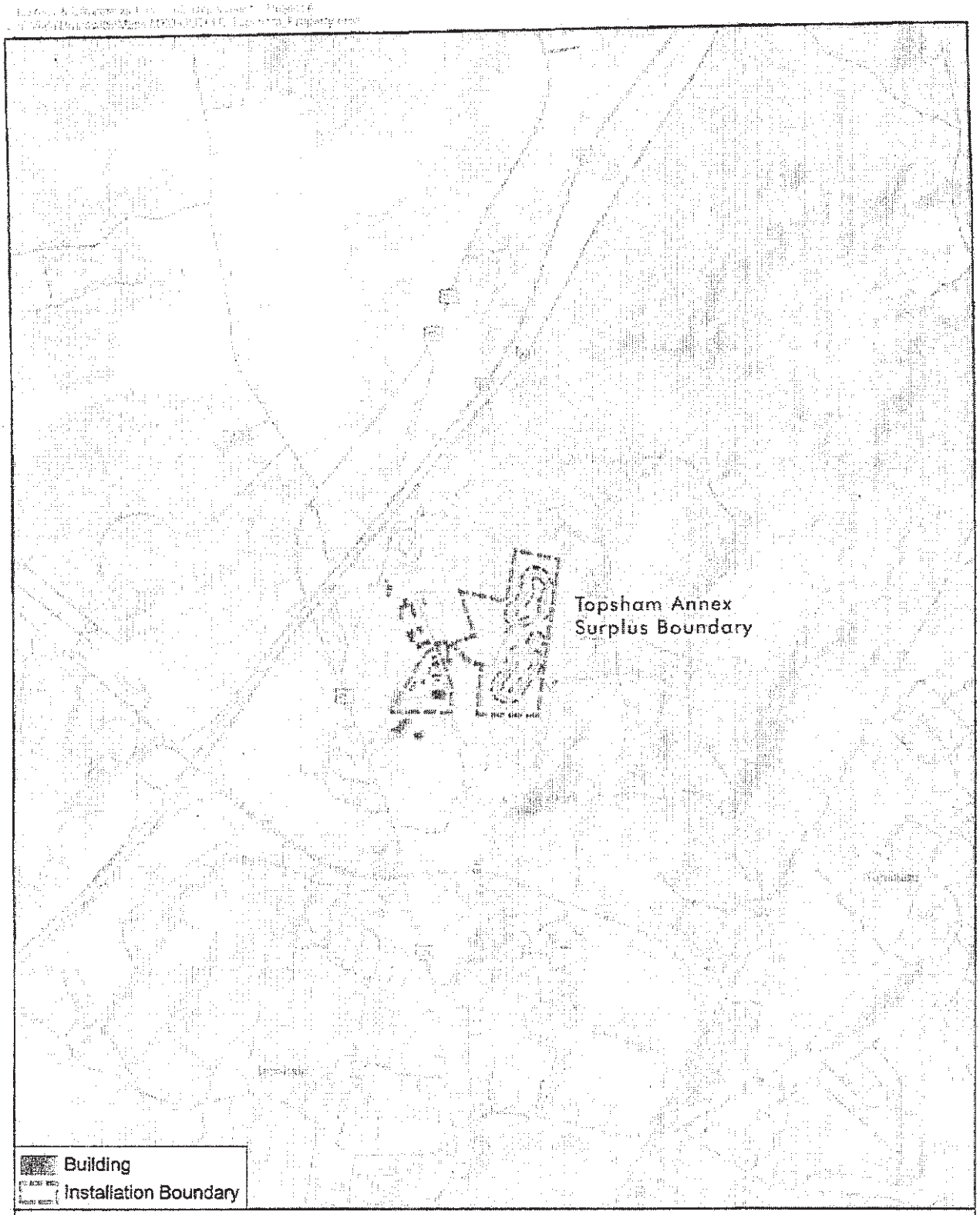


Figure 2
Sites Requiring Phase II
Testing & Analysis



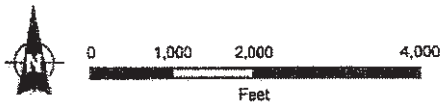


Figure 3
Topsham Annex Project Area
NAS Brunswick, Maine

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

BPMO NE/TS
Ser 10-176
August 19, 2010

Mr. Earle G. Shettleworth, Jr.
Director
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065

Ms. Louise Brodnitz
Historic Preservation Specialist
Advisory Council on Historic Preservation
Old Post Office Building
1100 Pennsylvania Ave., NW, Suite 803
Washington, DC 20004

Dear Mr. Shettleworth and Ms. Brodnitz:

In accordance with the requirements of Section 110 of the National Historic Preservation Act as amended and 36 CFR Part 800, we are submitting the enclosed draft Programmatic Agreement (PA) between the United States Navy and the Maine State Historic Preservation Officer (SHPO) for the disposal and reuse of properties located at Naval Air Station Brunswick, Maine and Topsham Annex, Topsham, Maine for your review and approval. We respectfully request your comments on the draft PA by August 27, 2010.

We appreciate your feedback. If you have any questions concerning this request, please do not hesitate to contact Tom Stephan at (215) 897-4916. We look forward to successful consultation and coordination with your office and to executing the Programmatic Agreement for the protection of the cultural heritage of the State of Maine.

Sincerely,

David Drozd
Director

Enclosure:
Draft Programmatic Agreement

Copy to: (w/o encl)
NAS Brunswick (L. Joy, K. Moore)
NAVFAC LANT (D. Cook)

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

BPMO NE.
Ser 10-081
February 25, 2010

Mr. Kirk F. Mohney
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333

Dear Mr. Mohney:

Thank you for your recent correspondence regarding architectural survey (MHPC #1828-09) and consultation at Topsham Annex of Naval Air Station Brunswick. We appreciate the National Register of Historic Places (NRHP) eligibility concurrence on Facility 337 (Auto Maintenance/Supply Warehouse), as noted in your January 26, 2010 letter. In the letter, you conclude that Facility 333 (Flag Headquarters/Army Reserve Office) is eligible for listing in the NRHP due to its architectural significance. In accordance with Section 106 of the National Historic Preservation Act, the Navy concurs that Facility 333 is individually NRHP-eligible. With this letter, we intend to continue consultation on the planned undertaking and potential effects to historic properties, as defined by the National Historic Preservation Act.

Navy will close Topsham Annex by September 15, 2011. The preferred alternative for future reuse and development follows the December 2007 *Topsham Annex Reuse Master Plan (Master Plan)* (http://www.mrra.us/reuseplansguidelines/topshamannexplan.html) and will be carried out by the Midcoast Regional Redevelopment Authority (MRRA).

The Navy has determined that the area of potential effect for this undertaking constitutes all of the land at Topsham Annex totaling 74 acres. The property consists of a 60-acre residential area and a 14-acre military administrative area (the Military Triangle). The residential area of the facility includes 129 units of military housing built between 1959 and 1961. The housing at Topsham Annex is treated through past consultation with your office and the nationwide 2004 *Program Comment for Wherry and Capehart Era Family Housing at Air Force and Navy Bases* (http://www.achp.gov/progalt/af-navy%20capehart%20wherry%20program%20comment.pdf). The Military Triangle area is featured in the report *Draft Comprehensive Architectural Survey of 14 buildings in the Military Triangle of Topsham Annex of NAS Brunswick, Maine* (SEARCH). Only Facility 333 is identified as NRHP-eligible. Current and historic maps, located in the SEARCH report, provide additional details concerning the layout of Topsham Annex and its architectural resources. Archaeological resources at Topsham Annex were addressed in a January 26, 2009 letter from your office to the BRAC Program Management Office, Northeast. The letter noted, "the Commission concurs with the conclusions of the Navy's prior studies that there

is only low to moderate archaeological sensitivity in the Topsham Annex property. Thus, we conclude that there is no need to conduct further archaeological investigations."

The Navy has applied the criteria of adverse effect (36 CFR 800.5a(2)(vii)) and determined that the planned undertaking will have an adverse effect on Facility 333, although the preferred alternative of the *Master Plan* calls for the reuse of this building for office space. The Navy respectfully requests concurrence that the undertaking constitutes an adverse effect to historic properties and will necessitate mitigation of the adverse effect through consultation ultimately resulting in the production of a Memorandum of Agreement. It is our hope that through this process, we can ensure a conclusion that is mutually beneficial to the state of Maine and the Navy.

The National Environmental Policy Act (NEPA) environmental assessment (EA) document, which will be available for review by your office and the public, will assess two reuse alternatives for the 74-acre property, including a Mixed Use Scenario (Alternative 1) and a Business Park Scenario (Alternative 2), and the No Action Alternative, which would leave the property in federal ownership under caretaker status. The Topsham Local Redevelopment Authority and the residents of the Topsham selected an alternative with mixed uses as the preferred alternative. The plan calls for 46 acres of existing military housing to be zoned medium- and high-density residential. Furthermore, 14 acres of undeveloped and recreational land would be used for open space and recreational activities coordinated with the local school district's adjacent athletic facilities. The remaining 14 acres of land in the existing administrative area of the Annex would be zoned for business and community uses. The second alternative is for the entire Annex to be redeveloped as a business park.

In proceeding with the planning of this undertaking, the Navy intends to coordinate Section 106 NHPA consultation with NEPA requirements pursuant to 36 CFR 800.8. Plans to involve the public will follow established Navy procedures for completing the NEPA process, as well as fulfill the Navy's responsibilities under 36 CFR 800.3(e). Additionally, the public and local planning groups have been engaged in the disposition of Topsham Annex through the intensive reuse planning process, which led to the development of the *Master Plan*. We have initiated consultation with the Passamaquoddy (Indian Township and Pleasant Point Reservations), the Aroostook Band of the Micmac, the Penobscot, and the Houlton Band of the Maliseet tribes to identify if they have religious or cultural interest in the APE. We feel it would be appropriate to invite MRRA, the Pejepscot Historical Society, and the town of Topsham as consulting parties. When additional documentation is gathered, the Navy will notify the Advisory Council on Historic Preservation of the adverse effect and invite comment from the Council. Please provide comments or concerns regarding this proposed approach so that we may incorporate them into our process.

We are currently working with our consultant (SEARCH) to produce the final version of the architectural report previously reviewed by your office. We will be in contact with you to convey the final version of the report, with the other materials required by your office (survey forms and photographs), in addition to continued consultation to mitigate the adverse effect. The full plan may be found at http://www.mrra.us/reuseplansguidelines/topshamannexplan.html.

If you need further clarification or information, feel free to contact Tom Stephen (BRAC PMO Northeast) at (215) 897-4916 or Darrell E. Cook (NAVFAC Atlantic) at (757) 322-4282. We look forward to continuing consultation on this project.

Sincerely,

David Droz

Copy to:
NAVFAC Atlantic (D. Cook)
NASB (L. Joy)

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

BPMO NE/TS
Ser 10-083
February 25, 2010

Mr. John Shattock
Economic and Community Development
Town of Topsham
100 Main Street
Topsham, ME 04086

Dear Mr. Shattock:

In accordance with the congressionally mandated BRAC decision of 2005, the Navy will close Topsham Annex of Naval Air Station Brunswick by September 15, 2011 and transfer the property out of federal ownership. In preparation for this transfer, the Navy is conducting an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) and conducting other necessary environmental work to comply with federal regulations. One component of these studies is consultation with the Maine State Historic Preservation Office (ME SHPO) and other consulting parties in accordance with Section 106 of the National Historic Preservation Act (NHPA) regarding historic properties that may be found at the transfer site. The result of preliminary consultation with the ME SHPO has resulted in the identification of one historic property, Facility 333 (Flag Headquarters/Army Reserve Office). The ME SHPO feels that Facility 333 is eligible for the National Register of Historic Places (NRHP) due to its architectural significance.

The Navy has determined that the area of potential effect for this undertaking constitutes all of the land at Topsham Annex being transferred out of federal ownership, totaling 74 acres. In accordance with Section 106, the Navy concurs that Facility 333 is individually NRHP-eligible. The Navy has applied the criteria of adverse effect (36 CFR 800.5a(2)(vii)) and determined that the planned undertaking will have an adverse effect on Facility 333. Mitigation of the adverse effect will require consultation with the ME SHPO and other consulting parties resulting in the formation of a Memorandum of Agreement.

With this letter, we invite your views on the effects of the planned transfer on the NRHP-eligible Facility 333 and invite the Town of Topsham to participate as a consulting party under Section 106. Please respond within 30 days of receipt of this letter. If you need further clarification or information, feel free to contact Tom Stephan (BRAC PMO Northeast) at (215) 897-4916 or Darrell E. Cook (NAVFAC Atlantic) at (757) 322-4282.

Sincerely,

David Drozd

Copy to:
NAVFAC Atlantic (D. Cook)
NASB (L. Joy)

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

BPMO NE/TS
Ser 10-080
February 25, 2010

Mr. Steve Levesque
Executive Director
Midcoast Regional Redevelopment Authority (MRRA)
5450 Fitch Avenue
Brunswick, ME 04011

Dear Mr. Levesque:

In accordance with the congressionally mandated BRAC decision of 2005, the Navy will close Topsham Annex of Naval Air Station Brunswick by September 15, 2011 and transfer the property out of federal ownership. In preparation for this transfer, the Navy is conducting an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) and conducting other necessary environmental work to comply with federal regulations. One component of these studies is consultation with the Maine State Historic Preservation Office (ME SHPO) and other consulting parties in accordance with Section 106 of the National Historic Preservation Act (NHPA) regarding historic properties that may be found at the transfer site. The result of preliminary consultation with the ME SHPO has resulted in the identification of one historic property, Facility 333 (Flag Headquarters/Army Reserve Office). The ME SHPO feels that Facility 333 is eligible for the National Register of Historic Places (NRHP) due to its architectural significance.

The Navy has determined that the area of potential effect for this undertaking constitutes all of the land at Topsham Annex being transferred out of federal ownership, totaling 74 acres. In accordance with Section 106, the Navy concurs that Facility 333 is individually NRHP-eligible. The Navy has applied the criteria of adverse effect (36 CFR 800.5a(2)(vii)) and determined that the planned undertaking will have an adverse effect on Facility 333. Mitigation of the adverse effect will require consultation with the ME SHPO and other consulting parties resulting in the formation of a Memorandum of Agreement.

With this letter, we invite your views on the effects of the planned transfer on the NRHP-eligible Facility 333 and invite the MRRA to participate as a consulting party under Section 106. Please respond within 30 days of receipt of this letter. If you need further clarification or information, feel free to contact Tom Stephan (BRAC PMO Northeast) at (215) 897-4916 or Darrell E. Cook (NAVFAC Atlantic) at (757) 322-4282.

Sincerely,

David Drozd

Copy to:
NAVFAC Atlantic (D. Cook)
NASB (L. Joy)

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE, NORTHEAST
4911 SOUTH BROAD STREET
PHILADELPHIA, PA 19112-1303

PBMO NE/TS
Ser 10-082
February 25, 2010

Pejepscot Historical Society
159 Park Row
Brunswick, ME 04011

Dear Pejepscot Historical Society:

In accordance with the congressionally mandated BRAC decision of 2005, the Navy will close Topsham Annex of Naval Air Station Brunswick by September 15, 2011 and transfer the property out of federal ownership. In preparation for this transfer, the Navy is conducting an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) and conducting other necessary environmental work to comply with federal regulations. One component of these studies is consultation with the Maine State Historic Preservation Office (ME SHPO) and other consulting parties in accordance with Section 106 of the National Historic Preservation Act (NHPA) regarding historic properties that may be found at the transfer site. The result of preliminary consultation with the ME SHPO has resulted in the identification of one historic property, Facility 333 (Flag Headquarters/Army Reserve Office). The ME SHPO feels that Facility 333 is eligible for the National Register of Historic Places (NRHP) due to its architectural significance.

The Navy has determined that the area of potential effect for this undertaking constitutes all of the land at Topsham Annex being transferred out of federal ownership, totaling 74 acres. In accordance with Section 106, the Navy concurs that Facility 333 is individually NRHP-eligible. The Navy has applied the criteria of adverse effect (36 CFR 800.5a(2)(vii)) and determined that the planned undertaking will have an adverse effect on Facility 333. Mitigation of the adverse effect will require consultation with the ME SHPO and other consulting parties resulting in the formation of a Memorandum of Agreement.

With this letter, we invite your views on the effects of the planned transfer on the NRHP-eligible Facility 333 and invite the Pejepscot Historical Society to participate as a consulting party under Section 106. Please respond within 30 days of receipt of this letter. If you need further clarification or information, feel free to contact Tom Stephan (BRAC PMO Northeast) at (215) 897-4916 or Darrell E. Cook (NAVFAC Atlantic) at (757) 322-4282.

Sincerely,

David Drozd

Copy to:
NAVFAC Atlantic (D. Cook)
NASB (L. Joy)

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

January 26, 2010

David Drozd, Director
Department of the Navy
Base Realignment and Closure
Program Management Office, Northeast
4911 South Broad Street
Philadelphia, PA 19112-1303

Project: MHPC #1828-09 – Draft Comprehensive Architectural Survey of 14 buildings in the Military Triangle of Topsham Annex of NAS Brunswick, Maine
Location: Topsham, Maine

Dear Mr. Drozd:

In response to your recent request, I have reviewed the information received December 23, 2010 to continue consultation on the above referenced project pursuant to Section 106 of the National Historic Preservation Act, as amended.

Based on the information supplied about the window alterations to Facility 337, we concur with the findings of the Architectural Survey Report that this building is not eligible for listing in the National Register of Historic Places.

