MAINE STATE LEGISLATURE

Brunswick Naval Air Station Reuse Master Plan

December 2007

Prepared for the Brunswick Local Redevelopment Authority
by Matrix Design Group

This study was prepared under contract with the Brunswick Local Redevelopment Authority with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the Brunswick Local Redevelopment Authority and does not necessarily reflect the views of the Office of Economic Adjustment.

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Appendices are available for public review at the Midcoast Regional Redevelopment Authority office, Town of Brunswick planning office, and at the Curtis Memorial Library.

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Section 1: Executive Summary

This section of the Brunswick Naval Air Station Reuse Master Plan report provides a brief overview of the reuse master plan, and introduces a variety of implementation issues and marketing strategies for further consideration. The Midcoast Regional Redevelopment Authority (MRRA), the entity charged with implementation of this plan, will rely on findings and recommendations of this report and move forward with more detailed financial, physical, and regulatory planning. This information, along with the background and findings of this extensive planning effort, is provided in subsequent sections of this report, and in the appendix that follows.

Plan Vision and Intent

The Reuse Master Plan for the Brunswick Naval Air Station (BNAS) represents a unique opportunity to establish a vibrant live, work, play and educate environment and centers of excellence for technology innovation, environmental sustainability, and "green" community development. Viewed from an economic development perspective, the plan provides a framework from which a variety of corporate, business, academic, recreational, and community services can flourish, and from a community development perspective, the plan promotes a strong sense of place based on smart growth principles that will serve as a model for future sustainable development throughout the region.

Land Use and Transportation Framework

The structure and relationship between future land uses and the transportation system proposed for redevelopment of the base is highlighted below and further described in **Section 6**. This includes a description and a diagrammatic illustration of the proposed land use program; a description and a diagrammatic illustration of each of the land use districts; a summary of transportation and open space elements; and a discussion of how environmental conditions influenced the Reuse Master Plan.

Land Use Program

The land use program shown in the following exhibits provides a summary of proposed land use districts with corresponding areas allocated for each land use type. As indicated on the exhibit, only 51% of the total base property has been allocated for development (approximately 1,630 acres); and, 49% (approximately 1,570 acres) of the base has been dedicated to a variety of active and passive areas for recreation, open space, and natural areas. This figure does not include parks, open space, and natural drainage or buffer areas that will be incorporated as part of the 1,630 acres planned for development. **Exhibit 2: Land Use Program Table** is color-coded to correspond with the land use districts shown on **Exhibit 1: BNAS Reuse Master Plan Map**.