As to Facility 333; Flag Headquarters/Army Reserve Office, we acknowledge receipt of the additional information pertaining to the design of this building and its relation to other work created by the Auburn, Maine based architecture and engineering firm of Alonzo J. Harriman, Inc. Although we recognize that military facilities constitute a small part of Harriman's commissions, that fact does not negate the importance of such projects to gaining an understanding of and appreciation for the firm's work. Furthermore, while the design of Facility 333 may be based on a standardized design (the actual standard plans have not been provided to us), in our opinion Harriman's interpretation is quite different from those of the buildings shown in Appendix C of your December 23, 2009 letter. Finally, with regard to the conclusion that the work of the Harriman firm at Loring Air Force Base was found to be ineligible for listing in the Register, please keep in mind that at the time of that survey these properties were less than fifty years of age. Only resources that were exceptionally significant under Criteria Consideration G at Loring were found to meet the National Register criteria. If we were to revisit the Harriman designed properties today, our conclusions may be different than they were then.

Regardless of whether Facility 333 is or is not considered a significant example of the work of Alonzo J. Harriman, the fact remains that within the local architectural context of Topsham, Maine, this building embodies "the distinctive characteristics of a type, period, or method of

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FAX: (207) 287-2335

construction…" under Criterion C. There are few - if any – other 1950s "Modern" institutional buildings in the community that retain integrity of location, design, setting, materials, and workmanship. If for no other reason, the Commission believes that Facility 333 is eligible for listing in the Register for its local architectural significance.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JOHN ELIAS BALDACCI
GOVERNOR

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

January 26, 2009

David Drozd, Director
Department of the Navy
Base Realignment and Closure
Program Management Office, Northeast
4911 South Broad Street
Philadelphia, PA 19112-1303

Project: MHPC #2430-08 - Environmental Assessment for Disposal and Reuse of Topsham Annex; Naval Air Station (NAS) Brunswick
Town: Topsham, ME

Dear Mr. Drozd:

In response to your recent request, I have reviewed the information received December 18, 2008 to initiate consultation on the above referenced project in accordance with Section 106 of the National Historic Preservation Act.

With regard to archaeological resources, the Commission concurs with the conclusions of the Navy's prior studies that there is only low to moderate archaeological sensitivity in the Topsham Annex property. Thus, we conclude that there is no need to conduct further archaeological investigations.

With regard to architectural resources, and in accordance with the recommendations of the prior cultural resource investigations, we believe that additional survey information will be necessary only for those properties (if any) that have or will reach the 50 year old threshold in the course of the undertaking. Any such properties will need to be evaluated in accordance with our survey guidelines and associated forms, which are both downloadable from our website: www.maine.gov/mhpc/project_review (see tabs in the white box on the left side of the webpage under Project Review). Please also find attached our revised photographic policy to be referenced in lieu of the policy in our on-line survey manual. Any computer generated template other than that provided by MHPC must be approved by MHPC prior to submission. No changes to the survey forms are to be made without consulting MHPC.

Once the information mentioned above is received, we will forward a response regarding the results of our evaluation. Please contact Robin Stancampiano of our staff if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
Deputy State Historic Preservation Officer

Enc.

PHONE: (207) 287-2132

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C Air Emissions Calculations

Construction, Topsham Annex

Alternative	total sq ft	Acres
Alternative 1		
New Residential space (148 units@2000 sqft)	296,000	6.80
New Commercial Space	200,000	4.59
Total New Built Space	496,000	11.39
Parking lots and roads /paving	200,000	4.59
Demolished Residential space (81 units @1500 sqft)	121,500	2.79
Demolished Commerical space	70,000	1.61
Total Demolition	191,500	4.40
Total graded space	887,500	20.37
Alternative 2		0.00
New Commercial Space	660,000	15.15
Parking lots/paving	600,000	13.77
Demolition (Same as Alternative 1)	191,500	4.40
Total graded space	1,451,500	33.32
Total reused space under Master Plan		60

Construction: ? 20 years
250 days per year
Existing Configuration
Total Space:
GMH Military Housing, LLC
129 existing units and 48 demolished
Navy Facilities
a commissary, a training facility, office space, and a fire station

Mobile Equipment Exhaust Emissions, Annual Continuous Operations, 20 Acre Project

Activity	Equipment List	Equipment quantity	Days Used	Emission Factors (lb/day)(1) NOx	VOC	CO	SO_2(2)	PM_{10}		Emissions (lbs/year) NOx	VOC	CO	SO2	PM10
Demolition	Loader	2	250	11.80	1.35	9.27	n/a	0.64		5900.00	675.00	4635.00	0.00	320.00
	Haul Truck	2	250	33.55	3.60	22.67	n/a	1.78		16775.00	1800.00	11335.00	0.00	890.00
Backhoe Excavation	Backhoe Loader	2	250	6.66	0.65	3.56	n/a	0.34		3330.00	325.00	1780.00	0.00	170.00
	Haul Truck	2	250	33.55	3.60	22.67	n/a	1.78		16775.00	1800.00	11335.00	0.00	890.00
Cut and fill	Scraper	2	250	35.39	3.64	21.58	n/a	1.85		17695.00	1820.00	10790.00	0.00	925.00
	Bulldozer	2	250	37.45	3.66	20.03	n/a	1.93		18725.00	1830.00	10015.00	0.00	965.00
	Water Truck	2	250	33.55	3.60	22.67	n/a	1.78		16775.00	1800.00	11335.00	0.00	890.00
Trenching	Trencher	2	250	8.31	1.00	7.26	n/a	0.45		4155.00	500.00	3630.00	0.00	225.00
	Track loader	2	250	6.66	0.65	3.56	n/a	0.34		3330.00	325.00	1780.00	0.00	170.00
Grading	Grader	2	250	16.42	1.76	11.09	n/a	0.87		8210.00	880.00	5545.00	0.00	435.00
	Bulldozer	2	250	37.45	3.66	20.03	n/a	1.93		18725.00	1830.00	10015.00	0.00	965.00
	Water Truck	2	250	33.55	3.60	22.67	n/a	1.78		16775.00	1800.00	11335.00	0.00	890.00
Concrete Slab pouring	Cement Truck	2	250	33.55	3.60	22.67	n/a	1.78		16775.00	1800.00	11335.00	0.00	890.00
Portable Equipment	Generator	2	250	8.31	1.00	7.26	n/a	0.45		4155.00	500.00	3630.00	0.00	225.00
	Air Compressor	2	250	8.31	1.00	7.26	n/a	0.45		4155.00	500.00	3630.00	0.00	225.00
Paving	Paving Machine Roller	2	250	11.91	1.37	9.36	n/a	0.64		5955.00	685.00	4680.00	0.00	320.00
Architectural Coatings	Air Compressor	2	250	8.31	1.00	7.26	n/a	0.45		4155.00	500.00	3630.00	0.00	225.00
			Emissions lbs/day	364.7	38.7	240.9	0.0	19.2	Annual Emissions lbs/year	182365.0	19370.0	120435.0	0.0	9620.0
			Emissions tons/day	**0.18**	**0.02**	**0.12**	**0.00**	**0.01**	**Annual Emissions TPY(3)**	**91.18**	**9.69**	**60.22**	**0.00**	**4.81**

Analysis assumes each piece of equipment operates on the site 250 days per year
(1) El Dorado County APCD CEQA Guide, February 2002.
(2) SO2 emission factor not available

Mobile Equipment Exhaust Emissions, Annual Continuous Operations, 30 Acre Project

Activity	Equipment List	Equipment quantity	Days Used	Emission Factors (lb/day)(1) NOx	VOC	CO	SO_2(2)	PM_{10}		Emissions (lbs/year) NOx	VOC	CO	SO2	PM10
Demolition	Loader	3	250	11.80	1.35	9.27	n/a	0.64		8850.00	1012.50	6952.50	0.00	480.00
	Haul Truck	3	250	33.55	3.60	22.67	n/a	1.78		25162.50	2700.00	17002.50	0.00	1335.00
Backhoe Excavation	Backhoe Loader	3	250	6.66	0.65	3.56	n/a	0.34		4995.00	487.50	2670.00	0.00	255.00
	Haul Truck	3	250	33.55	3.60	22.67	n/a	1.78		25162.50	2700.00	17002.50	0.00	1335.00
Cut and fill	Scraper	3	250	35.39	3.64	21.58	n/a	1.85		26542.50	2730.00	16185.00	0.00	1387.50
	Bulldozer	3	250	37.45	3.66	20.03	n/a	1.93		28087.50	2745.00	15022.50	0.00	1447.50
	Water Truck	3	250	33.55	3.60	22.67	n/a	1.78		25162.50	2700.00	17002.50	0.00	1335.00
Trenching	Trencher	3	250	8.31	1.00	7.26	n/a	0.45		6232.50	750.00	5445.00	0.00	337.50
	Track loader	3	250	6.66	0.65	3.56	n/a	0.34		4995.00	487.50	2670.00	0.00	255.00
Grading	Grader	3	250	16.42	1.76	11.09	n/a	0.87		12315.00	1320.00	8317.50	0.00	652.50
	Bulldozer	3	250	37.45	3.66	20.03	n/a	1.93		28087.50	2745.00	15022.50	0.00	1447.50
	Water Truck	3	250	33.55	3.60	22.67	n/a	1.78		25162.50	2700.00	17002.50	0.00	1335.00
Concrete Slab pouring	Cement Truck	3	250	33.55	3.60	22.67	n/a	1.78		25162.50	2700.00	17002.50	0.00	1335.00
Portable Equipment	Generator	3	250	8.31	1.00	7.26	n/a	0.45		6232.50	750.00	5445.00	0.00	337.50
	Air Compressor	3	250	8.31	1.00	7.26	n/a	0.45		6232.50	750.00	5445.00	0.00	337.50
Paving	Paving Machine Roller	3	250	11.91	1.37	9.36	n/a	0.64		8932.50	1027.50	7020.00	0.00	480.00
Architectural Coatings	Air Compressor	3	250	8.31	1.00	7.26	n/a	0.45		6232.50	750.00	5445.00	0.00	337.50
			Emissions lbs/day	364.7	38.7	240.9	0.0	19.2	Annual Emissions lbs/year	273547.5	29055.0	180652.5	0.0	14430.0
			Emissions tons/day	**0.18**	**0.02**	**0.12**	**0.00**	**0.01**	**Annual Emissions TPY(3)**	**136.77**	**14.53**	**90.33**	**0.00**	**7.22**

Analysis assumes each piece of equipment operates on the site 250 days per year
(1) El Dorado County APCD CEQA Guide, February 2002.
(2) SO2 emission factor not available

SITE PREPARATION PARTICULATE EMISSIONS FOR CONSTRUCTION

Activity	ACRES	ACTIVITY DAYS	BULLDOZING (LBS)(1)	PAN SCRAPING SOIL REMOV(LBS)(2)	PAN SCRAPING ETHMOVING (LBS)(3	EMISSIONS	
						LBS	TONS
Alternative 1	20.37	250	1500	326	206	2032	1.02
Alternative 2	33.32	251	1506	533	336	2375	1.19

(1) Bulldozing dust emissions based on 8hr/activity day * EF (EPA 1992)

(2) Soil removal dust emissions based on VMT/acre *acres*EF (EPA 1992)

(3) Earthmoving dust emissions based on soil removal miles *3 (BEE)*EF

EPA 1992 Fugitive Dust Background document (EPA-450/2-92-004) used as data reference.

VOC EMISSIONS FROM PAVING

Activity	**Acres Paved**	**Emission Factor(1**	**EMISSIONS**	
		(lbs/acre)	LBS	TONS
Alternative 1	4.59	2.62	360.9	0.180
Alternative 2	13.77	3.62	1495.9	0.748

(1) URBEMIS 9.2.4, 2007

VOC EMISSIONS FROM ARCHITECTURAL COATINGS

Activity				**EMISSIONS**	
	Sq ft surfaces[1]	**Est. Paint Qty (gal)[2]**	**Avg VOC Content (lb/gal)**	**LBS**	**TONS**
New Built Space					
Alternative 1	1587200	5291	5	26453	13.23
Alternative 2	2112000	7040	5	35200	17.60

[1]assumes total sq ft is divided to 10x10 spaces, with 8 ft ceilings

[2]assumes one gallon covers 300 sq ft

DEMOLITION PARTICULATE EMISSIONS			
		Alternative 1	**Alternative 2**
Floor Space To be demolished	(SQ FT)	191,500	191,500
Emission from Structure removal	(LBS)	97.7	97.7
Emissions from Debris removal	(LBS)	1800.1	1800.1
Emissions from Vehicle Activity	(LBS)	20385.2	20385.2
Total PM10 emissions	LBS	22282.9	22282.9
Total PM10 emissions	TONS	11.14	11.14

Notes:

(2) PM emission from structure takedown based on sq ft *EF
(3) PM emission from debris removal based on sq ft *EF
(4) PM emission from on-site vehicle activity based on sq ft *EF
(5) Pushing (bulldozing) PM emission put under site prep spreadsheet
(6) Reference EPA-450/2-92-004 (Fugitive Dust document)
(all EF's in EPA document converted to english units)

Highest (Most Conservative) Emfac 2007 (version 2.3)
Emission Factors for On-Road Passenger Vehicles & Delivery Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)
Source: Retreived may 15, 2007 form http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html

Vehicle Class:

Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model, taking the weighted average of vehicle types and simplifying into two categories:

Passenger Vehicles & Delivery Trucks.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle categories listed in the tables below, by use of the following equation:

Emissions (pounds per day) = N x TL x EF

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

This methodology replaces the old EMFAC emission factors in Tables A-9-5-J-1 through A-9-5-L in Appendix A9 of the current SCAQMD CEQA Handbook. All the emission factors account for the emissions from start, running and idling exhaust. In addition, the ROG emission factors include diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors include tire and brake wear

Scenario Year: **2009**

All model years in the range 1965 to 2009

Passenger Vehicles (pounds/mile)	
CO	0.00968562
NOx	0.00100518
ROG	0.00099245
SOx	0.00001066
PM10	0.00008601
PM2.5	0.00005384

Delivery Trucks (pounds/mile)	
CO	0.02016075
NOx	0.02236636
ROG	0.00278899
SOx	0.00002679
PM10	0.00080550
PM2.5	0.00069228

Annual Emissions from Privately Operated Vehicles

							Emission Factors (lbs/mi)[1]						Emissions (tpy)					
Source	**# of vehicles at residential buildings[2]**	**# of vehicles at commercial buildings**	**Total # of Vehicles**	**Avg Daily mileage per vehicle**	**Avg Annual Miles Per Vehicle[3]**	**Total Annual Miles**	**VOC**	**NOx**	**CO**	**SO2**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SO2**	**PM**	**PM2.5**
Existing	108	120	228	25	6,250	1,425,000	0.000992	0.001005	0.009686	0.000011	0.000086	0.000054	0.71	0.72	6.90	0.008	0.06	0.04
Alternative 1	222	140	362	25	6,250	2,262,500	0.000992	0.001005	0.009686	0.000011	0.000086	0.000054	1.12	1.14	10.96	0.012	0.10	0.06
									Change in Emissions Under Alternative 1				**0.42**	**0.42**	**4.06**	**0.00**	**0.04**	**0.02**
Alternative 2	0	1320	1320	25	6,250	8,250,000	0.000992	0.001005	0.009686	0.000011	0.000086	0.000054	4.09	4.15	39.95	0.044	0.35	0.22
									Change in Emissions Under Alternative 2				**3.39**	**3.43**	**33.05**	**0.04**	**0.29**	**0.18**

1 Highest (Most Conservative) Emfac 2009 (version 2.3), Emission factors for On-Road Passenger Vehicles (<8500 lbs), year 2009, SCA Total
(Source: Retreived may 15, 2007 from http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html)
2 Assumes 1.5 vehicles for each residence in residential buildings, one vehicle for each employee at commercial buildings
3 Assumes 250 daily commutes per year

to document summary tables:

	NOx	VOC	CO	PM10
Alt 1	0.42	0.42	4.056	0.04
Alt 2	3.43	3.39	33.052	0.29

Current - assume 108 vehicles in the residential area (72 residences) and 120 vehicles in the commercial area (commissary is busy)

Alt 1 - assume 222 vehicles in residential (148 residences) and 140 for commercial.

Alt 2 - assume 1320 workers and 85% will drive - 1122 vehicles per day

units	vehicles	%
72	108	1.5
	120	
148	222	1.5
1320		1122

C-9

D

Traffic Study

Traffic Impact Study
Closure and Reuse of Property at
Topsham Annex,
Naval Air Station Brunswick
Topsham, Maine

May 2009

Prepared for:

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Traffic Impact Study
Closure and Reuse of Property at
Topsham Annex,
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Topsham, Maine

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Executive Summary

The following Executive Summary is prepared for the reader's convenience, but is not intended to be a substitute for reading the full report.

The Topsham Annex for the Naval Air Station in Brunswick is located on the easterly dead-end of the existing Canam Drive in Topsham, Maine. In 2005, the Annex was identified and approved for closure as part of the Base Closure and Realignment Act of 1990. The base is approximately 74 acres in size and primarily consists of two areas: 1) 177 units of military housing, of which approximately 72 were occupied at the time when this study was initiated and 2) an operational area including commissary, training area, office space, and fire station.

As a result of the mandate for closure, an Environmental Assessment (EA) is required for the Annex. Part of this EA is a review of transportation issues, and an evaluation of the reuse / reoccupancy of the Annex, consistent with the *Topsham Annex Reuse Master Plan.* There are two Alternatives associated with the reuse of the Annex. Alternative 1 includes 146 dwelling units with 70,000 square feet of general office space, the latter use based on reuse of existing facilities at the site. Alternative 2 includes 660,000 square feet of business park with no residential component. The purpose of this Traffic Impact Study is to evaluate the existing adjacent roadway network and to identify what mitigation may be necessary to accommodate the traffic associated with reuse of the Annex under Alternatives 1 or 2.

In addition to closure of the Annex, the Naval Air Station in Brunswick (the municipality adjacent to the south side of Topsham) has also been identified for closure. Similar to this site, there are two alternatives identified for the reuse of that facility as well. Because the Brunswick site is significantly larger than the Annex site, the proposed Alternatives at the Brunswick site generate significantly more traffic and as a result, the study area is significantly larger and overlaps with this study area for the Annex. There was enough information completed for the Brunswick Alternative 1 scenario to include the appropriate overlapping trips in the study area for the Annex reuse / redevelopment. Alternative 2 of the Brunswick site is yet to be determined but is expected to be completed by the issuance of the final report for this project.

Based on the completion of the impact study, the following conclusions have been reached regarding the Annex and its potential impacts to local transportation infrastructure following redevelopment:

1. Alternative 1 is forecast, based on the *ITE Trip Generation Manual,* to generate 225 AM and 273 PM trip ends during the adjacent peak hour of street traffic. Alternative 2 is forecast to generate 909 AM and 857 PM trip ends during the adjacent peak hour of street traffic. (Note: A trip end is either a trip in or out of the site. Therefore a single vehicle making a round trip would equal two trip ends). The original 177 military housing units with commissary, training facility, office space and fire station were estimated, based on the ITE Trip Generation Manual, to generate 101 AM and 138 PM trip ends of the peak hour of adjacent street traffic.

2. The proposed trip generation for Alternatives 1 and 2 minus the trip credit for the original 177 military housing units with commissary, training facility, office space and fire station exceeds the MaineDOT threshold of 100 peak hour trip ends, and therefore both Alternatives 1 and 2 are anticipated to require a Traffic Movement Permit from the MaineDOT.

3. Six scenarios have been analyzed for the purposes of this report, which are the following:

   - Scenario 1 - 2031 No Build (i.e. travel conditions following the closure of the Annex)
   - Scenario 2 –2031 Reoccupancy (i.e. reuse of housing and office space at the Annex)
   - Scenario 3 - 2031 Alternative 1 with no change to the Brunswick site
   - Scenario 4 - 2031 Alternative 2 with no change to the Brunswick site
   - Scenario 5 - 2031 Alternative 1 with Brunswick Alternative 1 also included
   - Scenario 6 - 2031 Alternative 2 with Brunswick Alternative 1 also included

4. Based on the capacity analysis, mitigation was identified at the study area locations to accommodate the proposed traffic volumes. It should be noted that this is a Draft study and that as more information becomes available, or as municipal or governmental reviews are undertaken, the mitigation is subject to revision. The mitigation is described as follows:

   Mitigation for Scenario 1: 2031 No Build

   None proposed – based on existing roadway conditions as currently found in the field.

   Mitigation for Scenario 2: 2031 Reoccupancy

   It is important to note that the mitigation identified in this scenario is due to existing design deficiencies as well as the impact of long-term traffic growth, and that this mitigation could be needed regardless of if the Annex proceeds with Alternative 1 or 2. This scenario does assume the grandfathered 177 dwelling units are on site and occupied.

   Route 201 at Route 196/Coastal Connector

   - Extend eastbound left-turn lane from 250 feet to 350 feet
   - Extend westbound right-turn lane from 250 feet to 350 feet
   - Construct 250-foot northbound right-turn lane
   - Extend southbound left-turn lane from 200 feet to 250 feet
   - Convert outer southbound through/right turn lane to an exclusive right-turn lane

Route 201 at Eagles Way

- Construct 150-foot westbound right-turn lane
- Construct 150-foot northbound right-turn lane
- Construct 100-foot southbound left turn lane

Route 201 at Canam Drive

- Install fully-actuated traffic signal
- Construct 150-foot westbound right-turn lane
- Extend northbound right-turn lane to 150 feet
- Convert southbound 250-foot bypass lane to a dedicated left-turn lane

***Mitigation for Scenario 3:* 2031 Alternative 1 with no change to the Brunswick Site**

This Scenario contains the same mitigation as Scenario 2 (2031 Reoccupancy), but with the following minor extension of turn lanes to address the additional traffic generated by Alternative 1:

- Route 201 at Route 196 / Coastal Connector – Extend southbound left turn lane from proposed 250 feet to 300 feet.
- Route 201 at Eagles Way – Extend the proposed southbound left turn lane from 100 feet to 150 feet.

***Mitigation for Scenario 4:* 2031 Alternative 2 with no change to the Brunswick Site**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend eastbound left-turn lane from 200 feet to 300 feet
- *(Convert southbound outer through/right turn lane to an exclusive right-turn lane)*
- Construct additional southbound 350-foot right turn lane (for a total of two)

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane

- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 250-foot right-turn lane
- Construct additional 350-foot eastbound left turn lane (for a total of two)
- Construct additional northbound through lane
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at I-295 Southbound On-Ramp

- Extend westbound left-turn lane storage to 300 feet

***Mitigation for Scenario 5:* 2031 Alternative 1 with Brunswick Alternative 1 also included**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 350 feet
- *(Convert outer southbound through/right turn lane to an exclusive right-turn lane)*
- Construct additional southbound 350-foot left-turn lane

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 350-foot right-turn lane
- Construct additional northbound through lane
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at Hamilton Court

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Mallet Drive/Crooker Access

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Topsham Fair Mall Road

- Construct additional eastbound through lane (for a total of three)
- Transition outer westbound left turn lane to inner through lane east of the intersection (i.e. at Mallet Drive)
- Construct an additional westbound through lane (for a total of three)

Route 196 at I-295 Northbound Ramps

- Construct additional westbound through lane (for a total of three)
- Extend eastbound right turn lane from 150 feet to 500 feet
- Construct an additional westbound through lane (for a total of three)
- Construct additional 200-foot northbound right turn lane (for a total of three)

Route 196 at I-295 Overpass

- Widen bridge to accommodate additional westbound through lane

Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound

- Install fully-actuated traffic signal
- Modify ramp geometry as needed to accommodate widening and signalization
- Construct additional 300-foot northbound approach lane from ramp (for a total of two)

Route 196 at I-295 Southbound On-Ramp

- Install fully-actuated traffic signal
- Construct 200-foot eastbound right-turn lane
- Extend westbound left-turn lane storage to 300 feet for existing lane
- Construct additional 300-foot westbound left-turn lane

Route 196 west of I-295

- Extend two-lane section for westbound traffic to improve lane utilization

***Mitigation for Scenario 6:* 2031 Alternative 2 with Brunswick Alternative 1 also included**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 350 feet
- Construct additional southbound through lane (for a total of two)
- Provide a total of two 350-foot southbound right-turn lanes
- Construct additional southbound 350-foot left-turn lane

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 350-foot right-turn lane
- Construct additional northbound through lane
- Construct additional 350-foot eastbound left turn lane (for a total of two)
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at Hamilton Court

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Mallet Drive/Crooker Access

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Topsham Fair Mall Road

- Construct additional eastbound through lane (for a total of three)
- Transition outer westbound left turn lane to inner through lane east of the intersection (i.e. at Mallet Drive)
- Construct an additional westbound through lane (for a total of three)

Route 196 at I-295 Northbound Ramps

- Construct additional westbound through lane (for a total of three)
- Extend eastbound right turn lane from 150 feet to 500 feet
- Construct an additional westbound through lane (for a total of three)
- Construct additional 200-foot northbound right turn lane (for a total of three)

Route 196 at I-295 Overpass

- Widen bridge to accommodate additional westbound through lane

Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound

- Install fully-actuated traffic signal
- Modify ramp geometry as needed to accommodate widening and signalization
- Construct additional 300-foot northbound approach lane from ramp (for a total of two)

Route 196 at I-295 Southbound On-Ramp

- Install fully-actuated traffic signal
- Construct 200-foot eastbound right-turn lane
- Extend westbound left-turn lane storage to 300 feet for existing lane
- Construct additional 300-foot westbound left-turn lane

Route 196 west of I-295

- Extend two-lane section for westbound traffic to improve lane utilization

5. Based on a review of the latest available MaineDOT crash history of the previous three years, there were five locations identified as high crash locations. Those locations are:

   - Main Street at Green Street/Summer Street
   - Main Street at Thompson Lane/Winter Street
   - Coastal Connector (Route 196) at Main Street (Route 201)
   - Lewiston Road (Route 196) at Hamilton Court

- Lewiston Road (Route 196) at I-295 SB Off-Ramp to Route 196 eastbound

Based on a review of the collision diagrams, Main Street in the vicinity of Green Street may benefit from a pedestrian beacon, such as a HAWK beacon. However, there does not appear to be significant impact on the traffic at this area from the Annex site in either of the redevelopment Alternatives.

In addition, the intersection of Route 196 at Route 201 and the Coastal Connector may experience a safety benefit from the conversion of the right turn slip lanes for the eastbound and westbound approaches to a standard design under signalized control. However, conversion of these lanes would likely result in some loss of capacity and increase the crossing distance for pedestrians from refuge point to refuge point.

I. *Project Understanding*

The Topsham Annex for the Naval Air Station in Brunswick is located on the easterly dead-end of the existing Canam Drive in Topsham, Maine. In 2005, the Annex was identified and approved for closure as part of the Base Closure and Realignment Act of 1990. The base is approximately 74 acres in size and primarily consists of two areas: 1) 177 units of military housing, of which only approximately 72 are occupied at the time when this study was initiated and 2) an operational area including commissary, training area, office space, and fire station.

As a result of the mandate for closure, an Environmental Assessment (EA) is required for the Annex. Part of this EA is a review of traffic, and an evaluation of the reuse / reoccupancy of the annex, consistent with the *Topsham Annex Reuse Master Plan*. There are two Alternatives associated with the reuse of the Annex. Alternative 1 includes 146 dwelling units with 70,000 square feet of general office space, the latter use based on reuse of existing facilities at the site. Alternative 2 includes 660,000 square feet of business park with no residential component. The purpose of this Traffic Impact Study is to evaluate the existing adjacent roadway network and to identify what mitigation may be necessary to accommodate the traffic associated with reuse of the annex under Alternative 1 or 2.

In addition to closure of the Annex, the Naval Air Station in Brunswick (the municipality adjacent to the south side of Topsham) has also been identified for closure. Similar to this site, there are two alternatives identified for the reuse of that facility as well. Because the Brunswick site is significantly larger than the Annex site, the proposed Alternatives at the Brunswick site generate significantly more traffic and as a result, the study area is significantly larger and overlaps with this study area for the Annex. There was enough information completed for the Brunswick Alternative 1 scenario to include the appropriate overlapping trips in the study area for the Annex reuse / redevelopment. Alternative 2 of the Brunswick site is yet to be determined but is expected to be completed by the issuance of the final report for this project.

II. *Existing and Proposed Site*

The site is located on the easterly dead-end of the existing Canam Drive, which intersects Route 201 at the westerly end in an unsignalized intersection. Also accessed directly via this public way is the middle school and indirectly the high school which has its primary access on Eagles Way. The site is approximately 74 acres in size and consists of two primary areas; the housing area and an operational area that currently includes a commissary, training facility, office space, and fire station. A site location map has been included in Appendix A.

This study is based on two alternatives that were furnished for redevelopment of the site following closure. Alternative 1 includes 146 residential housing units and 70,000 square feet of office space. Alternative 2 includes 660,000 square feet of business park with no

residential component. Both alternatives are proposed to continue to use Canam Drive to access the site.

III. *Background Traffic Conditions*

This study was based on the following information:

- Draft *Description of Proposed Action and Alternatives (DOPAA)* dated October 2008 and prepared by Ecology and Environment, Inc.
- High Crash Listings and police crash reports for 2005-2007 provided by the Maine Department of Transportation.
- 2008 AM peak hour turning movement volumes collected on November 19, 2008 from 7:00 to 9:00 AM. The summary volumes are shown on Figure 2 of Appendix A.
- 2008 PM peak hour turning movement volumes collected on November 19, 2008 from 3:00 to 6:00 PM. The summary volumes are shown on Figure 2 of Appendix A.
- Automatic Traffic Recorder (ATR) count data collected at four locations within the study area, summarized on Figure 2 of Appendix A.
- The recently collected turning movement counts identified above were supplemented with a turning movement count completed at Route 201 and Eagles Way on September 16, 2004 from 3:00 PM to 6:00 PM.

Existing Uses

The existing site includes a mixture of residential dwelling units and a commissary, office space, training facility and fire station. Based on information provided in the Draft DOPAA, although the site originally provided for 177 military housing units, the existing site was considered to have 72 dwelling units occupied at the time of the 2008 turning movement counts. The commissary, training facility, office space and fire station were considered ancillary uses. The estimated trip generation from the 72 dwelling units was subtracted from the adjacent roadway network based on existing traffic patterns. This provides a benchmark of what the adjacent roadway network may experience for traffic volumes if the Annex were to close without any reuse or reoccupancy. The trip reduction is shown on Figure 5 of Appendix A.

In addition to the existing conditions including no reoccupancy or reuse of the Annex, the Annex is grandfathered (i.e. has standing for the purposes of traffic permitting) for the 177 dwelling units. The trip generation associated with full reoccupancy of those grandfathered units was also explored. The potential distribution of the trips associated with the 177 dwelling units is shown on Figure 6B of Appendix A with the full reoccupancy of the Annex in the year 2031 shown on Figure 6C of Appendix A.

Seasonal Adjustment

The MaineDOT utilizes highway classifications of I, II, or III for state and local roadways. Type I roadways are defined as urban roadways, or those roads that typically see commuter traffic and experience little fluctuation from week to week throughout the year. Type II roadways, or arterial roadways are those that see a combination of commuter and

recreational traffic and therefore experience moderate fluctuations during the year. Type III roadways, or recreational roadways are typically used for recreational purposes and experience dramatic seasonal fluctuation.

The roadways within the study area are considered to be Type I roadways. Typically, volumes are adjusted to 30th highest hour of the year, which usually occurs in July or August. Because the project site is adjacent to both a middle school and high school, and the schools are not active in July or August, an evaluation utilizing MaineDOT weekly group mean factors was performed to determine which time period provided the highest overall volumes; July or August with peak summer traffic and without the schools active, or a time period (in this case June) when the schools were still active but summer time traffic was not fully realized. Based on the evaluation, the time period that produced the highest volumes on the adjacent street traffic was in the month of June with the schools still active. Based on the counts that were completed in November 2008, the counted volumes were adjusted by a factor of 1.07. This is the typical methodology required by the Maine Department of Transportation (MaineDOT) for any projects moving through its transportation permitting process.

Annual Growth

The proposed development (either Alternative 1 or 2) is anticipated to be fully developed by 2031. Based on a review of the Annual Average Daily Traffic (AADT) history as provided in publications from MaineDOT, the annual growth in traffic within the study area was approximately one percent on Route 196 in the study area and approximately one half of one percent (0.5%) on Route 201 in the vicinity of Canam Drive. Based on that history, the 2008 traffic volumes were projected to 2031. The 2031 seasonally and annually adjusted traffic volumes are shown on Figure 3 of Appendix A.

Other Development

Approved projects that are not yet opened as well as projects for which applications have been filed are typically included in the predevelopment design volumes for a project in the permitting process. For the purposes of this project, a Five County Credit Union to be located off Hamilton Court was included as other development. Trip assignment for this development is shown on Figure 4 in Appendix A.

In addition to closure of the Annex, the Naval Air Station in Brunswick (the municipality adjacent to the south side of Topsham) has also been identified for closure. Similar to this site, there are two alternatives identified for the reuse of that facility as well. Because the Brunswick site is significantly larger than the Annex site, the proposed Alternatives at the Brunswick site generate significantly more traffic and as a result, the study area is significantly larger and overlaps with this study area for the Annex. There was enough information completed for the Brunswick Alternative 1 scenario to include the appropriate overlapping trips in the study area for the Annex reuse / redevelopment. Alternative 2 of the Brunswick site is yet to be determined but is expected to be completed by the issuance of the final report for this project.

2031 Predevelopment Traffic Volumes

The 2031 predevelopment traffic volumes, without and with the BNAS – Brunswick, are shown on Figures 6A and 8 respectively in Appendix A. The volumes were determined using the following procedure:

1) Development of Figure 3 – 2031 Adjusted and Balanced Volumes
2) Subtracting the volumes associated with the 72 dwelling units of the existing Annex as shown on Figure 4 – Trip Reduction from Closure of Annex
3) Add the volumes associated with the Five County Credit Union shown on Figure 5 – Traffic from Other Development
4) Steps 1-3 yield the volumes in Figure 6A – 2031 No-Build Volumes without BNAS – Brunswick Development
5) Add the volumes on Figure 6B to those on Figure 6A to yield the volumes on Figure 6C (2031 Volumes with Annex Reoccupancy)
6) Add the volumes in Figure 7 to Figure 6A to yield the volumes shown in Figure 8 – 2031 No-Build Volumes with BNAS – Brunswick Development.

III. *Study Area*

The study area for this report includes the following intersections:

Route 196 at:

- Southbound I-295 on/off ramp (Unsignalized)
- Northbound I-295 on/off ramp (Signalized)
- Topsham Fair Mall Road (Signalized)
- Mallet Drive (Signalized)
- Hamilton Court (Signalized)
- Route 201 (aka Main Street) (Signalized)

Route 201 at:

- Eagles Way (Unsignalized)
- Canam Drive (Unsignalized)
- Elm Street (Signalized)

IV. *Automatic Traffic Recorder (ATR) Data*

ATR counts were compiled on each of the primary approaches into the study area. The ATR information was then adjusted to Annual Average Daily Traffic (AADT) volumes using MaineDOT weekly group mean factors. The results are summarized as follows and shown graphically on Figure 2 in Appendix A.

- Route 196 west of the Topsham Fair Mall Road – Estimated 2008 AADT - 20,093
- Route 196 east of Route 201 – Estimated 2008 AADT - 18,168
- Route 201 between Second Street and Monument Place – Estimated 2008 AADT - 10,032
- Route 201 between Eagles Way and Canam Drive – Estimated 2008 AADT - 9,933

V. *Trip Generation Estimate for Redevelopment of the Site*

The Institute of Transportation Engineers (ITE) publication *Trip Generation,* 7th Edition was used as the source for determining trip generation for the existing and proposed development.