Exhibit 1: BNAS Reuse Master Plan Map

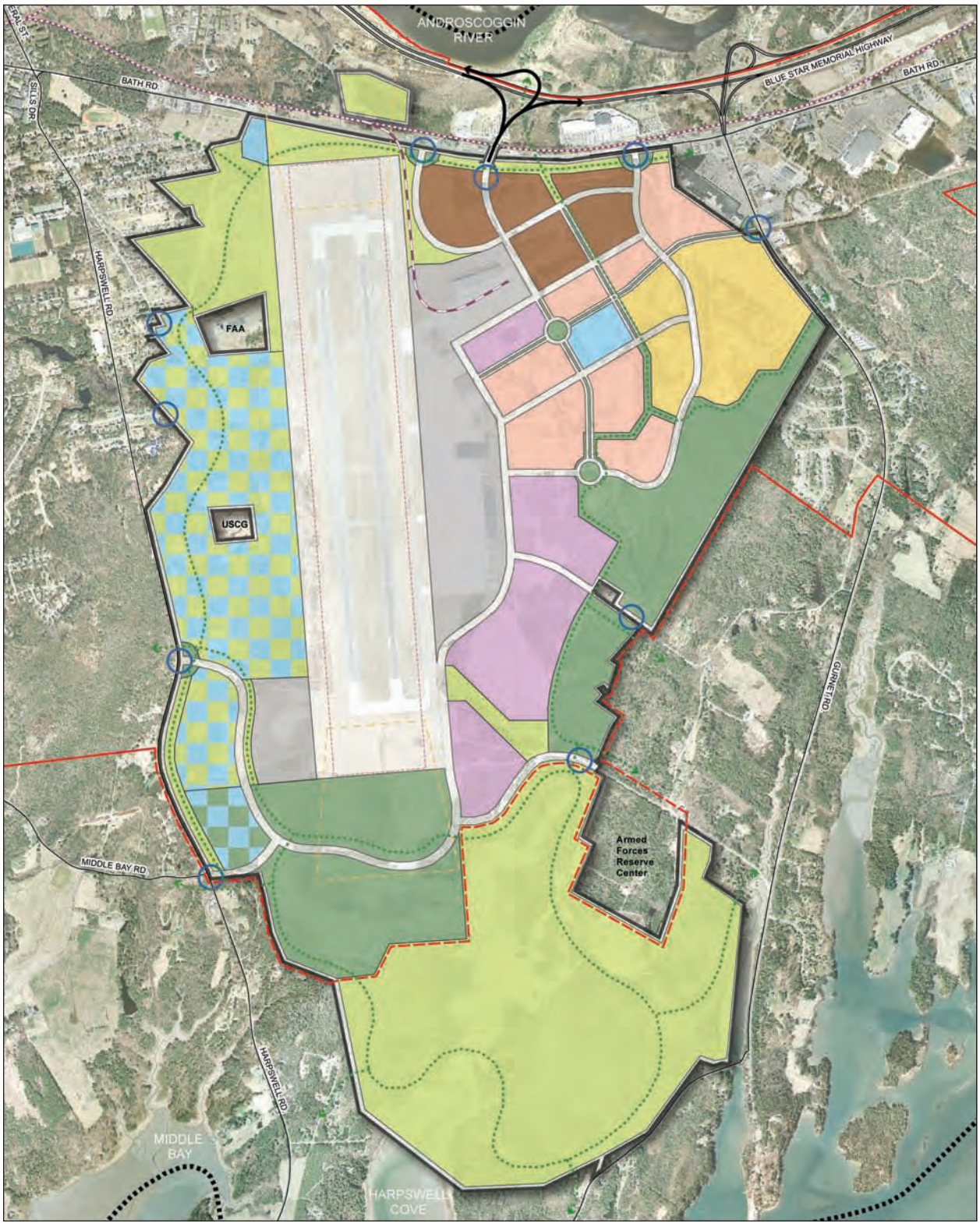


Exhibit 2: Land Use Program

Proposed Land Use Program

	LAND USE DISTRICTS	SURPLUS ACRES	PERCENT OF TOTAL
Land Development	Airport Operations	500	16%
	Aviation-Related Business	230	7%
	Professional Office	120	4%
	Community Mixed Use	175	5%
	Business and Technology Industries	190	6%
	Education	200	6%
	Residential	215	7%
	SUBTOTAL	1,630	51%
Open Space	Recreation / Open Space	510	16%
	Natural Areas	1,060	33%
	SUBTOTAL	1,570	49%
GRAND TOTAL		3,200	100%

Notes:

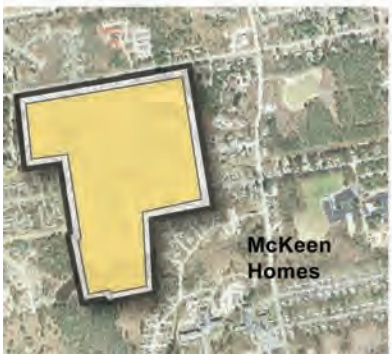
1. Checkered blue-light green area totals 320 acres, of which an undefined 175 acres have been assigned in the table above to Education and 145 acres to Natural Areas.
2. Checkered blue-dark green area totals 30 acres, all of which has been assigned in the table above to Recreation / Open Space; however, Education would be an allowed use, if needed.
3. Checkered light green-dark green (East Brunswick Transmitter Site) area totals 70 acres, of which an undefined 35 acres have been assigned in the table above to Recreation / Open Space and 35 acres to Natural Areas.
4. The Runway Object Free Area provides a 500-foot buffer to the east and west of the two runways. The Airport Operations land use district extends an additional 500 feet beyond the Runway Object Free Area, resulting in a 1,000-foot buffer parallel to the runways.

Legend

- B N A S Surplus Property
- Town of Brunswick
- State Highway
- Major Road
- Railroad
- Runway Protection Zone
- Runway Object Free Area
- Existing Town Growth Boundary
- Potential Town Growth Boundary
- Potential Pedestrian / Bike Trail
- Potential New Interchange
- Potential Railroad Spur
- Access Points

N

0 500 1,000 2,000 3,000 Feet



BLRA
BRUNSWICK LOCAL REDEVELOPMENT AUTHORITY

BRUNSWICK NAVAL AIR STATION
REUSE MASTER PLAN

Matrix Design Group Inc.
Integrated Design Solutions

PLANNING DECISIONS ECONOMIC RESEARCH ASSOCIATES
WRIGHT - PIERCE ENGINEERS WBRC ARCHITECTS + ENGINEERS

Land Use Districts

Based on the inventory and assessment of local, regional, and state market conditions, and influenced by the availability of existing on-base infrastructure and facility assets, the land use program illustrated above is described below:

Airport Operations District

The 500-acre Airport Operations District, shown in light gray on the plan, contains the two existing 8,000-foot long runways, taxiways and adjacent buffer zones surrounding the active airfield.

Aviation-Related Business District

The intent of the 230-acre Aviation-Related Business District, identified in dark gray on the plan, is to provide an area dedicated primarily to aviation-related business, industry, transportation and distribution, technology employment and other uses that rely on, or directly benefit from, proximity to airport facilities and operations. Such uses could include general and corporate aviation, aircraft maintenance / repair / overhaul, aviation-related manufacturing, and government and aerospace research and development.

Professional Office District

The intent of the 120-acre Professional Office District, identified in brown on the plan, is to provide an employment center serving corporate and professional office needs of the area. Some retail and community support uses (e.g. hotels, food service, and day care) could be integrated into this district. Primary uses in this district will include administrative, corporate, and professional offices (e.g. law, medical, insurance, architectural, engineering, finance, and real estate), and similar office uses. Uses could be accommodated within this district in stand-alone buildings, in a campus setting, or in a more compact office complex.

Community Mixed Use District

The intent of the 175-acre Community Mixed Use District, shown in light orange on the plan, is to provide a centralized area that encourages a compact pedestrian-oriented mix of community-related uses that will provide a variety of live, work, play and educate opportunities. Typical uses could include neighborhood-scale retail, professional offices, business and support services, restaurants, hotels and conference centers, health and fitness centers, day care centers, civic and cultural uses (e.g. churches, libraries, and museums), parks, and government buildings. A variety of higher-density attached housing types such as town homes, condominiums and apartments (including affordable rental and home ownership, and assisted / independent care senior housing) could also be included.

Business and Technology Industries District

The intent of the 190-acre Business and Technology Industries District, shown in purple on the plan, is to provide a high-tech employment center that will accommodate large-scale technology uses, such as technology-based research and development, energy parks, laboratories, light manufacturing, and warehouse and distribution uses. Facilities could be developed as stand-alone buildings on several acres or in a campus / corporate park setting. This district could also accommodate those activities that are normally considered industrial in nature, but which produce few, if any, external effects that may be adverse to nearby properties or to the community in general.

Education District

The intent of the 200-acre Education District, light blue on the plan, is to allow for university and college-level academic, administrative and support facilities. Typical uses will include college classrooms, administrative and support facilities, college athletic and sporting events, and student / faculty housing. More detailed studies are being conducted in the checkered areas on the plan to determine specific locations for educational versus natural area uses.

Residential District

The intent of the 215-acre Residential District, shown in yellow on the plan, is to provide for a variety of housing types in a compact, pedestrian-oriented setting. Typical uses will include single-family attached / detached, multi-family apartments, assisted / senior housing, and retirement / second homes. The proposed density of the McKeen Street housing area is five dwelling units per acre, and eight dwelling units per acre for the on-base housing areas. Residential uses in the Community Mixed Use District are proposed at a density of 24 dwelling units per acre.