As stated previously, although the site originally provided for 177 military housing units, the existing site was identified as having 72 dwelling units currently occupied, with ancillary uses of commissary, training facility, office space and fire station. The ITE Trip Generation Manual [Residential Condo / Townhouse (LUC 230)] was used to determine the trip generation for the 72 dwelling units. The trip generation associated with the occupied housing units is 32 AM and 37 PM trip ends of the adjacent peak hour of street traffic.

Since the existing 177 military housing units would probably be considered to be "grandfathered" by MaineDOT (i.e. given standing for the purposes of permitting), this study also explored what reoccupancy of all the units would generate. Based on using Residential Planned Unit Development code (LUC 270 in the Manual), the units could be expected to generate 101 AM and 138 PM trip ends of the adjacent peak hour of street traffic. Although the Annex also has a commissary, training area, office space, and fire station; these uses were considered to be ancillary to the military housing and it is not expected that MaineDOT would consider reoccupancy of these facilities by civilians as grandfathered.

In Alternative 1, the trip generation is based on using Residential Planned Unit Development [Land Use Code (LUC) 270] for the 146 dwelling units and General Office (LUC 710) for the 70,000 square feet of office space. The planned unit category was used instead of the Residential Condo / Townhouse because: 1) the number of units is significantly more than the existing occupied 72 units; and 2) the non-military type of residential living is expected to generate more trips per unit than a military residential unit. Since there may be shared trips between the residential units and the office and/or schools, this trip generation may be conservative.

In Alternative 2, Business Park (LUC 770) was used for the proposed 660,000 square feet of proposed development. The trip generation calculations are provided in Appendix C.

The following table lists the trip generation for the AM and PM peak hours of the adjacent street traffic for Alternatives 1 and 2.

Trip Generation Summary – Peak Hour of Adjacent Street Traffic

Use	Alternative 1 - Reuse		Alternative 2- High Density	
	AM	PM	AM	PM
Planned Residential Development - LUC 270 (146 Dwelling Units)	84	116	NA	NA
General Office - LUC 710 (70,000 SF)	141	157	NA	NA
Business Park - LUC 770 (660,000 SF)	NA	NA	909	857
Total	**225**	**273**	**909**	**857**

NA = Not Applicable

VI. *MaineDOT Traffic Movement Permit*

In addition to the previous trip generation summary, the "trip credit" for the original 177 military housing units was also calculated as described in the previous section. This trip credit is used to assist in determining if the proposed development would require a MaineDOT Traffic Movement Permit. Based on using the planned unit land use code, the estimated trip generation is 101 AM and 138 PM trip ends for the peak hours of adjacent street traffic. The net increases in trip generation are as follows:

- Alternative 1 AM: 225-101 = 124
- Alternative 1 PM: 273-138 = 135
- Alternative 2 AM: 909-101 = 808
- Alternative 2 PM: 857-138 = 719

Because the net increase in traffic for the AM or PM peak hour of adjacent street traffic is greater than 100 trip ends, the site will need a MaineDOT Traffic Movement Permit.

VII. *Trip Distribution*

The ratio of entering and exiting traffic was based on the Institute of Transportation Engineers publication *Trip Generation,* 7th Edition for each of the various uses. The trip distribution is as follows:

	AM	PM
Planned Residential Development:	25% Enter, 75% Exit	65% Enter, 35% Exit
General Office:	90% Enter, 10% Exit	15% Enter, 85% Exit
Business Park:	85% Enter, 15% Exit	25% Enter, 75% Exit

A summary of the trip distribution is provided in the following table :

Trip Generation Summary

Use	Alternative 1 - Reuse				Alternative 2- High Density			
	AM		PM		AM		PM	
	Enter	Exit	Enter	Exit	Enter	Exit	Enter	Exit
Planned Residential Develop. (LUC 270)	21	63	75	41	NA	NA	NA	NA
General Office (LUC 710)	127	14	24	133	NA	NA	NA	NA
Business Park (LUC 770)	NA	NA	NA	NA	773	136	214	643
Total	**148**	**77**	**99**	**174**	**773**	**136**	**214**	**643**

VIII. *Trip Composition and Assignment*

Trip Composition

There are typically three types of trips to a development; primary, diverted and pass-by. Primary trips are those that are on the adjacent roadway network with the sole purpose of visiting the specific site. Primary trips have the most impact on the adjacent roadway network. Diverted traffic are vehicles that are already somewhere on the adjacent roadway network but adjust their route temporarily to travel to the site; when the vehicles depart the site they continue on to their original destination. Diverted traffic tends to have less impact on the adjacent roadway network than Primary traffic, but more than Pass-by traffic. Pass-by trips are already on the adjacent roadway network and passing by the site entrance when they enter the site. When they depart the site, they continue in the direction they were originally traveling. Pass-by trips only impact the driveway and have the least impact on the adjacent roadway network.

For the purposes of this evaluation, the trip composition for all uses was considered to be one hundred percent primary trips. This implies that all the traffic associated with the proposed development is new to the adjacent roadway network.

Trip Assignment

Once the trip generation is determined, the trips are assigned to the adjacent roadway network. For the purposes of this study, a 25-mile radius gravity model was utilized with some extension of the 25 miles (up to 30) for drivers who have easy access to the Interstate coming to or from major service/retail/population centers. The gravity model identifies municipalities and their associated population within the gravity model area and assumes that the trips are proportionally distributed based on population. The gravity model and Figures 9 and 10 showing the trip assignment for Alternatives 1 and 2 respectively are provided in Appendix A.

IX. *2031 Postdevelopment Traffic*

There are four 2031 Postdevelopment Scenarios described as follows and provided in Appendix A:

- 2031 Alternative 1 Build Volumes without Brunswick Development – Figure 11
- 2031 Alternative 2 Build Volumes without Brunswick Development – Figure 12
- 2031 Alternative 1 Build Volumes with Brunswick Development Alt 1 – Figure 13
- 2031 Alternative 2Build Volumes with Brunswick Development Alt 1– Figure 14

X. *Mitigation*

The potential roadway improvements were identified to accommodate additional traffic associated with each development scenario. It should be noted that this is a Draft study and that as more information becomes available, or as municipal or governmental reviews are undertaken, the mitigation is subject to revision. The scenarios are described as follows:

1. *2031 No Build* – This is the year 2031 with the site not reoccupied with either Alternative 1 or 2 and all the existing geometry of the intersections.
2. *2031 Reoccupancy* - This includes reoccupancy of the original 177 housing units.
3. *2031 Alternative 1 with no change to the Brunswick site* – This is the year 2031 with the combination of 146 dwelling units and 70,000 square feet of office space. This did not include any change to the BNAS – Brunswick site in the adjacent Town.
4. *2031 Alternative 2 with no change to the Brunswick site* – This is the year 2031 with 660,000 s.f. of business park and no residential component. This did not include any change to the BNAS – Brunswick site in the adjacent Town.
5. *2031 Alternative 1 with Brunswick Alternative 1 also included* – This is the year 2031 with the combination of 146 dwelling units and 70,000 square feet of office space. This did include the development of Alternative 1 at the BNAS – Brunswick site in the adjacent Town.
6. *2031 Alternative 2 with Brunswick Alternative 1 also included* – This is the year 2031 with 660,000 s.f. of business park and no residential component. This did include the development of Alternative 1 at the BNAS – Brunswick site in the adjacent Town.

For the purposes of the following descriptions, Route 196 is considered to travel east-west and Route 201 is considered to travel north-south. The mitigation is identified on the conceptual mitigation plans provided in Appendix C.

Mitigation for Scenario 1: 2031 No Build

None proposed – based on existing roadway conditions as currently found in the field.

Mitigation for Scenario 2: 2031 Reoccupancy

It is important to note that the mitigation identified in this scenario is due to existing design deficiencies as well as the impact of long-term traffic growth, and that this mitigation could be needed regardless of if the Annex proceeds with Alternative 1 or 2. This scenario does assume the grandfathered 177 dwelling units are on site and occupied.

Route 201 at Route 196/Coastal Connector

- Extend eastbound left-turn lane from 250 feet to 350 feet
- Extend westbound right-turn lane from 250 feet to 350 feet
- Construct 250-foot northbound right-turn lane
- Extend southbound left-turn lane from 200 feet to 250 feet
- Convert outer southbound through/right turn lane to an exclusive right-turn lane

Route 201 at Eagles Way

- Construct 150-foot westbound right-turn lane
- Construct 150-foot northbound right-turn lane
- Construct 100-foot southbound left turn lane

Route 201 at Canam Drive

- Install fully-actuated traffic signal
- Construct 150-foot westbound right-turn lane
- Extend northbound right-turn lane to 150 feet
- Convert southbound 250-foot bypass lane to a dedicated left-turn lane

Mitigation for Scenario 3: 2031 Alternative 1 with no change to the Brunswick Site

This Scenario contains the same mitigation as Scenario 2 (2031 Reoccupancy), but with the following minor extension of turn lanes to address the additional traffic generated by Alternative 1:

- Route 201 at Route 196 / Coastal Connector – Extend southbound left turn lane from proposed 250 feet to 300 feet.
- Route 201 at Eagles Way – Extend the proposed southbound right turn lane from 100 feet to 150 feet.

***Mitigation for Scenario 4:* 2031 Alternative 2 with no change to the Brunswick Site**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 300 feet
- *(Convert southbound outer through/right turn lane to an exclusive right-turn lane)*
- Construct additional southbound 350-foot right turn lane (for a total of two)

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 250-foot right-turn lane
- Construct additional 350-foot eastbound left turn lane (for a total of two)
- Construct additional northbound through lane
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at I-295 Southbound On-Ramp

- Extend westbound left-turn lane storage to 300 feet

***Mitigation for Scenario 5:* 2031 Alternative 1 with Brunswick Alternative 1 also included**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 350 feet
- *(Convert outer southbound through/right turn lane to an exclusive right-turn lane)*
- Construct additional southbound 350-foot left-turn lane

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 350-foot right-turn lane
- Construct additional northbound through lane
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at Hamilton Court

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Mallet Drive/Crooker Access

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Topsham Fair Mall Road

- Construct additional eastbound through lane (for a total of three)
- Transition outer westbound left turn lane to inner through lane east of the intersection (i.e. at Mallet Drive)
- Construct an additional westbound through lane (for a total of three)

Route 196 at I-295 Northbound Ramps

- Construct additional westbound through lane (for a total of three)
- Extend eastbound right turn lane from 150 feet to 500 feet
- Construct an additional westbound through lane (for a total of three)
- Construct additional 200-foot northbound right turn lane (for a total of three)

Route 196 at I-295 Overpass

- Widen bridge to accommodate additional westbound through lane

Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound

- Install fully-actuated traffic signal
- Modify ramp geometry as needed to accommodate widening and signalization
- Construct additional 300-foot northbound approach lane from ramp (for a total of two)

Route 196 at I-295 Southbound On-Ramp

- Install fully-actuated traffic signal
- Construct 200-foot eastbound right-turn lane
- Extend westbound left-turn lane storage to 300 feet for existing lane
- Construct additional 300-foot westbound left-turn lane

Route 196 west of I-295

- Extend two-lane section for westbound traffic to improve lane utilization

***Mitigation for Scenario 6:* 2031 Alternative 2 with Brunswick Alternative 1 also included**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 350 feet
- Construct additional southbound through lane (for a total of two)
- Provide a total of two 350-foot southbound right-turn lanes
- Construct additional southbound 350-foot left-turn lane

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane

- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 350-foot right-turn lane
- Construct additional northbound through lane
- Construct additional 350-foot eastbound left turn lane (for a total of two)
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at Hamilton Court

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Mallet Drive/Crooker Access

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Topsham Fair Mall Road

- Construct additional eastbound through lane (for a total of three)
- Transition outer westbound left turn lane to inner through lane east of the intersection (i.e. at Mallet Drive)
- Construct an additional westbound through lane (for a total of three)

Route 196 at I-295 Northbound Ramps

- Construct additional westbound through lane (for a total of three)
- Extend eastbound right turn lane from 150 feet to 500 feet
- Construct an additional westbound through lane (for a total of three)
- Construct additional 200-foot northbound right turn lane (for a total of three)

Route 196 at I-295 Overpass

- Widen bridge to accommodate additional westbound through lane

Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound

- Install fully-actuated traffic signal
- Modify ramp geometry as needed to accommodate widening and signalization
- Construct additional 300-foot northbound approach lane from ramp (for a total of two)

Route 196 at I-295 Southbound On-Ramp

- Install fully-actuated traffic signal
- Construct 200-foot eastbound right-turn lane

- Extend westbound left-turn lane storage to 300 feet for existing lane
- Construct additional 300-foot westbound left-turn lane

Route 196 west of I-295

- Extend two-lane section for westbound traffic to improve lane utilization

XI. *Capacity Analyses*

Capacity analyses for the intersections was completed utilizing the Synchro/SimTraffic Version 6 analysis software package. Levels of service rankings are similar to the academic ranking system where an 'A' is very good with little control delay and an 'F' represents very poor conditions. A level of service 'D' and higher is desirable for a signalized intersection. At an unsignalized intersection, if the level of service falls below a 'D', an evaluation should be made to determine if mitigation is warranted.

The capacity analysis was performed for six different scenarios, as previously discussed in the mitigation portion:

- Scenario 1 - 2031 No Build (also 1A – 2008 No Build)
- Scenario 2 - Reoccupancy
- Scenario 3 - 2031 Alternative 1 with no change to the Brunswick site
- Scenario 4 - 2031 Alternative 2 with no change to the Brunswick site
- Scenario 5 - 2031 Alternative 1 with Brunswick Alternative 1 also included
- Scenario 6 - 2031 Alternative 2 with Brunswick Alternative 1 also included

The following tables summarize the relationship between control delay and level of service for signalized and unsignalized intersections, respectively:

Level of Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec)
A	Up to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	Greater than 80.0

Level of Service Criteria for Unsignalized Intersections

Level of Service	Control Delay per Vehicle (sec)
A	Up to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The following tables identify the level of service for each of the study area intersections. The capacity analysis for each scenario assumes interconnection and optimization of the timing and phasing of the signalized intersections. For scenarios 2 and 3, the analysis was summarized for the forecast volumes for both the existing roadway network as well as with the proposed mitigation. For scenarios 4 and 5 (which includes Alternative 1 development at the Brunswick site), the increases in traffic volumes are so significant (doubling to tripling certain critical volumes along the Route 196 to I-295 corridor) that the existing conditions analyses are unable to provide meaningful results; as such, the analyses without mitigation is listed as N/A (not applicable); however, the results with mitigation is provided.

2031 PM Peak Hour Level of Service for Route 201 / Elm Street - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
Elm WB	C (C)	C	NN	C	NN	C	NN	NN	NN	NN	NN
201 NB	A (A)	A	NN	A	NN	A	NN	NN	NN	NN	NN
201 SB	B (B)	B	NN	B	NN	B	NN	NN	NN	NN	NN
Overall	**B (B)**	**B**	NN	**B**	NN	**B**	NN	NN	NN	NN	NN

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
NN = No Mitigation Necessary
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 PM Peak Hour Level of Service for Route 196 / SB I-295 Ramp - (Unsignalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	A (A)	A	NN	A	NN	A	A	N/A	C	N/A	C
196 WB	A (A)	A	NN	A	NN	A	A	N/A	A	N/A	A
295 NB	A (A)	A	NN	A	NN	B	A	N/A	B	N/A	B
295 SB	A (A)	B	NN	B	NN	B	C	N/A	B	N/A	B
Overall	**A (A)**	**A**	**NN**	**A**	NN	**A**	**A**	**N/A**	**B**	**N/A**	**B**

W/O = Without mitigation
W/ = With mitigation if applicable (includes signalization)
N/A = Not Applicable
NN = No Mitigation Necessary
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 PM Peak Hour Level of Service for Route 196 / NB I-295 Ramp - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	A (A)	A	NN	A	NN	B	NN	N/A	B	N/A	B
196 WB	A (A)	A	NN	A	NN	A	NN	N/A	B	N/A	C
295 NB	B (B)	B	NN	B	NN	B	NN	N/A	C	N/A	C
Overall	**A (A)**	**A**	**NN**	**A**	NN	**B**	NN	**N/A**	**C**	**N/A**	**C**

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
NN = No Mitigation Necessary
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 PM Peak Hour Level of Service for Route 196/Topsham Fair Mall Road - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	B (B)	B	NN	B	NN	C	NN	N/A	C	N/A	C
196 WB	B (B)	B	NN	B	NN	B	NN	N/A	C	N/A	D
Mall NB	C (C)	C	NN	C	NN	D	NN	N/A	C	N/A	D
Crooker SB	C (C)	C	NN	C	NN	D	NN	N/A	D	N/A	D
Overall	**B (B)**	**B**	**NN**	**B**	NN	**C**	NN	**N/A**	**C**	**N/A**	**C**

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
NN = No Mitigation Necessary
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 PM Peak Hour Level of Service for Route 196 / Mallet Drive - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	A (A)	A	NN	A	NN	D	NN	N/A	A	N/A	A
196 WB	A (A)	A	NN	A	NN	A	NN	N/A	A	N/A	C
Mallet NB	C (C)	C	NN	C	NN	D	NN	N/A	D	N/A	E
Crooker SB	C (C)	C	NN	C	NN	C	NN	N/A	D	N/A	E
Overall	**A (A)**	**A**	**NN**	**A**	NN	**B**	NN	**N/A**	**A**	**N/A**	**B**

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
NN = No Mitigation Necessary
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 PM Peak Hour Level of Service for Route 196 / Hamilton Court - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	A (A)	B	A	B	B	D	B	N/A	B	N/A	A
196 WB	A (A)	A	A	A	A	A	A	N/A	A	N/A	D
Hamilton NB	C (C)	C	C	D	C	E	C	N/A	C	N/A	C
Overall	**A (A)**	**A**	**A**	**A**	**A**	**C**	**B**	**N/A**	**A**	**N/A**	**D**

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
Note: Volumes in parenthesis denote results for 2008 existing conditions

Scenarios 2 and 3 show an improved level of service for some approaches; however, no mitigation is proposed for those scenarios. The improved levels of service are due to mitigation and resulting improved traffic flow at adjacent intersections.

2031 AM Peak Hour Level of Service for Route 196 / Route 201 - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	B (B)	B	B	B	B	E	C	N/A	B	N/A	C
196 WB	C (C)	C	C	C	C	D	C	N/A	C	N/A	C
201 NB	D (D)	D	C	D	C	E	C	N/A	D	N/A	D
201 SB	C (C)	C	C	C	C	E	C	N/A	C	N/A	D
Overall	**C (C)**	**C**	**C**	**C**	**C**	**E**	**C**	**N/A**	**C**	**N/A**	**C**

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 PM Peak Hour Level of Service for Route 196 / Route 201 - (Signalized)

Approach	Scenario										
	1 & (1A) – No Build	2 - Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
196 EB	D (C)	D	C	E	C	F	C	N/A	B	N/A	C
196 WB	C (C)	C	C	D	D	D	C	N/A	C	N/A	C
201 NB	D (D)	F	D	F	D	F	D	N/A	D	N/A	E
201 SB	D (D)	D	D	D	D	D	C	N/A	D	N/A	E
Overall	**D (D)**	**D**	**D**	**E**	**D**	**E**	**C**	**N/A**	**C**	**N/A**	**D**

W/O = Without mitigation
W/ = With mitigation if applicable
N/A = Not Applicable
Note: Volumes in parenthesis denote results for 2008 existing conditions

2031 AM Peak Hour Level of Service for Route 201 / Eagles Way - (Unsignalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
Eagles WB	D (C)	D	B	E	C	F	E	N/A	B	N/A	F
201 NB	A (A)	A	A	A	A	A	A	N/A	A	N/A	A
201 SB	B (A)	B	A	B	A	F	A	N/A	A	N/A	A
Overall	**A (A)**	**A**	**A**	**A**	**A**	**F**	**A**	**N/A**	**A**	**N/A**	**B**

W/O = Without mitigation
W/ = With mitigation if applicable
Note: Volumes in parenthesis denote results for 2008 existing conditions
N/A = Not Applicable

2031 PM Peak Hour Level of Service for Route 201 / Eagles Way - (Unsignalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
Eagles WB	F (E)	F	F	F	F	F	F	N/A	D	N/A	F
201 NB	A (A)	A	A	A	A	A	A	N/A	A	N/A	A
201 SB	B (A)	B	A	B	A	B	A	N/A	A	N/A	A
Overall	**B (A)**	**B**	**A**	**C**	**A**	**B**	**A**	**N/A**	**A**	**N/A**	**A**

W/O = Without mitigation
W/ = With mitigation if applicable
Note: Volumes in parenthesis denote results for 2008 existing conditions
N/A = Not Applicable

2031 AM Peak Hour Level of Service for Route 201 / Canam Drive - (Unsignalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		3 – Alt 1 w/o Brunswick		4 – Alt 2 w/o Brunswick		5 – Alt 1 w/ Brunswick		6 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
Canam WB	B (B)	C	C	C	C	F	C	N/A	C	N/A	D
201 NB	A (A)	A	A	A	B	A	B	N/A	A	N/A	B
201 SB	B (A)	B	B	B	B	C	B	N/A	B	N/A	C
Overall	**A (A)**	**A**	**B**	**B**	**B**	**C**	**B**	**N/A**	**B**	**N/A**	**B**

W/O = Without mitigation
W/ = With mitigation if applicable (includes signalization)
Note: Volumes in parenthesis denote results for 2008 existing conditions
N/A = Not Applicable

2031 PM Peak Hour Level of Service for Route 201 / Canam Drive - (Unsignalized)

Approach	Scenario										
	1 & (1A) – No Build	2 – Reoccupancy		2 – Alt 1 w/o Brunswick		3 – Alt 2 w/o Brunswick		4 – Alt 1 w/ Brunswick		5 – Alt 2 w/ Brunswick	
		W/O	W/	W/O	W/	W/O	W/	W/O	W/	W/O	W/
Canam WB	C (C)	E	C	F	C	F	C	N/A	D	N/A	D
201 NB	A (A)	A	B	A	B	A	B	N/A	B	N/A	B
201 SB	B (A)	B	B	B	C	B	C	N/A	C	N/A	C
Overall	**A (A)**	**B**	**B**	**F**	**C**	**F**	**C**	**N/A**	**C**	**N/A**	**C**

W/O = Without mitigation
W/ = With mitigation if applicable (includes signalization)
N/A = Not Applicable
Note: Volumes in parenthesis denote results for 2008 existing conditions

As can be seen from the previous tables, with the addition of the proposed mitigation (some of which is substantial), the study area intersections operate at a level of service 'D' or better, with the following exceptions:

- *Route 196 at Mallet Drive/Crooker*: There is delay for the side-street approaches on Scenario 5 during the PM peak hour. It should be noted that these are relatively low in volume, and that overall mobility along Route 196 at this location is not impaired.
- *Route 201 at Route 196/Coastal Connector*: There is delay for the Route 201 approaches on Scenario 5 during the PM peak hour. Despite the significant level of mitigation proposed for this condition, the intersection is trying to accommodate almost 8,000 vehicles during the peak hour and some delay results. Additional mitigation beyond that proposed is unrealistic, given the significant property impacts adjacent to this location.
- *Eagles Way at Route 201*: There is delay for exiting traffic from this driveway, which is not uncommon for an unsignalized STOP controlled approach to a major roadway. Separate left and right turn lanes exiting Eagles Way are proposed. In addition, left turning traffic also have the option of exiting onto Route 201 from the proposed signal at Canam Drive in the build scenarios.

XII. *High Crash Location Review*

A review of the high crash locations within the study area was completed as part of this study. In the state of Maine, a high crash location review typically consists of examining crash records for the latest three-year period. As of the time of this report, MaineDOT was publishing crash records for the 2005-2007 period.

In order to evaluate whether a location has a crash problem, MaineDOT utilizes two criteria to define what is called a High Crash Location (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor of 1.00 or more for a three-year period. (A Critical Rate Factor {CRF} compares the actual crash rate to the rate for similar intersection in the state. A CRF of less than 1.00 indicates a rate of less than average) **and**:
2. A minimum of eight crashes over the latest three-year period.

The following table summarizes the high crash locations as established using the MaineDOT criteria. It should be noted that all the HCL's were intersections and that no links (roadway segments connecting intersections) within the study area were classified as high crash locations.

Maine DOT Crash Data for 2005-2007: Intersections

Node	Intersection	# of Collisions	CRF	HCL?
44170	Main Street at Green Street/Summer Street	8	1.06	Yes
44171*	Main Street at Thompson Lane/Winter Street	9	1.17	Yes
44020*	Coastal Connector (Route 196) at Main Street (Route 201)	43	1.11	Yes
44585	Lewiston Road (Route 196) at Hamilton Court	12	1.30	Yes
44588	Lewiston Road (Route 196) at I-295 SB Off-Ramp to 196 EB	10	2.89	Yes

*** These intersections are located very close to adjacent intersections and crashes at these locations are considered with the adjacent intersection.**

Based on the published history, five locations within the study area are considered High Crash Locations. Copies of the police reports for these locations were obtained and collision diagrams were prepared and are provided in Appendix C.

Main Street at Green Street/Summer Street

Although coded as the same node, these locations are currently offset, and as such, were placed on two separate collision diagrams. Main Street at Summer Street experienced four collisions based on the provided crash reports. Of these, three were rear ends involving left turns from the major street; a driver behind the turning vehicle did not see the blinking indicator, or the indicator was not used. One incident involved a vehicle attempting to turn left from the Bowdoin Mill across from Summer Street being struck by oncoming traffic. Potential mitigation at this location could be the establishment of a left turn lane for vehicles accessing either Summer Street or the Bowdoin Mill complex. However, as this is a low-speed, urban environment with little opportunity for widening, an additional lane is not recommended.

Main Street at Green Street experienced five collisions during the 2005-2007 period. Two incidents involved vehicles rear-end left turning vehicles, one involved a rear end of a vehicle losing control, and two incidents took place when a vehicle stopped for a pedestrian in the crosswalk and was struck from behind. As with at Summer Street, the addition of a turn lane does not appear to be feasible, nor is it recommended. However, if pedestrian-related incidents continue to occur, one possible solution would be the placement of a pedestrian-actuated beacon. The most effective style of beacon would be the HAWK, which could be pedestal-mounted at this location.

Main Street at Thompson Lane (Winter Street)

In actuality, most of the incidents at this location were miscoded and were actually at Winter Street. These were rear-end collisions, commonly associated with the grade at this location. As such, there does not appear to be a feasible remedy at this location.

Main Street at Lewiston Road

This location experienced the greatest number of collisions of the High Crash Locations in the study area. The majority of the incidents were attributable to rear-end collisions at the right-turn slip lanes on Route 196, which is a collision pattern common to these lane types at signalized intersections. The remainder of the intersection incidents are a mixture of rear-end collisions, improper lane changes, red -light running, drivers blinded by sun, confusion due to construction/police presence, and OUI's. Based on a review of these incidents, removal of the slip lanes and conversion to standard right-turn lanes would likely reduce the crash rate significantly at this location.

Lewiston Road at Hamilton Court

All crashes at this location were rear-end in nature. The contributing factors included failed brakes, sunlight in driver's eyes, poor roadway conditions, significant congestion, and driver inattention. However, as no one cause appears to have a significant impact on this location, no changes to the intersection are recommended.

Lewiston Road at I-295 Southbound Off-Ramp to Lewiston Road Eastbound

The crashes at this location were entirely composed of rear-end incidents for vehicles coming off of the 295 ramp. Based on a review of both the collision reports and the geometry in the field, it appears that the acute angle of the ramp contributes to the collisions, as drivers attempt to merge with Lewiston Road at a high rate of speed while trying to look far to their left. The result is that drivers at the front of a queue often wind up stopping suddenly, and are struck from behind as a result. A possible solution at this location could be the realignment of this ramp to provide for a more perpendicular approach to Lewiston Road.

XIII. *On-Site Pedestrian and Transit Facilities*

Pedestrian Accommodations

The level of detail for this study was broad in nature and therefore did not focus on accommodations for pedestrians. However, it is recommended that sidewalks be provided for both Alternatives 1 and 2. In Alternative 1, the mixture of business and residential, there could be pedestrians walking from the residential dwelling units to both the offices for work and to the adjacent middle or high schools.

In Alternative 2, the business park, employees may use the sidewalks for exercise or intermixing between the buildings.

Transit Accommodations

Similar to pedestrian accommodations, this study was not intended to analyze existing or proposed transit systems to accommodate either Alternative 1 or 2. However, buses should be accommodated on site with either Alternative 1 or 2. It should be noted that there is no public bus service in the Topsham area; however, intercity bus service is provided by Concord Trailways in Brunswick, which operates in this region on a limited schedule.

Lastly, it is anticipated that Amtrak passenger rail service will be extended to downtown Brunswick by the time the Annex is reoccupied. The intercity services may provide for some transit-related opportunities for this area in the future.

Both the pedestrian and transit accommodations have the potential to reduce the traffic on the adjacent roadway network and in turn, reduce the recommended mitigation.

XIV. *Transportation Demand Management (TDM)*

In an effort to reduce peak hour demands to the site and minimize the use of single-occupant vehicles, consideration should be given to implementing a transportation demand management (TDM) program. This program could include but not be limited to the following:

Promotion of Public Transportation

The cost or a portion of the cost of monthly bus passes could be subsidized by the facility as an incentive for employees to utilize the local public transportation network.

Ridesharing Program

Ridesharing programs encourage commuters to ride in vehicles with other commuters rather than drive alone. The facility could provide ride-matching services through postings in public areas. Reserved parking spaces for vehicles that are used for van or carpooling could also be provided.

Provision of Bicycle Amenities

Enclosed and secure bicycle facilities could be provided for employees interested in bicycling to and from work or school

Staggered Work Hours

Both Alternative 1 and Alternative 2 would benefit from staggering the start and release time of the office space and/or business park from the peak hours of the adjacent street traffic.

Similar to the pedestrian and transit accommodations, each of the above transportation demand management techniques has the potential to reduce traffic on the adjacent

roadway network during the key peak hours of the day, and in turn, reduce the recommended mitigation.

XV. *Conclusions and Recommendations*

Based on the review and analysis contained within this Traffic Impact Study, the following conclusions and recommendations were identified:

1. Alternative 1 is forecast, based on the *ITE Trip Generation Manual,* to generate 225 AM and 273 PM trip ends of the adjacent peak hour of street traffic. Alternative 2 is forecast to generate 909 AM and 857 PM trip ends of the adjacent peak hour of street traffic. (Note: A trip end is either a trip in or out of the site. Therefore a single vehicle making a round trip would equal two trip ends). The original 177 military housing units with commissary, training facility, office space and fire station were estimated, based on the ITE Trip Generation Manual, to generate 101 AM and 138 PM trip ends of the peak hour of adjacent street traffic.

2. The proposed trip generation for Alternatives 1 and 2 minus the trip credit for the original 177 military housing units with commissary, training facility, office space and fire station exceeds the MaineDOT threshold of 100 peak hour trip ends, and therefore both Alternatives 1 and 2 are anticipated to require a Traffic Movement Permit from the MaineDOT.

3. Six scenarios have been analyzed for the purposes of this report, which are the following:

   - Scenario 1 - 2031 No Build (i.e. travel conditions following the closure of the Annex)
   - Scenario 2 –2031 Reoccupancy (i.e. reuse of housing and office space at the Annex)
   - Scenario 3 - 2031 Alternative 1 with no change to the Brunswick site
   - Scenario 4 - 2031 Alternative 2 with no change to the Brunswick site
   - Scenario 5 - 2031 Alternative 1 with Brunswick Alternative 1 also included
   - Scenario 6 - 2031 Alternative 2 with Brunswick Alternative 1 also included

4. Based on the capacity analysis, mitigation was identified at the study area locations to accommodate the proposed traffic volumes. It should be noted that this is a Draft study and that as more information becomes available, or as municipal or governmental reviews are undertaken, the mitigation is subject to revision. The mitigation is described as follows:

   Mitigation for Scenario 1: 2031 No Build

   None proposed – based on existing roadway conditions as currently found in the field.

Mitigation for Scenario 2: 2031 Reoccupancy

It is important to note that the mitigation identified in this scenario is due to existing design deficiencies as well as the impact of long-term traffic growth, and that this mitigation could be needed regardless of if the Annex proceeds with Alternative 1 or 2. This scenario does assume the grandfathered 177 dwelling units are on site and occupied.

Route 201 at Route 196/Coastal Connector

- Extend eastbound left-turn lane from 250 feet to 350 feet
- Extend westbound right-turn lane from 250 feet to 350 feet
- Construct 250-foot northbound right-turn lane
- Extend southbound left-turn lane from 200 feet to 250 feet
- Convert outer southbound through/right turn lane to an exclusive right-turn lane

Route 201 at Eagles Way

- Construct 150-foot westbound right-turn lane
- Construct 150-foot northbound right-turn lane
- Construct 100-foot southbound left turn lane

Route 201 at Canam Drive

- Install fully-actuated traffic signal
- Construct 150-foot westbound right-turn lane
- Extend northbound right-turn lane to 150 feet
- Convert southbound 250-foot bypass lane to a dedicated left-turn lane

***Mitigation for Scenario 3:* 2031 Alternative 1 with no change to the Brunswick Site**

This Scenario contains the same mitigation as Scenario 2 (2031 Reoccupancy), but with the following minor extension of turn lanes to address the additional traffic generated by Alternative 1:

- Route 201 at Route 196 / Coastal Connector – Extend southbound left turn lane from proposed 250 feet to 300 feet.
- Route 201 at Eagles Way – Extend the proposed southbound right turn lane from 100 feet to 150 feet.

***Mitigation for Scenario 4:* 2031 Alternative 2 with no change to the Brunswick Site**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would

most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 300 feet
- *(Convert southbound outer through/right turn lane to an exclusive right-turn lane)*
- Construct additional southbound 350-foot right turn lane (for a total of two)

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 250-foot right-turn lane
- Construct additional 350-foot eastbound left turn lane (for a total of two)
- Construct additional northbound through lane
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at I-295 Southbound On-Ramp

- Extend westbound left-turn lane storage to 300 feet

***Mitigation for Scenario 5:* 2031 Alternative 1 with Brunswick Alternative 1 also included**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- Construct additional eastbound through lane (for a total of three)

- Construct two additional westbound through lanes (for a total of four)
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 350 feet
- *(Convert outer southbound through/right turn lane to an exclusive right-turn lane)*
- Construct additional southbound 350-foot left-turn lane

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 350-foot right-turn lane
- Construct additional northbound through lane
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at Hamilton Court

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Mallet Drive/Crooker Access

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Topsham Fair Mall Road

- Construct additional eastbound through lane (for a total of three)
- Transition outer westbound left turn lane to inner through lane east of the intersection (i.e. at Mallet Drive)
- Construct an additional westbound through lane (for a total of three)

Route 196 at I-295 Northbound Ramps

- Construct additional westbound through lane (for a total of three)
- Extend eastbound right turn lane from 150 feet to 500 feet
- Construct an additional westbound through lane (for a total of three)
- Construct additional 200-foot northbound right turn lane (for a total of three)

Route 196 at I-295 Overpass

- Widen bridge to accommodate additional westbound through lane

Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound

- Install fully-actuated traffic signal
- Modify ramp geometry as needed to accommodate widening and signalization
- Construct additional 300-foot northbound approach lane from ramp (for a total of two)

Route 196 at I-295 Southbound On-Ramp

- Install fully-actuated traffic signal
- Construct 200-foot eastbound right-turn lane
- Extend westbound left-turn lane storage to 300 feet for existing lane
- Construct additional 300-foot westbound left-turn lane

Route 196 west of I-295

- Extend two-lane section for westbound traffic to improve lane utilization

***Mitigation for Scenario 6:* 2031 Alternative 2 with Brunswick Alternative 1 also included**

The mitigation shown below in parenthesis and italics *(XX)* is mitigation that was previously identified in Scenario 2 (2031 Reoccupancy) as most likely being needed to address existing deficiencies and normal traffic growth to the year 2031, and would most likely be needed even if the Annex did not pursue Alternatives 1 or 2, but instead occupied the site with the grandfathered 177 housing units.