Recreation and Open Space District

The intent of the 510-acre Recreation and Open Space District, identified on the plan in dark green, is to provide suitable areas for a variety of commercial and public outdoor active and passive recreational opportunities for the community. Recreational uses could include public parks, sports fields, golf courses, public gardens, bicycle trails, and equestrian facilities.

Natural Areas District

The intent of the 1,060-acre Natural Areas District, light green on the plan, is to preserve, maintain and enhance existing natural areas for the long-term benefit of area residents and the surrounding community; as such, only those uses that will not significantly alter the environment and/or will provide opportunities to experience the environment will be considered. Pedestrian trails, nature and interpretive centers,

environmental education, and other non-intrusive outdoor passive recreation and educational uses could also be included. More detailed studies are being conducted in the checkered areas to determine specific locations for natural versus educational uses.

Transportation System

The nature and magnitude of transportation demands associated with redevelopment of the facility, as well as the ability of the existing transportation systems to accommodate these demands, are paramount considerations addressed in the Reuse Master Plan. A recurring theme from the public was the desire to provide viable alternatives to single passenger automobile travel, and sensitivity to other uses in the vicinity of the base. The transportation framework plan element of the Reuse Master Plan addresses both off-site and on-site capacity-related improvements, including:

- The creation of a new connector spur and interchange that will connect to US Route 1 west of the present interchange at Cook's Corner
- New secondary points-of-access onto the adjacent street systems at Bath Road / Gurnet Road / Harpswell Road
- New east / west connector linking Gurnet and Harpswell Roads
- The widening of Bath Road
- The creation of a new network of pedestrian / bicycle trails

Rail Service Considerations and Access

The base has historically been served directly by rail, via an at-grade crossing of Bath Road. The rail spur once extended into the site roughly parallel to the main base entrance. While the re-creation of both passenger and freight rail access onto the site provides an incentive for certain future development, the reintroduction of a grade crossing on Bath Road would present a number of challenges. Initial evaluation suggests that creation of grade-separated rail access could be achieved through elevating Bath Road across the north end of the site, which would allow a new rail spur alignment further to the west.

Pedestrian Considerations

Significant public input has also indicated the need to create a facility characterized by "walkability." The improvements incorporated into the plan provide pedestrian access throughout the redevelopment, with a focus on connectivity with those types of land uses which tend to generate pedestrian traffic, or interface with other transportation modes. Proposed transit stops will be located to correspond with complementary land use elements and transportation nodes.

Open Space System

Over 1,500 acres (49%) of the site are dedicated to open space and natural areas, where wetlands, drainageways, wildlife corridors and other sensitive natural systems are prevalent. Urban parks and formal open spaces are envisioned in the more developed areas, with pedestrian linkages to ensure connectivity not only throughout the property, but also into the adjacent neighborhoods and community. This approach promotes the concept of conservation and preservation of site and area-wide natural systems, while also providing a variety of locations and conditions for both active and passive recreational activities.

Environmental Influences

A detailed opportunities and constraints analysis was performed with respect to environmental conditions to help guide the development of the Reuse Master Plan. The analysis produced an implementation strategy that will best position designated land use districts for redevelopment. As a result, specific recommendations have been incorporated into the land use master plan described in **Section 6** of this report.

Taking environmental conditions into consideration while developing the Reuse Master Plan facilitates a quick start to base redevelopment, which creates momentum, optimism, and decreases the community's anxiety over the closure of the historic military installation.

Plan Implementation Considerations

As the MRRA focuses on implementation of the Reuse Master Plan for redevelopment of the Brunswick Naval Air Station, more detailed planning, market and economic studies, building and environmental investigations, and other activities must be programmed. The following section provides a discussion of a variety of issues that will aid MRRA in making decisions related to future economic development, transportation and infrastructure, environmental cleanup, and property transfer.

Economic and Development Impacts

The following development impact estimates (in current dollars) represent the jobs, wages and taxes that could be generated, assuming full build-out of the BNAS site according to the Reuse Master Plan. All new development has been included, as well as the reuse of select existing buildings for education tenants. There will be additional public benefit conveyances (PBCs) which will result in the repositioning of select facilities, but such uses are not likely to contribute a level of jobs and wages comparable

to new development. Consequently, Economics Research Associates, Inc. (ERA) did not include them in this analysis. Neither construction labor nor short-term employment impacts generated by residential development have been included.

Current operations at BNAS generate:

- Total employment of 4,863
- Total annual wages of roughly $115,000,000
- An average annual wage of roughly $24,000

These figures assume full build-out of the entire site over a period of 20 years. The Reuse Master Plan could generate the following development impacts in current dollars:

- Total employment of 13,800 workers
- Total annual wages of $732,390,000
- An average annual wage of roughly $53,000
- Total annual income taxes of $40,849,000
- Total annual commercial and residential property taxes of $19,011,000, which could be a source of tax increment financing (TIF) to assist in funding reinvestment in public infrastructure and other base redevelopment activities; property valuation that is not sheltered in a TIF district would be subject to the impact of the state's school funding formula, county tax assessment and state municipal sharing formula

Transportation and Infrastructure Impact Considerations

Preliminary "order of magnitude" estimates were developed relative to the degree of public sector capital investment that will be necessary for implementation of the 20-year redevelopment plan. The majority of costs relate to the rehabilitation of existing facilities and the construction of new transportation and utility infrastructure. Primary components include:

- Arterial, collector and local streets
- Water and sewer systems
- Storm drainage
- Electrical transmission and distribution
- Telecommunications

The total projection for these costs (through build out) is estimated at approximately $240 million, which includes a contingency allowance of 25 percent and approximately 18 percent for "soft costs" such as engineering, permitting, and related items.

The time frames necessary for implementation of utility and transportation infrastructure improvements will be dictated to a large extent by the rate at which new businesses and residents occupy the facility; phasing may also be driven by the logistics of transfer-of-ownership and operations responsibility of any utility systems. The need for capacity-related improvements to the transportation network in the vicinity of the base will be dictated primarily by the rate at which existing facilities are reused, and new facilities are constructed.