Route 201 at Route 196/Coastal Connector

- *(Extend eastbound left-turn lane from 250 feet to 350 feet)*
- Construct additional 350-foot eastbound left turn lane
- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)
- *(Extend westbound right-turn lane from 250 feet to 350 feet)*
- Construct additional northbound through lane
- Extend southbound left-turn lane from 200 feet to 350 feet
- Construct additional southbound through lane (for a total of two)
- Provide a total of two 350-foot southbound right-turn lanes
- Construct additional southbound 350-foot left-turn lane

Route 201 at Eagles Way

- Construct 350-foot *(increase of 200 feet from Scenario 2)* westbound right-turn lane
- Construct additional northbound through/right-turn lane
- Construct 150-foot *(increase of 50 feet from Scenario 2)* southbound left turn lane
- Construct additional southbound through lane

Route 201 at Canam Drive

- *(Install fully-actuated traffic signal)*
- Construct westbound 350-foot right-turn lane
- Construct additional northbound through lane
- Construct additional 350-foot eastbound left turn lane (for a total of two)
- *(Convert southbound 250-foot bypass lane to a dedicated left-turn lane)*

Route 196 at Hamilton Court

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Mallet Drive/Crooker Access

- Construct additional eastbound through lane (for a total of three)
- Construct two additional westbound through lanes (for a total of four)

Route 196 at Topsham Fair Mall Road

- Construct additional eastbound through lane (for a total of three)
- Transition outer westbound left turn lane to inner through lane east of the intersection (i.e. at Mallet Drive)
- Construct an additional westbound through lane (for a total of three)

Route 196 at I-295 Northbound Ramps

- Construct additional westbound through lane (for a total of three)
- Extend eastbound right turn lane from 150 feet to 500 feet
- Construct an additional westbound through lane (for a total of three)
- Construct additional 200-foot northbound right turn lane (for a total of three)

Route 196 at I-295 Overpass

- Widen bridge to accommodate additional westbound through lane

Route 196 at I-295 Southbound Off-Ramp to Route 196 Eastbound

- Install fully-actuated traffic signal
- Modify ramp geometry as needed to accommodate widening and signalization

- Construct additional 300-foot northbound approach lane from ramp (for a total of two)

Route 196 at I-295 Southbound On-Ramp

- Install fully-actuated traffic signal
- Construct 200-foot eastbound right-turn lane
- Extend westbound left-turn lane storage to 300 feet for existing lane
- Construct additional 300-foot westbound left-turn lane

Route 196 west of I-295

- Extend two-lane section for westbound traffic to improve lane utilization

5. Based on a review of the latest available MaineDOT crash history of the previous three years, there were five locations identified as high crash locations. Those locations are:

   - Main Street at Green Street/Summer Street
   - Main Street at Thompson Lane/Winter Street
   - Coastal Connector (Route 196) at Main Street (Route 201)
   - Lewiston Road (Route 196) at Hamilton Court
   - Lewiston Road (Route 196) at I-295 SB Off-Ramp to Route 196 eastbound

   Based on a review of the collision diagrams, Main Street in the vicinity of Green Street may benefit from a pedestrian beacon, such as a HAWK beacon. However, there does not appear to be significant impact on the traffic at this area from the Annex site in either of the redevelopment Alternatives.

   In addition, the intersection of Route 196 at Route 201 and the Coastal Connector may experience a safety benefit from the conversion of the right turn slip lanes for the eastbound and westbound approaches to a standard design under signalized control. However, conversion of these lanes would likely result in some loss of capacity and increase the crossing distance for pedestrians from refuge point to refuge point.

JN:	2117	Gorrill-Palmer Consulting Engineers, Inc.
Project Description:	Topsham Annex	P.O. Box 1237
Project Location:	Topsham, Maine	15 Shaker Road
Date:	4/28/2009	Gray, Maine 04039

Middle School/Junior High School
Land Use Code (LUC) 522

Students 700

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Sample Size	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 1.62 (X)	1134	20	50%	50%	567	567	---
AM Peak Hour of Adj. Street Traffic	---	---	---	---	---	---	---	---
PM Peak Hour of Adj. Street Traffic	T = 0.15 (X)	105	11	50%	50%	53	52	---
AM Peak Hour of Generator	T = 0.53 (X)	371	21	55%	45%	204	167	---
PM Peak Hour of Generator	T = 0.30 (X)	210	23	45%	55%	95	116	---
								---
Saturday	---	---	---	---	---	---	---	---
Saturday Peak Hour of Generator	---	---	---	---	---	---	---	---

* Percentages rounded to nearest 5%

Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Sample Size	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	---	---	---	---	---	---	---	---
AM Peak Hour of Adj. Street Traffic	---	---	---	---	---	---	---	---
PM Peak Hour of Adj. Street Traffic	---	---	---	---	---	---	---	---
AM Peak Hour of Generator	T = 0.79 (X) - 228.00	325	21	55%	45%	179	146	0.5
PM Peak Hour of Generator	---	---	---	---	---	---	---	---
Saturday	---	---	---	---	---	---	---	---
Saturday Peak Hour of Generator	---	---	---	---	---	---	---	---

* Percentages rounded to nearest 5%

JN: 2117
Project Description: Topsham Annex
Project Location: Topsham, Maine
Date: April 28, 2009

Gorrill-Palmer Consulting Engineers, Inc.
P.O. Box 1237
15 Shaker Road
Gray, Maine 04039

High School
Land Use Code (LUC) 522

Students 1,100

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Sample Size	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	T = 1.71 (X)	1881	51	50%	50%	941	940	---
AM Peak Hour of Adj. Street Traffic	---	---	---	---	---	---	---	---
PM Peak Hour of Adj. Street Traffic	T = 0.14 (X)	154	34	45%	55%	69	85	---
AM Peak Hour of Generator	T = 0.41 (X)	451	62	70%	30%	316	135	---
PM Peak Hour of Generator	T = 0.28 (X)	308	62	30%	70%	92	216	---
Saturday	T = 0.61 (X)	671	20	50%	50%	336	335	---
Saturday Peak Hour of Generator	T = 0.11 (X)	121	20	65%	35%	79	42	---

* Percentages rounded to nearest 5%

Fitted Curve Equation

Time Period	ITE Trip Rate	Trip Ends	Sample Size	Directional Split * IN	Directional Split * OUT	Directional Distribution IN	Directional Distribution OUT	R^2
Weekday	Ln(T) = 0.81 Ln(X) + 1.86	1868	51	50%	50%	934	934	0.54
AM Peak Hour of Adj. Street Traffic	---	---	---	---	---	---	---	---
PM Peak Hour of Adj. Street Traffic	---	---	---	---	---	---	---	---
AM Peak Hour of Generator	Ln(T) = 0.77 Ln(X) + 0.69	438	62	70%	30%	307	131	0.50
PM Peak Hour of Generator	Ln(T) = 0.62 Ln(X) + 1.45	328	62	30%	70%	98	230	0.51
Saturday	---	---	---	---	---	---	---	---
Saturday Peak Hour of Generator	---	---	---	---	---	---	---	---

* Percentages rounded to nearest 5%

2: Route 196 & Route 201 Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	15.7	20.5	37.1	32.0	23.8
St Del/Veh (s)	12.1	15.7	33.4	28.5	19.9

4: Eagles Way & Route 201 Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	20.7	2.7	5.8	5.5
St Del/Veh (s)	21.0	0.0	2.5	2.8

49: Canam Drive & Route 201 Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	14.2	2.3	5.6	6.0
St Del/Veh (s)	12.7	0.1	0.2	2.4

Total Network Performance

Delay / Veh (s)	39.3
St Del/Veh (s)	21.4

Intersection: 2: Route 196 & Route 201

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	L	TR	L
Maximum Queue (ft)	240	191	140	22	71	218	212	82	106	105	250	178
Average Queue (ft)	128	93	44	2	26	116	125	11	49	63	115	92
95th Queue (ft)	214	164	103	19	61	191	200	51	90	98	201	160
Link Distance (ft)		697	697			933	933			473	473	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			225	275			250	225			200
Storage Blk Time (%)	0											0
Queuing Penalty (veh)	1											0

Intersection: 2: Route 196 & Route 201

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	180	260
Average Queue (ft)	85	129
95th Queue (ft)	152	213
Link Distance (ft)	368	368
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 4: Eagles Way & Route 201

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	127	60	18	282
Average Queue (ft)	40	28	1	66
95th Queue (ft)	90	61	9	198
Link Distance (ft)	804		338	1244
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25		
Storage Blk Time (%)	30	3		
Queuing Penalty (veh)	9	2		

Intersection: 46: Bend

Movement	SB	SB
Directions Served	T	T
Maximum Queue (ft)	5	15
Average Queue (ft)	0	0
95th Queue (ft)	4	6
Link Distance (ft)	473	473
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 49: Canam Drive & Route 201

Movement	WB	WB	NB	SB
Directions Served	L	R	R	L
Maximum Queue (ft)	134	57	18	56
Average Queue (ft)	59	29	1	17
95th Queue (ft)	105	64	7	46
Link Distance (ft)	912			
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25	100	250
Storage Blk Time (%)	37	3		
Queuing Penalty (veh)	10	6		

Network Summary

Network wide Queuing Penalty: 27

2: Route 196 & Route 201 Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	18.7	21.1	48.7	37.7	28.5
St Del/Veh (s)	14.6	15.2	43.2	33.9	23.7

4: Eagles Way & Route 201 Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	53.1	2.0	4.3	6.6
St Del/Veh (s)	53.8	0.0	1.2	4.4

5: Route 196 & Hamilton Ct. Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	5.7	3.8	33.9	5.9
St Del/Veh (s)	3.0	2.4	32.5	4.0

7: Route 196 & Crooker 2 Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	4.1	3.1	31.1	31.3	4.4
St Del/Veh (s)	0.9	1.7	29.4	30.2	2.1

10: Route 196 & Crooker 1 Performance by approach

Approach	EB	WB	NB	SB	All
Delay / Veh (s)	15.1	14.9	24.1	24.9	16.9
St Del/Veh (s)	10.6	11.5	21.9	24.1	13.3

22: Route 196 & I-295 NB On Ramp Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	6.6	5.6	11.0	7.3
St Del/Veh (s)	3.1	2.7	7.1	3.9

29: Route 196 & Performance by approach

Approach	EB	WB	NB	All
Delay / Veh (s)	1.0	2.0	11.1	2.6
St Del/Veh (s)	0.2	0.4	9.2	1.2

30: Route 196 & SB Ramp Performance by approach

Approach	EB	WB	SB	All
Delay / Veh (s)	0.5	1.2	8.5	1.2
St Del/Veh (s)	0.0	0.3	8.4	0.4

49: Canam Drive & Route 201 Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	27.4	3.0	5.2	7.2
St Del/Veh (s)	26.1	0.0	0.1	3.8

58: Winter Street & Route 201 Performance by approach

Approach	WB	NB	SB	All
Delay / Veh (s)	22.7	8.4	10.8	11.8
St Del/Veh (s)	20.1	4.6	3.1	6.8

Total Network Performance

Delay / Veh (s)	57.0
St Del/Veh (s)	30.9

Intersection: 2: Route 196 & Route 201

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	L	TR	L
Maximum Queue (ft)	249	174	136	49	70	308	316	272	163	167	368	215
Average Queue (ft)	138	105	50	4	30	180	171	46	95	99	221	124
95th Queue (ft)	222	167	116	24	63	277	269	151	151	156	339	213
Link Distance (ft)		697	697			933	933			473	473	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	250			225	275			250	225			200
Storage Blk Time (%)	1					1	1	0				3
Queuing Penalty (veh)	2					0	2	0				4

Intersection: 2: Route 196 & Route 201

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	208	262
Average Queue (ft)	89	143
95th Queue (ft)	164	229
Link Distance (ft)	368	368
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 4: Eagles Way & Route 201

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	203	50	15	198
Average Queue (ft)	76	27	1	43
95th Queue (ft)	166	63	9	156
Link Distance (ft)	804		338	1244
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25		
Storage Blk Time (%)	57	2		
Queuing Penalty (veh)	12	2		

Intersection: 5: Route 196 & Hamilton Ct.

Movement	EB	EB	WB	WB	WB	NB	B43
Directions Served	T	TR	L	T	T	LR	T
Maximum Queue (ft)	160	164	115	66	80	141	59
Average Queue (ft)	66	70	49	20	28	72	3
95th Queue (ft)	135	139	96	56	70	130	26
Link Distance (ft)	532	532		548	548	69	114
Upstream Blk Time (%)						13	
Queuing Penalty (veh)						0	
Storage Bay Dist (ft)			100				
Storage Blk Time (%)			2				
Queuing Penalty (veh)			14				

Intersection: 7: Route 196 & Crooker 2

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LR	LR
Maximum Queue (ft)	26	82	101	65	70	118	117	45
Average Queue (ft)	3	20	32	17	15	23	44	9
95th Queue (ft)	15	55	78	44	50	77	90	32
Link Distance (ft)		536	536		532	532	226	335
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	75			125				
Storage Blk Time (%)		0						
Queuing Penalty (veh)		0						

Intersection: 10: Route 196 & Crooker 1

Movement	EB	EB	EB	EB	B37	B37	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	R	T	T	L	L	T	TR	L	LT
Maximum Queue (ft)	27	380	403	342	16	55	156	149	176	200	177	229
Average Queue (ft)	5	175	184	82	1	3	86	92	78	102	101	128
95th Queue (ft)	21	292	302	184	9	27	134	143	151	178	163	191
Link Distance (ft)		356	356		234	234			536	536		213
Upstream Blk Time (%)		0	0	0							0	0
Queuing Penalty (veh)		2	1	0							0	0
Storage Bay Dist (ft)	325			325			350	350			200	
Storage Blk Time (%)		0	0	0							0	0
Queuing Penalty (veh)		0	2	0							0	1

Intersection: 10: Route 196 & Crooker 1

Movement	NB	NB	SB	SB
Directions Served	R	R	L	TR
Maximum Queue (ft)	107	114	37	37
Average Queue (ft)	45	47	6	7
95th Queue (ft)	89	92	26	27
Link Distance (ft)	213		275	275
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		200		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 15: Bend

Movement	NW
Directions Served	T
Maximum Queue (ft)	152
Average Queue (ft)	5
95th Queue (ft)	84
Link Distance (ft)	374
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 22: Route 196 & I-295 NB On Ramp

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	R	L	R	R
Maximum Queue (ft)	53	150	173	213	258	174	210	92	159
Average Queue (ft)	12	52	81	90	102	17	95	26	59
95th Queue (ft)	37	115	147	179	196	103	166	68	115
Link Distance (ft)		748	748	234	234			881	
Upstream Blk Time (%)				0	0				
Queuing Penalty (veh)				0	2				
Storage Bay Dist (ft)	50					150	200		200
Storage Blk Time (%)	2	6			1	0	1		0
Queuing Penalty (veh)	8	1			4	0	3		0

Intersection: 29: Route 196 &

Movement	EB	NB
Directions Served	T	R
Maximum Queue (ft)	38	198
Average Queue (ft)	2	69
95th Queue (ft)	17	143
Link Distance (ft)	297	701
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 30: Route 196 & SB Ramp

Movement	EB	WB	WB	WB	SB
Directions Served	TR	L	T	T	R
Maximum Queue (ft)	21	82	9	42	57
Average Queue (ft)	2	20	0	2	18
95th Queue (ft)	12	52	5	20	41
Link Distance (ft)	374		297	297	1168
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		175			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 49: Canam Drive & Route 201

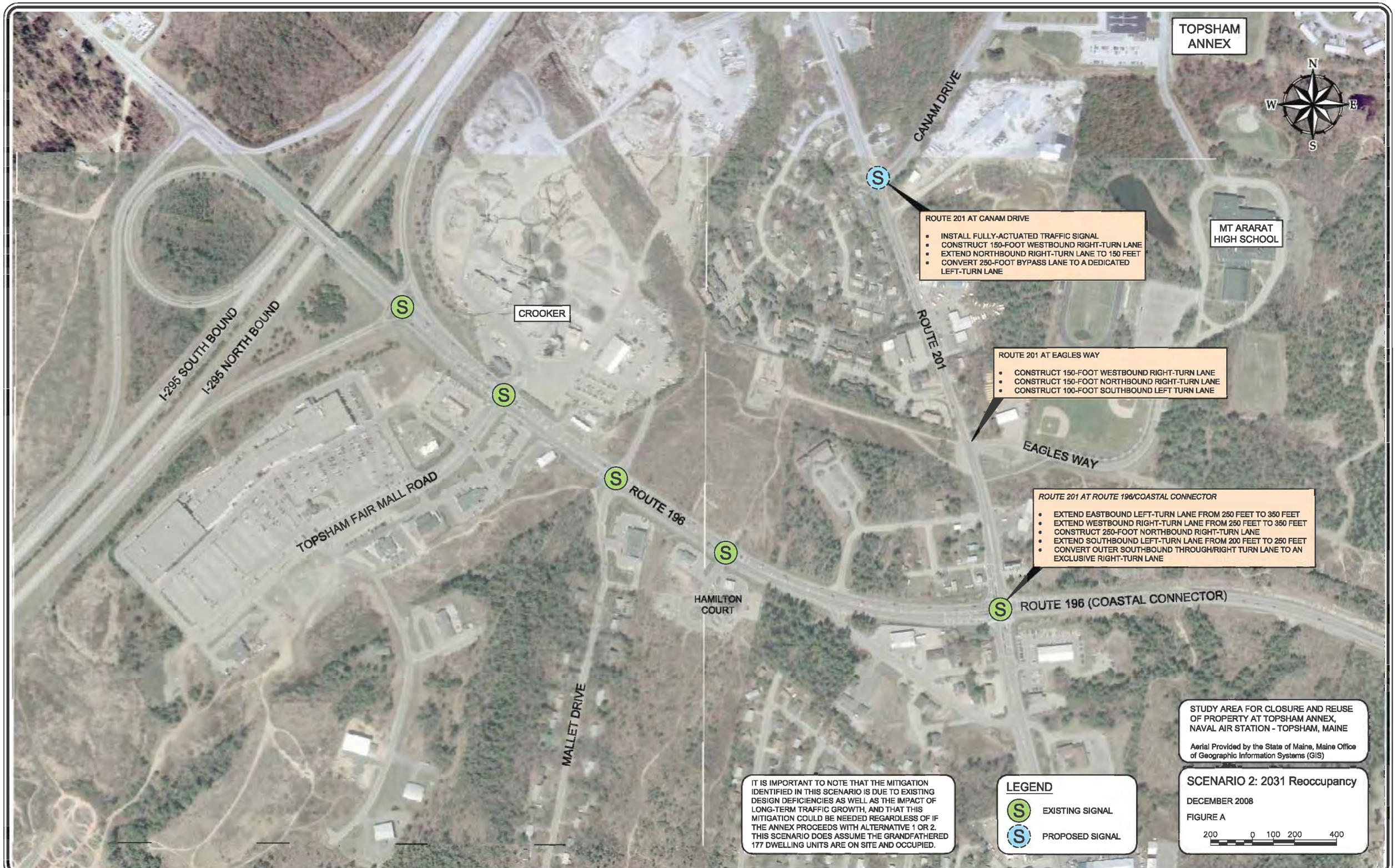
Movement	WB	WB	NB	SB
Directions Served	L	R	T	L
Maximum Queue (ft)	209	51	7	31
Average Queue (ft)	83	35	0	6
95th Queue (ft)	159	68	4	26
Link Distance (ft)	912		1244	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25		250
Storage Blk Time (%)	54	8		
Queuing Penalty (veh)	21	12		

Intersection: 58: Winter Street & Route 201

Movement	WB	WB	NB	NB	SB	SB	B46
Directions Served	LT	R	L	TR	L	TR	T
Maximum Queue (ft)	192	100	20	337	57	184	22
Average Queue (ft)	78	37	3	122	10	55	1
95th Queue (ft)	149	85	15	258	35	131	9
Link Distance (ft)	1260			277		3344	473
Upstream Blk Time (%)				1			
Queuing Penalty (veh)				0			
Storage Bay Dist (ft)		75	60		80		
Storage Blk Time (%)	10	0		12		3	
Queuing Penalty (veh)	7	0		1		1	

Network Summary

Network wide Queuing Penalty: 104


TOPSHAM ANNEX
N
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CANAM DRIVE
ROUTE 201 AT CANAM DRIVE
INSTALL FULLY-ACTUATED TRAFFIC SIGNAL
CONSTRUCT 150-FOOT WESTBOUND RIGHT-TURN LANE
EXTEND NORTHBOUND RIGHT-TURN LANE TO 150 FEET
CONVERT 250-FOOT BYPASS LANE TO A DEDICATED LEFT-TURN LANE
MT ARARAT HIGH SCHOOL
CROOKER
I-295 SOUTH BOUND
I-295 NORTH BOUND
ROUTE 201
ROUTE 201 AT EAGLES WAY
CONSTRUCT 150-FOOT WESTBOUND RIGHT-TURN LANE
CONSTRUCT 150-FOOT NORTHBOUND RIGHT-TURN LANE
CONSTRUCT 100-FOOT SOUTHBOUND LEFT TURN LANE
EAGLES WAY
TOPSHAM FAIR MALL ROAD
ROUTE 196
ROUTE 201 AT ROUTE 196/COASTAL CONNECTOR
EXTEND EASTBOUND LEFT-TURN LANE FROM 250 FEET TO 350 FEET
EXTEND WESTBOUND RIGHT-TURN LANE FROM 250 FEET TO 350 FEET
CONSTRUCT 250-FOOT NORTHBOUND RIGHT-TURN LANE
EXTEND SOUTHBOUND LEFT-TURN LANE FROM 200 FEET TO 250 FEET
CONVERT OUTER SOUTHBOUND THROUGH/RIGHT TURN LANE TO AN EXCLUSIVE RIGHT-TURN LANE
HAMILTON COURT
ROUTE 196 (COASTAL CONNECTOR)
MALLET DRIVE
STUDY AREA FOR CLOSURE AND REUSE OF PROPERTY AT TOPSHAM ANNEX, NAVAL AIR STATION - TOPSHAM, MAINE
Aerial Provided by the State of Maine, Maine Office of Geographic Information Systems (GIS)
IT IS IMPORTANT TO NOTE THAT THE MITIGATION IDENTIFIED IN THIS SCENARIO IS DUE TO EXISTING DESIGN DEFICIENCIES AS WELL AS THE IMPACT OF LONG-TERM TRAFFIC GROWTH, AND THAT THIS MITIGATION COULD BE NEEDED REGARDLESS OF IF THE ANNEX PROCEEDS WITH ALTERNATIVE 1 OR 2. THIS SCENARIO DOES ASSUME THE GRANDFATHERED 177 DWELLING UNITS ARE ON SITE AND OCCUPIED.
LEGEND
EXISTING SIGNAL
PROPOSED SIGNAL
SCENARIO 2: 2031 Reoccupancy
DECEMBER 2008
FIGURE A
200 0 100 200 400

TOPSHAM ANNEX

N
W E
S

CANAM DRIVE

ROUTE 201 AT CANAM DRIVE

- *(INSTALL FULLY-ACTUATED TRAFFIC SIGNAL)*
- *(CONSTRUCT 150-FOOT WESTBOUND RIGHT-TURN LANE)*
- *(EXTEND NORTHBOUND RIGHT-TURN LANE TO 150 FEET)*
- *(CONVERT 250-FOOT BYPASS LANE TO A DEDICATED LEFT-TURN LANE)*

MT ARARAT HIGH SCHOOL

CROOKER

I-295 SOUTH BOUND

I-295 NORTH BOUND

ROUTE 201

ROUTE 201 AT EAGLES WAY

- *(CONSTRUCT 150-FOOT WESTBOUND RIGHT-TURN LANE)*
- *(CONSTRUCT 150-FOOT NORTHBOUND RIGHT-TURN LANE)*
- CONSTRUCT 150-FOOT SOUTHBOUND LEFT TURN LANE *(CONSTRUCTION OF 100 FOOT LEFT TURN LANE EXPECTED UNDER SCENERIO 2)*

EAGLES WAY

TOPSHAM FAIR MALL ROAD

ROUTE 196

ROUTE 201 AT ROUTE 196/COASTAL CONNECTOR

- *(EXTEND EASTBOUND LEFT-TURN LANE FROM 250 FEET TO 350 FEET)*
- *(EXTEND WESTBOUND RIGHT-TURN LANE FROM 250 FEET TO 350 FEET)*
- *(CONSTRUCT 250-FOOT NORTHBOUND RIGHT-TURN LANE)*
- EXTEND SOUTHBOUND LEFT-TURN LANE FROM 200 FEET TO 300 FEET *(EXTENSION FROM 200 FEET TO 250 FEET EXPECTED UNDER SCENERIO 2)*
- *(CONVERT OUTER SOUTHBOUND THROUGH/RIGHT TURN LANE TO AN EXCLUSIVE RIGHT-TURN LANE)*

HAMILTON COURT

ROUTE 196 (COASTAL CONNECTOR)

MALLET DRIVE

STUDY AREA FOR CLOSURE AND REUSE OF PROPERTY AT TOPSHAM ANNEX, NAVAL AIR STATION - TOPSHAM, MAINE

Aerial Provided by the State of Maine, Maine Office of Geographic Information Systems (GIS)

***SCENARIO 3:* 2031 Alternative 1 with no change to the Brunswick Site**

DECEMBER 2008

FIGURE B

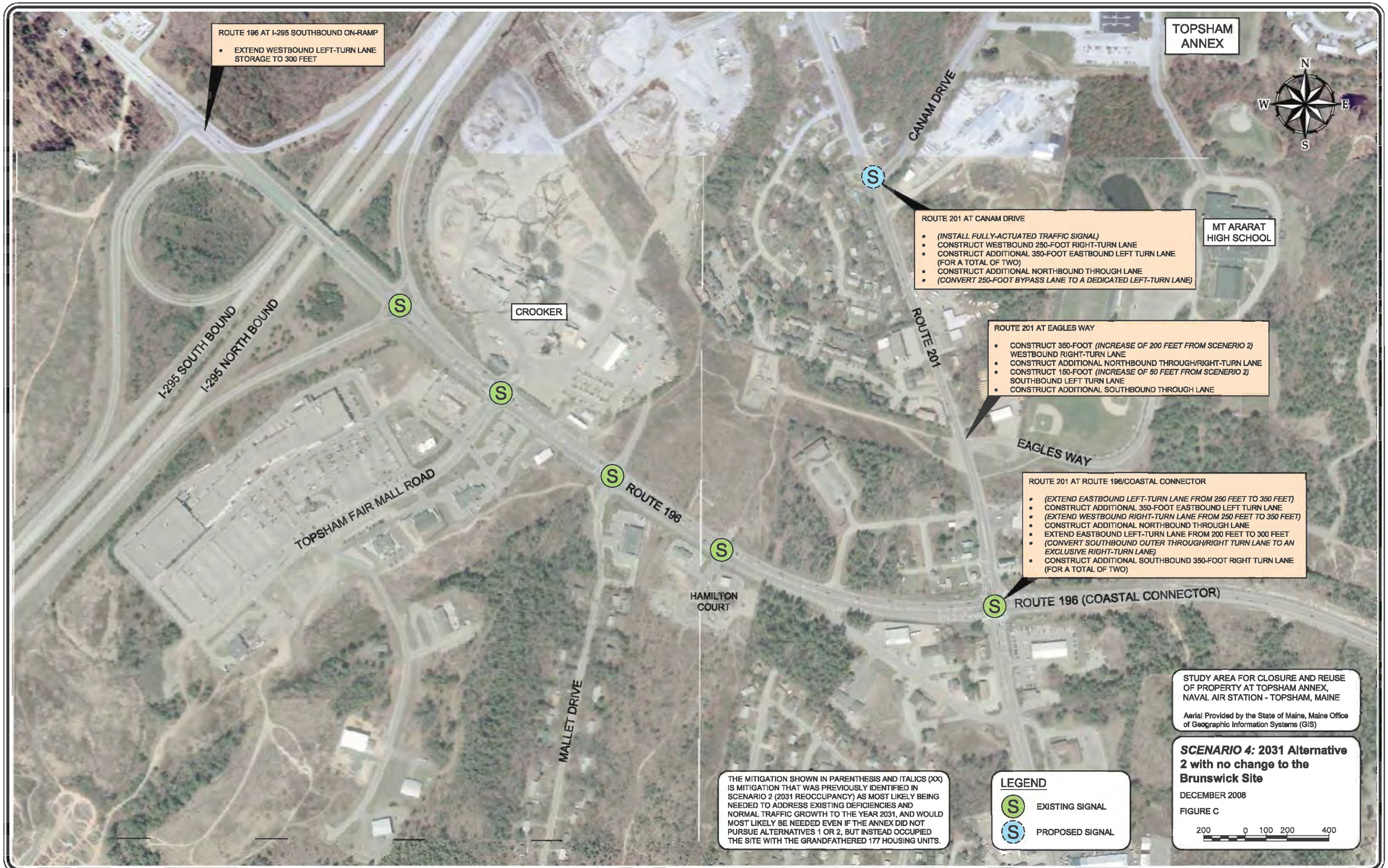
200 0 100 200 400

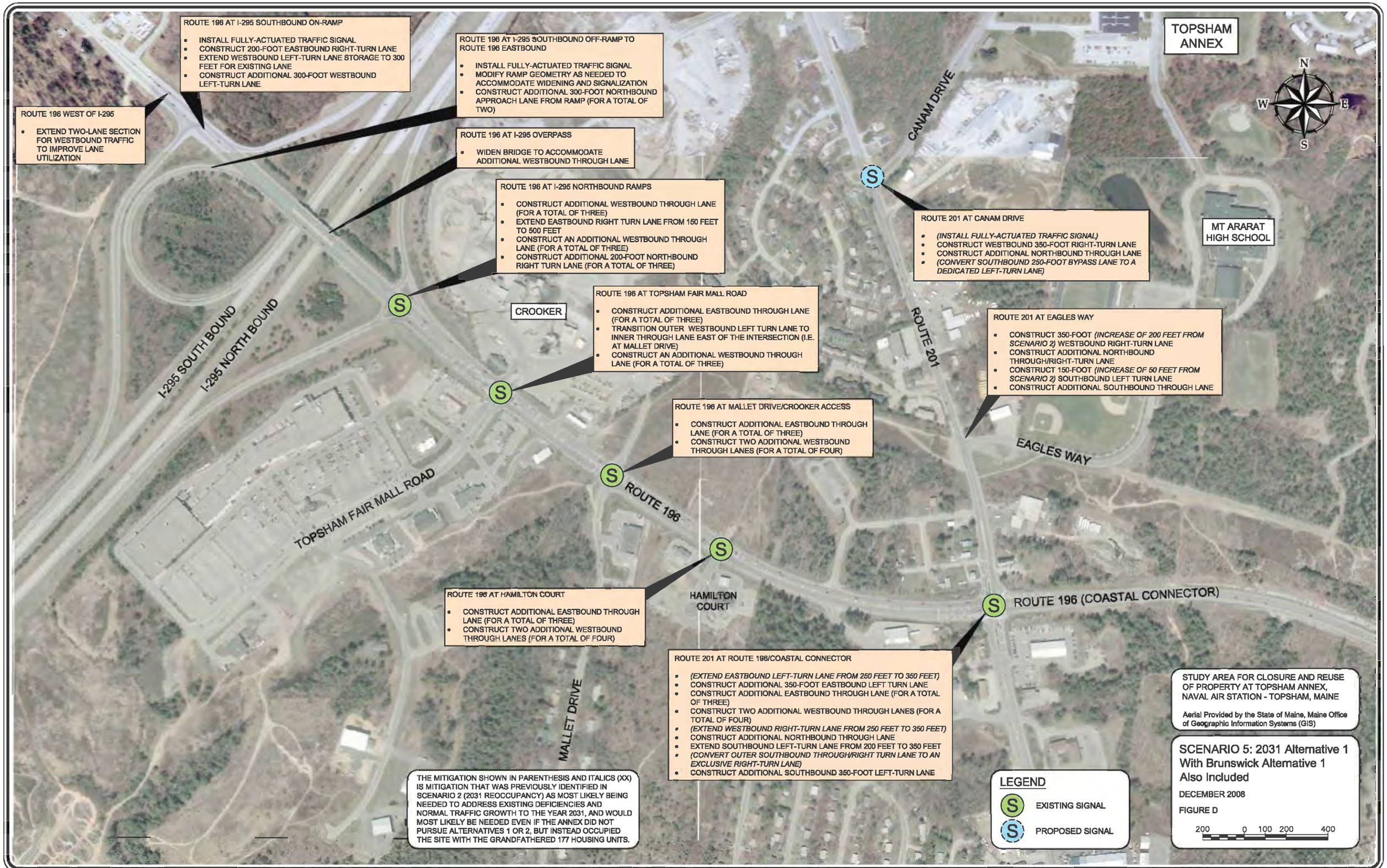
THE MITIGATION SHOWN IN PARENTHESIS AND ITALICS (XX) IS MITIGATION THAT WAS PREVIOUSLY IDENTIFIED IN SCENARIO 2 (2031 REOCCUPANCY) AS MOST LIKELY BEING NEEDED TO ADDRESS EXISTING DEFICIENCIES AND NORMAL TRAFFIC GROWTH TO THE YEAR 2031, AND WOULD MOST LIKELY BE NEEDED EVEN IF THE ANNEX DID NOT PURSUE ALTERNATIVES 1 OR 2, BUT INSTEAD OCCUPIED THE SITE WITH THE GRANDFATHERED 177 HOUSING UNITS.