Environmental Considerations

Numerous environmental issues must be considered prior to and during implementation of the plan. Environmentally-impacted sites on the property are at various stages of investigation, remediation, and closure; some potential areas of environmental concern have not been assessed at all. A number of known environmentally-impacted areas have not been adequately investigated to determine the nature and extent of contamination. Environmental investigation and site characterization for known and potential environmentally-impacted sites are critical elements to redevelopment because the extent of contamination must be defined prior to estimating costs for remediation to be protective of human health and the environment for the land use(s) described in the plan, and to adequately estimate and consider long term obligations (e.g., long term monitoring or land use controls). The environmental strategy for cleanup and redevelopment in accordance with the Reuse Master Plan includes filling identified data gaps while coordinating further site investigation, remediation, and closure of contaminated sites consistent with the redevelopment schedule and priorities. **Appendix G** contains details on the known and potential environmental issues, how they relate to the land uses described in this Reuse Master Plan, and the status of the Navy's investigation and planned cleanup.

Environmental Phasing

During the development of the Reuse Master Plan, certain areas have been identified as priorities in redevelopment phasing. The priority areas include property that may be transferred to the MRRA prior to 2011 base closure, areas that will be developed to include special activity centers or economic centers, and areas that will require significant cleanup time or areas that have not yet been investigated and may require a long lead time for investigation and remediation. Priorities related to environmental investigation and cleanup have been identified, along with the reasoning associated with the priorities, as reported in detail in **Section 7**.

Following investigation and the determination of the nature and extent of contamination at impacted sites, the environmental cleanup process will proceed to remedy selection and implementation to position properties for transfer with as few land use controls (LUCs) as possible. Schedules for cleanup of individual sites will be driven by redevelopment phasing and priorities.

Property Transfer Considerations

A number of property transfer mechanisms may be used to convey all or portions of the BNAS property to new owners. The Brunswick Local Redevelopment Authority (BLRA), the entity charged with developing this Reuse Master Plan, envisions that: (1) properties identified and approved by the BLRA Board of Directors through the Notice of Interest (NOI) process will be transferred via the appropriate public benefit conveyance authority; (2) the MRRA may seek to acquire portions of the property via an Economic Development Conveyance; and/or (3) the MRRA may negotiate with the Navy to acquire select parcels within the property via the Negotiated Sale transfer mechanism. It is also assumed that the Navy will likely make select parcels available to the highest bidder via Public Sales. Such transfers would require consistency with this Reuse Master Plan, and be subject to zoning and other land use controls and restrictions that may be placed on the property by the Town of Brunswick and/or the MRRA. Information related to potential property transfer mechanisms and recommendations made by the BLRA Board of Directors for implementation of the Plan are provided in **Section 7**; they include:

- Public Benefit Conveyances (PBCs) allow the transfer of surplus military property for a specified public purpose at up to a 100 percent discount, which may be conveyed to eligible public agencies and private not-for-profit organizations to provide for certain public goods and services.
- Homeless Assistance Provisions identify the unmet needs of the homeless in the vicinity of the base. Using information provided from area homeless service providers and the Maine State Housing Authority, a report entitled *Report on the Homeless in Midcoast Maine* was created to assist the BLRA in understanding the scope of homeless needs in the vicinity. Based upon the NOI evaluations and interviews, recent homeless studies, and recommendations from the BLRA's Homeless and Housing Committee, Tedford Housing's proposal was selected because it most closely addressed the identified needs of the homeless in the vicinity. The BLRA agreed to establish a homeless services trust fund to be capitalized by future base property sales / transfers or development exactions to support both housing and related services for homeless persons. Providing service funding also allows the homeless to integrate throughout the community and lessen the impact on municipal services in one area by spreading the demand over a wider area. More details regarding this approach are provided in **Section 7**.

- Economic Development Conveyances provide for the transfer of select properties within the base to the MRRA at a discounted price or at fair market value for the purpose of job creation.
- Negotiated Sales are available only to a public entity for a public purpose such as the provision of affordable housing. Negotiated sale authority requires the payment of fair market value.
- Public Sales (auctions to the highest bidder) may be used by the Navy for properties not conveyed via other mechanisms.

Economic Feasibility and Public Benefit Analysis

Economic Feasibility

The Reuse Master Plan, as presented in this overall study, supports the uses and industries targeted in Economics Research Associates' January 2007 report. In that report, ERA identified composite research and development and manufacturing, information technology, biomedical, radio frequency identification, open-source software and alternative energy as technology-based industries that should be targeted tenants for a Maine Center of Innovation. The Business and Technology Industries District, outlined in the Reuse Master Plan, would serve as the location for the Center. ERA has coordinated with aviation consultant Edwards and Kelcey in reviewing the potential for on-site airport operations. The Edwards and Kelcey Aviation Feasibility Study confirmed the potential for general and corporate aviation, government agencies, maintenance, repair and overhaul, and research and development activities. Consequently, the Reuse Master Plan designates 500 acres for airport operations and 230 acres for aviation-related businesses. In addition, ERA has underlined the demand for a hotel and conference center, linked to a golf course, as well as supportive retail, second homes, retirement homes, education and aviation. The Reuse Master Plan takes all of this into account and designates an appropriate mix of land-use districts providing for flexibility and expansion.

Public Benefit Analysis

There are several benefits likely to result from the proposed Public Benefit Conveyances at the base. ERA considered the following PBCs as likely to occur and generate significant benefits. The buildings and land to be occupied by Bowdoin College and Southern Maine Community College will result in:

- Access to advanced technology training and education
- Potential synergies with relevant firms and industries
- Pipeline of entry-level workers for targeted industries

Over 1,000 acres of open space and conservation land along with select community recreational facilities will be transferred to the Town of Brunswick. The land and existing buildings potentially provide:

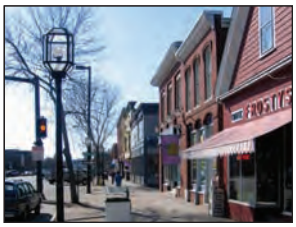
- Walking, biking and cross-country skiing trails
- Access to green space for residential homeowners
- A marsh and bay water trail for recreational boaters
- Access for canoes and kayaks to promote low-impact exploration of the coastal habitat
- Commercial shellfish opportunities for local shellfish harvesters
- Facilities for gym use, and health and wellness programming
- Future athletic field space
- Recreational programming for area youths
- An attractive amenity to commercial residential and resort development
- A higher quality of life

Management Considerations

The Midcoast Regional Redevelopment Authority is a public municipal corporation chartered by the State Legislature with the responsibility to implement the Reuse Master Plan prepared for the BNAS property in Brunswick and the Topsham Annex in Topsham, Maine. Members of the Authority have been appointed by the governor and confirmed by the legislature. Presently, the proposed staffing model will include an executive director, a deputy director, a planning and environmental manager, a property manager, grants and communications coordinator and an executive administrative assistant. The estimated MRRA budget for 2008 is $858,911.

Section 7 of this report outlines how economic development at BNAS can best be accomplished by leveraging the assets of various regional, state and federal resources. The action plan is loosely based upon the phasing strategy outlined for facility development. The plan should be considered only as a basic guide for future planning, bearing in mind that an element of flexibility should be maintained as the project progresses.

Section 2: Background and Overview

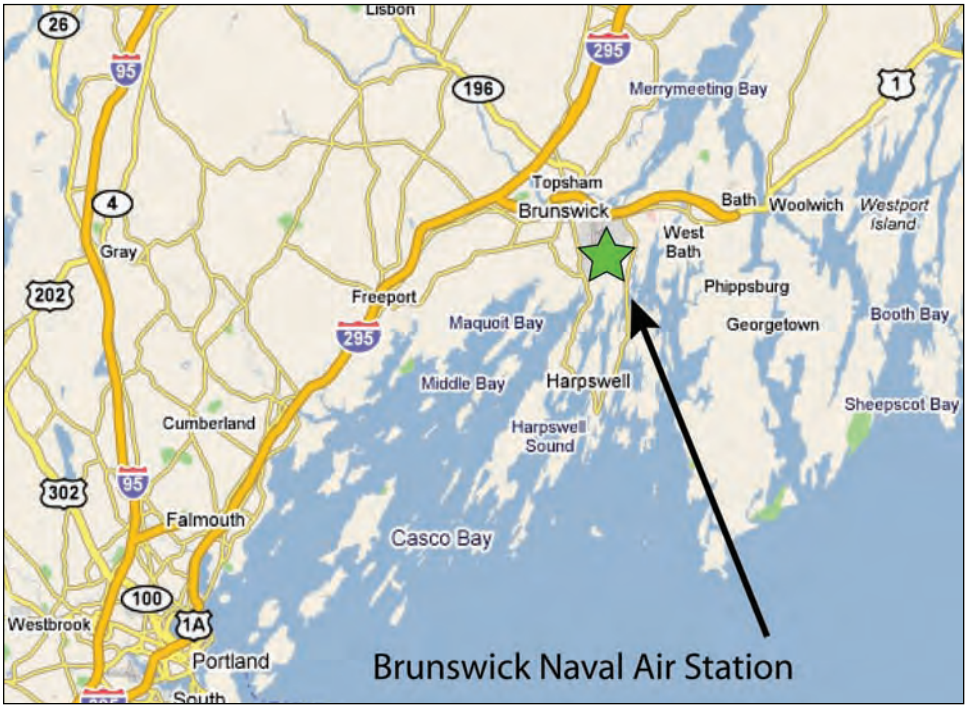


On August 24, 2005, the Federal Base Realignment and Closure (BRAC) Commission voted eight to one to close Naval Air Station Brunswick and move its aircraft operations to Jacksonville, Florida; on September 15, 2005, the final list was approved by the President. By law, the base must close before September 15, 2011. For the Town of Brunswick and the State of Maine, that decision was the culmination of an intense process and significant community effort to keep the base open to maintain an employment base of over 5,200 military and civilian personnel; and a regional economy exceeding $147 million.

Property Setting and Description

Locally known as Brunswick Naval Air Station, the base is a 3,300-acre military enclave within the jurisdictional limits of the Town of Brunswick, in Cumberland County, Maine, as illustrated on **Exhibit 3: Regional Context Map**. Primary vehicular access to the base is via US Route 1 at Cook's Corner (Gurnet Road), and from downtown Brunswick, east via Highway 24 (Bath Road). The property is bordered on the west by a variety of low to moderate-density residential neighborhoods east of Harpswell Road; Bowdoin College facilities are generally west of Harpswell Road; on the south predominately by