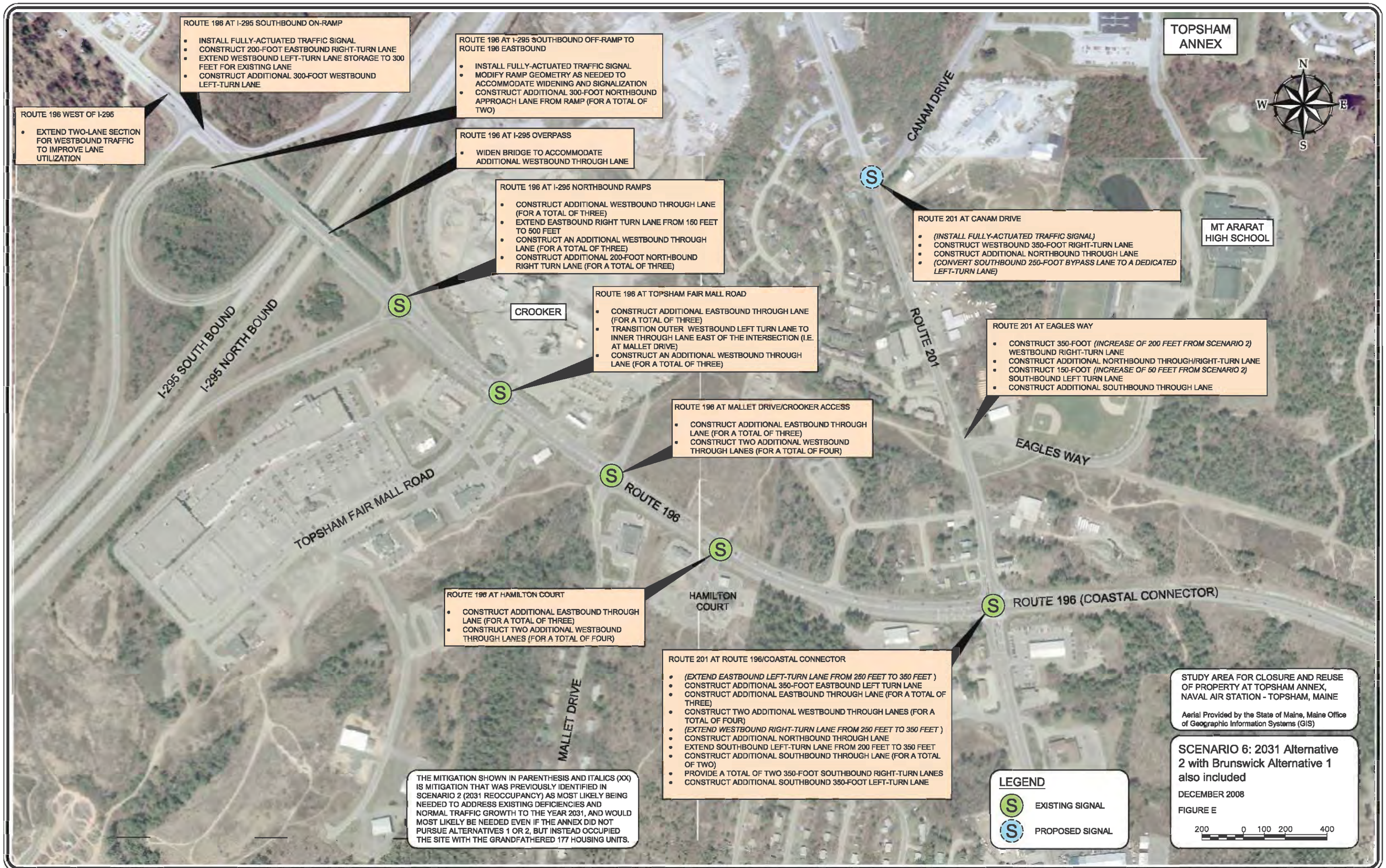
LEGEND

S EXISTING SIGNAL

S PROPOSED SIGNAL


ROUTE 196 AT I-295 SOUTHBOUND ON-RAMP
• EXTEND WESTBOUND LEFT-TURN LANE STORAGE TO 300 FEET
TOPSHAM ANNEX
N
W
E
S
CANAM DRIVE
ROUTE 201 AT CANAM DRIVE
• (INSTALL FULLY-ACTUATED TRAFFIC SIGNAL)
• CONSTRUCT WESTBOUND 250-FOOT RIGHT-TURN LANE
• CONSTRUCT ADDITIONAL 350-FOOT EASTBOUND LEFT TURN LANE (FOR A TOTAL OF TWO)
• CONSTRUCT ADDITIONAL NORTHBOUND THROUGH LANE
• (CONVERT 250-FOOT BYPASS LANE TO A DEDICATED LEFT-TURN LANE)
MT ARARAT HIGH SCHOOL
CROOKER
I-295 SOUTH BOUND
I-295 NORTH BOUND
ROUTE 201
ROUTE 201 AT EAGLES WAY
• CONSTRUCT 350-FOOT (INCREASE OF 200 FEET FROM SCENERIO 2) WESTBOUND RIGHT-TURN LANE
• CONSTRUCT ADDITIONAL NORTHBOUND THROUGH/RIGHT-TURN LANE
• CONSTRUCT 150-FOOT (INCREASE OF 50 FEET FROM SCENERIO 2) SOUTHBOUND LEFT TURN LANE
• CONSTRUCT ADDITIONAL SOUTHBOUND THROUGH LANE
EAGLES WAY
TOPSHAM FAIR MALL ROAD
ROUTE 196
ROUTE 201 AT ROUTE 196/COASTAL CONNECTOR
• (EXTEND EASTBOUND LEFT-TURN LANE FROM 250 FEET TO 350 FEET)
• CONSTRUCT ADDITIONAL 350-FOOT EASTBOUND LEFT TURN LANE
• (EXTEND WESTBOUND RIGHT-TURN LANE FROM 250 FEET TO 350 FEET)
• CONSTRUCT ADDITIONAL NORTHBOUND THROUGH LANE
• EXTEND EASTBOUND LEFT-TURN LANE FROM 200 FEET TO 300 FEET
• (CONVERT SOUTHBOUND OUTER THROUGH/RIGHT TURN LANE TO AN EXCLUSIVE RIGHT-TURN LANE)
• CONSTRUCT ADDITIONAL SOUTHBOUND 350-FOOT RIGHT TURN LANE (FOR A TOTAL OF TWO)
HAMILTON COURT
ROUTE 196 (COASTAL CONNECTOR)
MALLET DRIVE
STUDY AREA FOR CLOSURE AND REUSE OF PROPERTY AT TOPSHAM ANNEX, NAVAL AIR STATION - TOPSHAM, MAINE
Aerial Provided by the State of Maine, Maine Office of Geographic Information Systems (GIS)
SCENARIO 4: 2031 Alternative 2 with no change to the Brunswick Site
DECEMBER 2008
FIGURE C
200 0 100 200 400
THE MITIGATION SHOWN IN PARENTHESIS AND ITALICS (XX) IS MITIGATION THAT WAS PREVIOUSLY IDENTIFIED IN SCENARIO 2 (2031 REOCCUPANCY) AS MOST LIKELY BEING NEEDED TO ADDRESS EXISTING DEFICIENCIES AND NORMAL TRAFFIC GROWTH TO THE YEAR 2031, AND WOULD MOST LIKELY BE NEEDED EVEN IF THE ANNEX DID NOT PURSUE ALTERNATIVES 1 OR 2, BUT INSTEAD OCCUPIED THE SITE WITH THE GRANDFATHERED 177 HOUSING UNITS.
LEGEND
EXISTING SIGNAL
PROPOSED SIGNAL


ROUTE 196 AT I-295 SOUTHBOUND ON-RAMP
INSTALL FULLY-ACTUATED TRAFFIC SIGNAL
CONSTRUCT 200-FOOT EASTBOUND RIGHT-TURN LANE
EXTEND WESTBOUND LEFT-TURN LANE STORAGE TO 300 FEET FOR EXISTING LANE
CONSTRUCT ADDITIONAL 300-FOOT WESTBOUND LEFT-TURN LANE
ROUTE 196 AT I-295 SOUTHBOUND OFF-RAMP TO ROUTE 196 EASTBOUND
INSTALL FULLY-ACTUATED TRAFFIC SIGNAL
MODIFY RAMP GEOMETRY AS NEEDED TO ACCOMMODATE WIDENING AND SIGNALIZATION
CONSTRUCT ADDITIONAL 300-FOOT NORTHBOUND APPROACH LANE FROM RAMP (FOR A TOTAL OF TWO)
ROUTE 196 WEST OF I-295
EXTEND TWO-LANE SECTION FOR WESTBOUND TRAFFIC TO IMPROVE LANE UTILIZATION
ROUTE 196 AT I-295 OVERPASS
WIDEN BRIDGE TO ACCOMMODATE ADDITIONAL WESTBOUND THROUGH LANE
ROUTE 196 AT I-295 NORTHBOUND RAMPS
CONSTRUCT ADDITIONAL WESTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
EXTEND EASTBOUND RIGHT TURN LANE FROM 150 FEET TO 500 FEET
CONSTRUCT AN ADDITIONAL WESTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT ADDITIONAL 200-FOOT NORTHBOUND RIGHT TURN LANE (FOR A TOTAL OF THREE)
ROUTE 196 AT TOPSHAM FAIR MALL ROAD
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
TRANSITION OUTER WESTBOUND LEFT TURN LANE TO INNER THROUGH LANE EAST OF THE INTERSECTION (I.E. AT MALLET DRIVE)
CONSTRUCT AN ADDITIONAL WESTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
ROUTE 196 AT MALLET DRIVE/CROOKER ACCESS
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT TWO ADDITIONAL WESTBOUND THROUGH LANES (FOR A TOTAL OF FOUR)
ROUTE 196 AT HAMILTON COURT
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT TWO ADDITIONAL WESTBOUND THROUGH LANES (FOR A TOTAL OF FOUR)
ROUTE 201 AT ROUTE 196/COASTAL CONNECTOR
(EXTEND EASTBOUND LEFT-TURN LANE FROM 250 FEET TO 350 FEET)
CONSTRUCT ADDITIONAL 350-FOOT EASTBOUND LEFT TURN LANE
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT TWO ADDITIONAL WESTBOUND THROUGH LANES (FOR A TOTAL OF FOUR)
(EXTEND WESTBOUND RIGHT-TURN LANE FROM 250 FEET TO 350 FEET)
CONSTRUCT ADDITIONAL NORTHBOUND THROUGH LANE
EXTEND SOUTHBOUND LEFT-TURN LANE FROM 200 FEET TO 350 FEET
(CONVERT OUTER SOUTHBOUND THROUGH/RIGHT TURN LANE TO AN EXCLUSIVE RIGHT-TURN LANE)
CONSTRUCT ADDITIONAL SOUTHBOUND 350-FOOT LEFT-TURN LANE
ROUTE 201 AT CANAM DRIVE
(INSTALL FULLY-ACTUATED TRAFFIC SIGNAL)
CONSTRUCT WESTBOUND 350-FOOT RIGHT-TURN LANE
CONSTRUCT ADDITIONAL NORTHBOUND THROUGH LANE
(CONVERT SOUTHBOUND 250-FOOT BYPASS LANE TO A DEDICATED LEFT-TURN LANE)
ROUTE 201 AT EAGLES WAY
CONSTRUCT 350-FOOT (INCREASE OF 200 FEET FROM SCENARIO 2) WESTBOUND RIGHT-TURN LANE
CONSTRUCT ADDITIONAL NORTHBOUND THROUGH/RIGHT-TURN LANE
CONSTRUCT 150-FOOT (INCREASE OF 50 FEET FROM SCENARIO 2) SOUTHBOUND LEFT TURN LANE
CONSTRUCT ADDITIONAL SOUTHBOUND THROUGH LANE
THE MITIGATION SHOWN IN PARENTHESIS AND ITALICS (XX) IS MITIGATION THAT WAS PREVIOUSLY IDENTIFIED IN SCENARIO 2 (2031 REOCCUPANCY) AS MOST LIKELY BEING NEEDED TO ADDRESS EXISTING DEFICIENCIES AND NORMAL TRAFFIC GROWTH TO THE YEAR 2031, AND WOULD MOST LIKELY BE NEEDED EVEN IF THE ANNEX DID NOT PURSUE ALTERNATIVES 1 OR 2, BUT INSTEAD OCCUPIED THE SITE WITH THE GRANDFATHERED 177 HOUSING UNITS.
TOPSHAM ANNEX
N
W
E
S
CANAM DRIVE
MT ARARAT HIGH SCHOOL
CROOKER
I-295 SOUTH BOUND
I-295 NORTH BOUND
ROUTE 201
EAGLES WAY
TOPSHAM FAIR MALL ROAD
ROUTE 196
HAMILTON COURT
ROUTE 196 (COASTAL CONNECTOR)
MALLET DRIVE
LEGEND
EXISTING SIGNAL
PROPOSED SIGNAL
STUDY AREA FOR CLOSURE AND REUSE OF PROPERTY AT TOPSHAM ANNEX, NAVAL AIR STATION - TOPSHAM, MAINE
Aerial Provided by the State of Maine, Maine Office of Geographic Information Systems (GIS)
SCENARIO 5: 2031 Alternative 1 With Brunswick Alternative 1 Also Included
DECEMBER 2008
FIGURE D
200 0 100 200 400


ROUTE 196 AT I-295 SOUTHBOUND ON-RAMP
INSTALL FULLY-ACTUATED TRAFFIC SIGNAL
CONSTRUCT 200-FOOT EASTBOUND RIGHT-TURN LANE
EXTEND WESTBOUND LEFT-TURN LANE STORAGE TO 300 FEET FOR EXISTING LANE
CONSTRUCT ADDITIONAL 300-FOOT WESTBOUND LEFT-TURN LANE
ROUTE 196 AT I-295 SOUTHBOUND OFF-RAMP TO ROUTE 196 EASTBOUND
INSTALL FULLY-ACTUATED TRAFFIC SIGNAL
MODIFY RAMP GEOMETRY AS NEEDED TO ACCOMMODATE WIDENING AND SIGNALIZATION
CONSTRUCT ADDITIONAL 300-FOOT NORTHBOUND APPROACH LANE FROM RAMP (FOR A TOTAL OF TWO)
ROUTE 196 WEST OF I-295
EXTEND TWO-LANE SECTION FOR WESTBOUND TRAFFIC TO IMPROVE LANE UTILIZATION
ROUTE 196 AT I-295 OVERPASS
WIDEN BRIDGE TO ACCOMMODATE ADDITIONAL WESTBOUND THROUGH LANE
ROUTE 196 AT I-295 NORTHBOUND RAMPS
CONSTRUCT ADDITIONAL WESTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
EXTEND EASTBOUND RIGHT TURN LANE FROM 150 FEET TO 500 FEET
CONSTRUCT AN ADDITIONAL WESTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT ADDITIONAL 200-FOOT NORTHBOUND RIGHT TURN LANE (FOR A TOTAL OF THREE)
ROUTE 196 AT TOPSHAM FAIR MALL ROAD
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
TRANSITION OUTER WESTBOUND LEFT TURN LANE TO INNER THROUGH LANE EAST OF THE INTERSECTION (I.E. AT MALLET DRIVE)
CONSTRUCT AN ADDITIONAL WESTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
ROUTE 196 AT MALLET DRIVE/CROOKER ACCESS
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT TWO ADDITIONAL WESTBOUND THROUGH LANES (FOR A TOTAL OF FOUR)
ROUTE 196 AT HAMILTON COURT
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT TWO ADDITIONAL WESTBOUND THROUGH LANES (FOR A TOTAL OF FOUR)
ROUTE 201 AT ROUTE 196/COASTAL CONNECTOR
(EXTEND EASTBOUND LEFT-TURN LANE FROM 250 FEET TO 350 FEET)
CONSTRUCT ADDITIONAL 350-FOOT EASTBOUND LEFT TURN LANE
CONSTRUCT ADDITIONAL EASTBOUND THROUGH LANE (FOR A TOTAL OF THREE)
CONSTRUCT TWO ADDITIONAL WESTBOUND THROUGH LANES (FOR A TOTAL OF FOUR)
(EXTEND WESTBOUND RIGHT-TURN LANE FROM 250 FEET TO 350 FEET)
CONSTRUCT ADDITIONAL NORTHBOUND THROUGH LANE
EXTEND SOUTHBOUND LEFT-TURN LANE FROM 200 FEET TO 350 FEET
CONSTRUCT ADDITIONAL SOUTHBOUND THROUGH LANE (FOR A TOTAL OF TWO)
PROVIDE A TOTAL OF TWO 350-FOOT SOUTHBOUND RIGHT-TURN LANES
CONSTRUCT ADDITIONAL SOUTHBOUND 350-FOOT LEFT-TURN LANE
ROUTE 201 AT CANAM DRIVE
(INSTALL FULLY-ACTUATED TRAFFIC SIGNAL)
CONSTRUCT WESTBOUND 350-FOOT RIGHT-TURN LANE
CONSTRUCT ADDITIONAL NORTHBOUND THROUGH LANE
(CONVERT SOUTHBOUND 250-FOOT BYPASS LANE TO A DEDICATED LEFT-TURN LANE)
ROUTE 201 AT EAGLES WAY
CONSTRUCT 350-FOOT (INCREASE OF 200 FEET FROM SCENARIO 2) WESTBOUND RIGHT-TURN LANE
CONSTRUCT ADDITIONAL NORTHBOUND THROUGH/RIGHT-TURN LANE
CONSTRUCT 150-FOOT (INCREASE OF 50 FEET FROM SCENARIO 2) SOUTHBOUND LEFT TURN LANE
CONSTRUCT ADDITIONAL SOUTHBOUND THROUGH LANE
TOPSHAM ANNEX
MT ARARAT HIGH SCHOOL
CANAM DRIVE
ROUTE 201
EAGLES WAY
CROOKER
I-295 SOUTH BOUND
I-295 NORTH BOUND
TOPSHAM FAIR MALL ROAD
ROUTE 196
HAMILTON COURT
MALLET DRIVE
ROUTE 196 (COASTAL CONNECTOR)
N
W
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S
THE MITIGATION SHOWN IN PARENTHESIS AND ITALICS (XX) IS MITIGATION THAT WAS PREVIOUSLY IDENTIFIED IN SCENARIO 2 (2031 REOCCUPANCY) AS MOST LIKELY BEING NEEDED TO ADDRESS EXISTING DEFICIENCIES AND NORMAL TRAFFIC GROWTH TO THE YEAR 2031, AND WOULD MOST LIKELY BE NEEDED EVEN IF THE ANNEX DID NOT PURSUE ALTERNATIVES 1 OR 2, BUT INSTEAD OCCUPIED THE SITE WITH THE GRANDFATHERED 177 HOUSING UNITS.
LEGEND
EXISTING SIGNAL
PROPOSED SIGNAL
STUDY AREA FOR CLOSURE AND REUSE OF PROPERTY AT TOPSHAM ANNEX, NAVAL AIR STATION - TOPSHAM, MAINE
Aerial Provided by the State of Maine, Maine Office of Geographic Information Systems (GIS)
SCENARIO 6: 2031 Alternative 2 with Brunswick Alternative 1 also included
DECEMBER 2008
FIGURE E
200 0 100 200 400