Exhibit 3: Regional Context Map



Source: Matrix Design Group

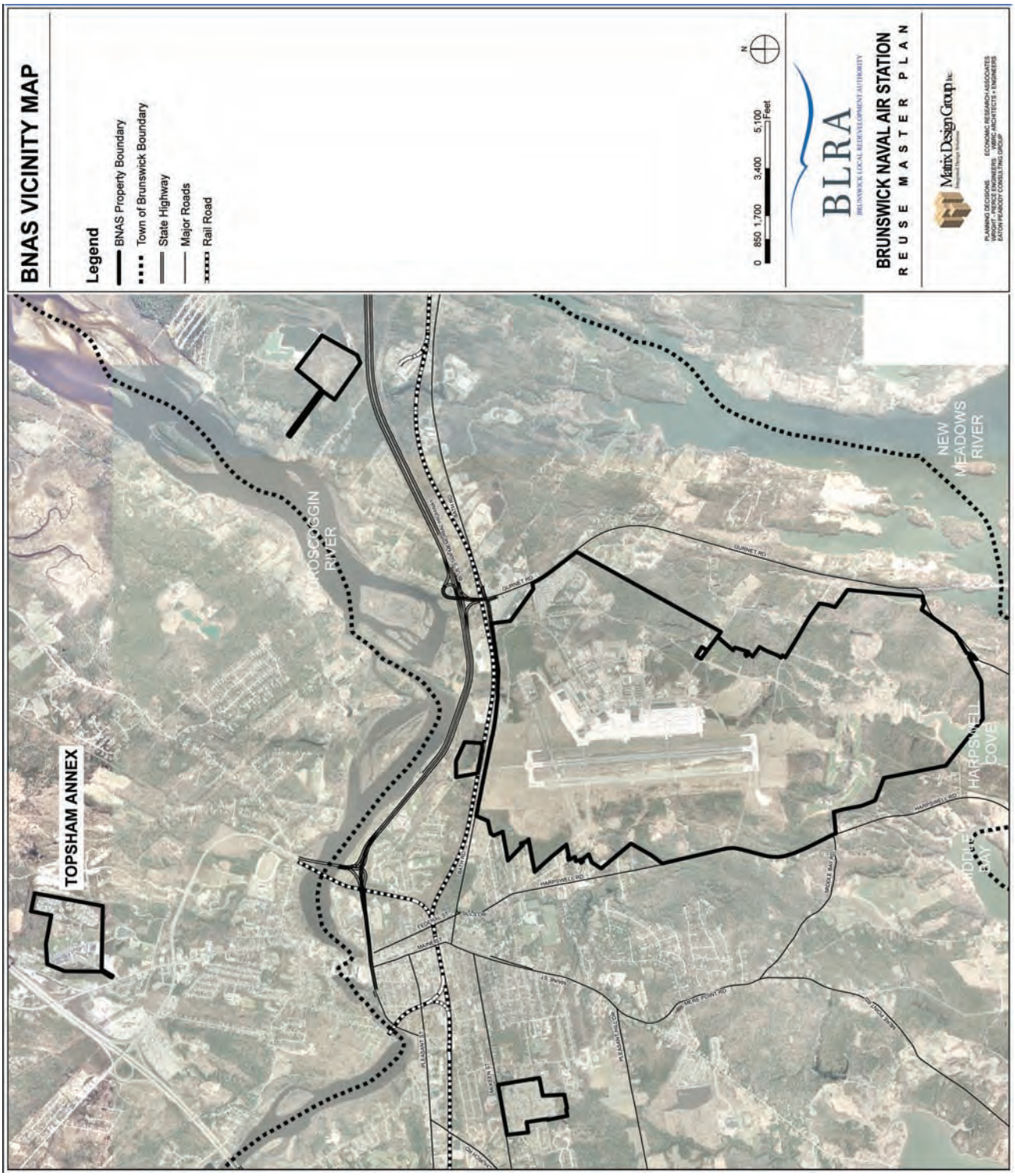
Harpswell Cove; on the east by commercial development associated with Cook's Corner, and residential development to the south, between the base and Gurnet Road; and on the north by highway commercial uses and undeveloped areas north of Bath Road.

The base is the last remaining active-duty Department of Defense airfield located in the Northeast, and is home to five active duty and two reserve squadrons. The base's two 8,000 foot runways and airside support infrastructure and systems (which encompass over 1,300 acres of the base) provide year-round airport services and support on a 24 hours a day, seven days a week. Flying Lockheed P-3 "Orion" long-range maritime patrol aircraft tasked by Patrol and Reconnaissance Wing Five, active duty squadrons regularly deploy overseas for six months at a time.

BNAS has 29 tenant commands, including a Reserve P-3 squadron and a Reserve Fleet Logistics Support Squadron flying C-130 "Hercules" transports. In addition, over 1,600 Naval Reservists travel from throughout New England to drill at Naval Air Reserve Brunswick, SeaBee Battalion and numerous other reserve commands. Approximately 20 percent of the activities, facilities and services at BNAS are in direct support of the AEGIS Destroyer shipbuilding program at nearby Supervisor of Shipbuilding, Bath and the Bath Iron Works Corporation. As Maine's second largest employer, BNAS employs 4,863 military and civilian personnel, including 713 officers, 3,493 enlisted personnel and 657 civilians. The air station provides over $187 million to the local economy, including $115 million in salaries, $38 million in contracts and material purchases and $34 million in medical purchases. Also, the Navy's only cold weather Survival, Evasion, Resistance and Escape (SERE) School is taught at Brunswick and on 12,000 acres near Rangeley in northwestern Maine, which is not considered part of this planning effort.

Three other isolated properties, however, are included: the 77-acre McKeen Housing site (McKeen), located about two miles west of the main base on McKeen Street southwest of downtown Brunswick; a 69-acre East Brunswick Transmitter Site (EBTS), located approximately two miles northeast of the main base, off Old Bath Road; and the 0.25-acre parcel in Phippsburg, a former transmitter site. **Exhibit 4: BNAS Vicinity Map** illustrates the location of the BNAS property being investigated as part of this study, including the McKeen and EBTS parcels.

Exhibit 4: BNAS Vicinity Map



Source: Matrix Design Group

The Brunswick Local Redevelopment Authority

After the BRAC decision to close BNAS was final, Governor John E. Baldacci, the local legislative delegation, and the Brunswick Town Council established the Brunswick Local Redevelopment Authority. The BLRA was recognized by the Department of Defense on December 1, 2005.

BLRA Members

Members of the Authority were appointed by the Governor, based on a review of outstanding civic and business leaders, state and local governmental representatives, academic, and institutional leaders. The following members represent the BLRA Board of Directors:

Brunswick Resident Appointees:

- Martin L. Wilk, Chair
- Carol Godfrey Warren, Vice Chair
- Robert B. Jarratt
- S. Catherine Longley
- Dana W. Totman

Brunswick Town Council Appointees:

- Joanne King
- Forrest Lowe

Town of Topsham Appointee:

- Sue Spann

State of Maine Appointees:

- John Richardson, Commissioner, DECD
- Honorable Stan Gerzofsky, Representative - District 66

Regional Appointees:

- Arthur F. Mayo III
- Major General John W. Libby, Maine National Guard
- Charles Spies

The BLRA also includes several staff members to help facilitate and manage the redevelopment process. Staff includes:

- Victoria Boundy, Senior Planner
- Jeffrey Jordan, Deputy Director
- Steve Levesque, Executive Director
- Alexis Mann, Grants Administrator
- Kathy Paradis, Executive Assistant
- Bob Rocheleau, Property Manager
- Clare Tosto, Communications Coordinator

As part of the BLRA, committees were formed to focus on specific aspects of the reuse planning process and issues. The BLRA Board adopted a specific mission statement for each committee.

- Executive Committee – Martin L. Wilk
  The mission of the Executive Committee is to monitor the progress and effectiveness of the BLRA Board, its committees, Executive Director, staff and consultants in achieving the goals and timelines established by the BRAC process, Department of Defense, and office of Economic Adjustment.
- Personnel and Contracts Screening Committee - S. Catherine Longley
  The mission of the Personnel and Contracts Screening Committee is to conduct Executive Director and consultant search processes and bring recommendations forward to the Board. The Screening Committee will also oversee the consultant contract process.

- State and Local Screening Committee - Stan Gerzofsky
  The mission of the State and Local Screening Committee is to provide information, analysis and recommendations to assist the BLRA in its deliberation on the development and implementation of a “state and local screening” process in accordance with the Federal Base Closure Community Redevelopment and State and Local Assistance Act.
- Aviation Committee – Martin L. Wilk
  The mission of the Aviation Committee is to provide information, analysis and recommendations to assist the BLRA in its deliberation on potential reuse alternatives for the aviation assets at BNAS.

- Environmental Committee – Carol Godfrey Warren
  The mission of the Environmental Committee is to provide information, analysis and recommendations to assist the BLRA Board on environmental issues and remediation efforts related to the Reuse Master Plan and property disposition and transfer.
- Homeless and Housing Committee – Dana W. Totman
  The mission of the Homeless and Housing Committee is to provide information, analysis and recommendations to assist the BLRA Board in its deliberation on the development and implementation of a "Homeless Screening" process in accordance with the Federal Base Realignment and Closure Act.

BLRA Guiding Principles

The Brunswick Local Redevelopment Authority is charged with the responsibility of preparing a reuse master plan for the Brunswick Naval Air Station. The following principles were adopted on May 17, 2006 to provide general guidance to it as it proceeds with the development of the Reuse Master Plan:

- The LRA Board will be actively engaged in all aspects of the reuse planning efforts and will complete the final Master Reuse Plan for BNAS by September 1, 2000.
- The planning process will include an extensive, open and inclusive public participation program, including numerous community-wide visioning sessions and other opportunities to provide meaningful input. The LRA will not pre-judge what the plan will be, but will consider all the studies, analysis and community views before making decisions about the Master Reuse Plan.
- The reuse plan will accommodate the needs and values of the community, the region and the State of Maine, and be consistent with the policies of the Brunswick Comprehensive Plan. Redevelopment of the base provides an opportunity to re-connect the base with the community, both geographically and economically.
- The reuse plan will have sufficient flexibility to accommodate both short term (less than ten years) and long term (ten to fifty years) needs and values.
- The reuse plan will consider "smart growth" strategies that promote sustainable development and balance economic development, environmental protection and the preservation or enhancement of the quality of life for Brunswick residents.
- The reuse plan will consider a mix of land uses, including, but not limited to, the following: businesses with potential for high employment growth, capital investment and tax revenue; open space and public recreation uses; academic and research facilities; governmental/public services; housing; and aviation.
- The reuse plan will make adequate provision for environmental clean-up and remediation, including a goal that base clean-up is to the standard necessary to support the proposed reuse of the land and facilities.

- The reuse plan will seek to develop local and regional economic and employment viability and sustainability similar to or better than the economic health of the region before the BRAC closure announcement.
- Development on the base should be integrated with the economic development of the Town, the region and the State of Maine.
- The reuse plan will attempt to optimize the use of existing facilities and infrastructure including the integration of a multi-modal transportation system with designated land uses.
- The reuse plan will recognize and optimize the skills of the available civilian workforce at BNAS and the region.

The Federal Property Screening Process

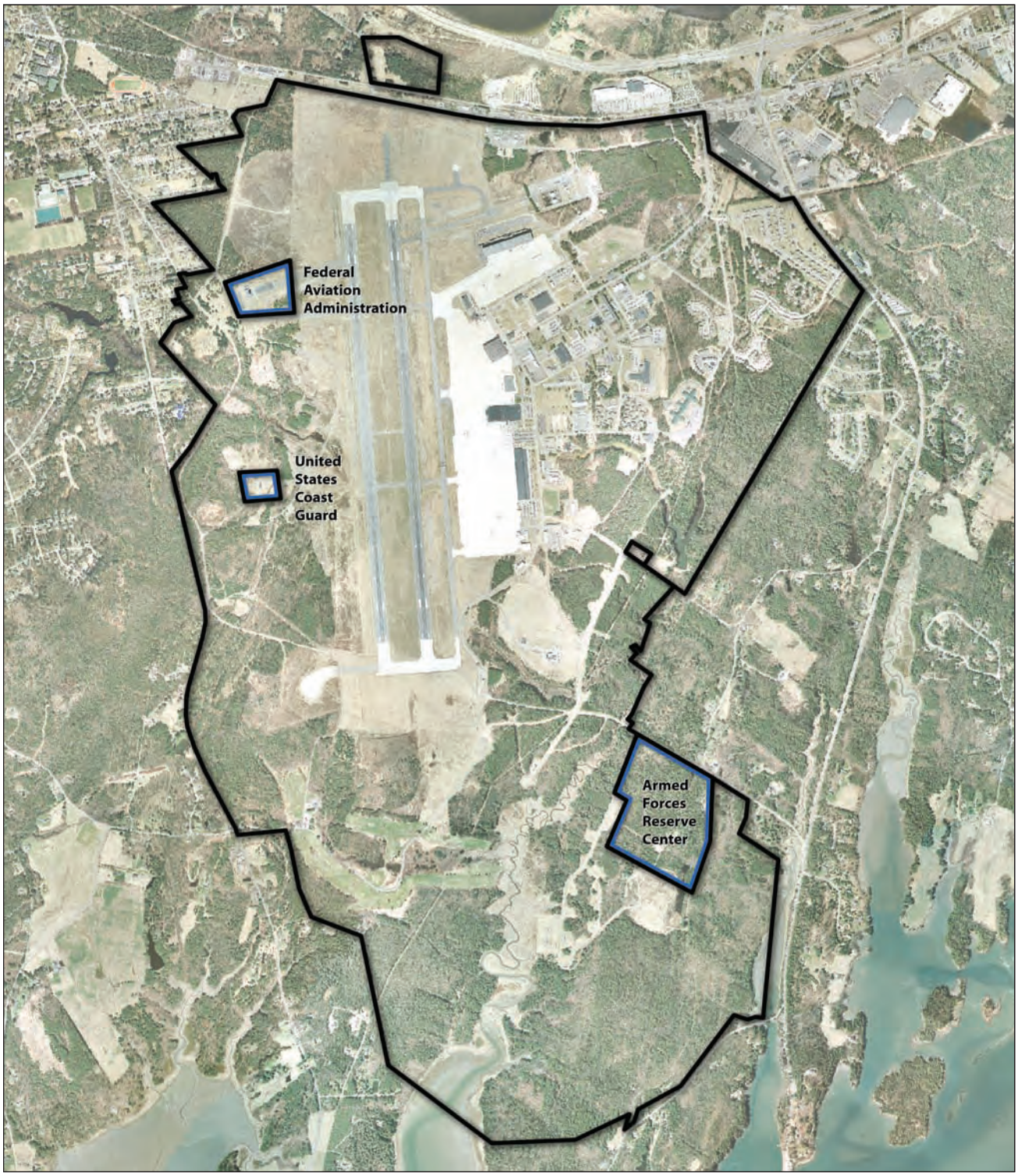
The BRAC process allows for various federal, state, and local agencies and other non-profit organizations to apply for and be considered for property within a closed military installation. There are two levels of screening, the first of which is the "federal to federal" screening, during which other Department of Defense (DoD) organizations are notified by the Department of the Navy (or other applicable Military Department) of the availability of "excess" property. After consideration by these components, other federal departments are then given the opportunity to request portions of the property. The parcels within the remaining installation that are not transferred to these agencies under this first level screening activity are considered "surplus" property.

The second level of screening is conducted by the BLRA and considers the surplus property, as defined above. During this process, the BLRA provides notice of the availability of surplus property to homeless provider organizations, state and local governments, and potential recipients of public benefit conveyances. The following sections of this report describe this process as it relates to the redevelopment of the 3,300-acre Brunswick Naval Air Station.

Federal Determination of Surplus Property

The federal government made its official determination of "surplus" property for BNAS on February 6, 2007. Prior to that time, the BLRA was aware of specific federal requests for property, and worked with the Navy to communicate the BLRA's position on those requests, in terms of how each request could potentially impact the future use of the property and the community's Reuse Master Plan. Based on those discussions, approximately 100 acres of land have been set aside for federal uses, and reflected accordingly in the Reuse Master Plan. **Exhibit 5: Federal to Federal Requests for BNAS Property Map** illustrates the locations of these requests which results in an overall surplus property of approximately 3,200 acres.

Exhibit 5: Federal-to-Federal Requests for BNAS Property Map



Source: Matrix Design Group

State and Local Screening Process

The Federal Base Closure Community Redevelopment and Homeless Assistance Act governs the process of how federal defense facilities are disposed. The Act was designed to accommodate the impacted communities' multiple interests in base reuse, including meeting the national priority to assist homeless individuals and families, and for economic development conveyances for business growth and expansion and Public Benefit Conveyances (PBC) to provide for reuse of land and building assets for a public purpose. The Act provides for a community-based process whereby government and not-for-profit organizations may propose the reuse of surplus military property to provide vital public services such as education, health care, open space or parks, parks and recreation related uses, law enforcement, prisons, transportation terminal facilities, aviation uses or other public buildings and facilities; the Act also provides for a community-based process whereby government and not-for-profit organizations serving homeless individuals or families participate in the local reuse planning process. The BLRA is responsible for developing a reuse plan for Brunswick Naval Air Station that appropriately balances the needs for economic redevelopment, certain public facilities and amenities, and homeless assistance.

The BLRA officially began its "state and local screening process" on February 9, 2007, after the federal determination of surplus property was made. Notices were sent to the State of Maine, local governments, and not-for-profit agencies in the vicinity of the base, and advertisements were placed in the *Portland Press Herald* and *Times Record* to solicit proposals. State and local government agencies and not-for-profit organizations that provide or propose to provide programs, services, or activities on the base were also contacted. The following process was followed to meet the federal requirements for state and local screening:

State and Local Screening Notice of Interest

The BLRA State and Local Screening Committee prepared its Notice of Interest for distribution to state and local governments and other interested parties, which was approved by the BLRA Board on June 21, 2006. Elements of the Notice of Interest included the following:

- Understanding the Base Realignment and Closure (BRAC) Process
- Eligibility for Pubic Benefit Conveyance
- State and Local Screening Process Description
- Evaluation Criteria
- Outreach and Education Process
- The Application Process
- Summary Matrix of Public Benefit Federal Partners
- Goals of the State and Local Screening Process

- Role of the BLRA Board, Screening Committee and Staff
- BLRA Guiding Principles

Workshops – State and local governments and other interested parties were invited to attend one of two workshops to learn more about the State and Local Screening process; to learn how public conveyances work with federal sponsoring agencies; to review the application, and to take a tour of BNAS.

Applicant Presentations – State and local governments and other interested parties were invited to make presentations to the BLRA Board.

Application Instructions – The BLRA, through its State and Local Screening Notice of Interest, directed interested parties to contact the respective federal sponsoring agency to discuss the potential for a public benefit conveyance, and to inquire about the federal sponsor's own application process.

Review Process – The BLRA and its Local Screening committee reviewed submitted applications, met with applicants, and made a set of recommendations to the full BLRA Board for its consideration.

BLRA Board Review – The BLRA Board reviewed recommendations made by the Screening Committee, and made recommendations for public benefit conveyance reuses for consideration in the Reuse Master Plan.

Homeless and Housing Assistance Screening Process

The BLRA officially began its six-month "homeless screening process" on February 9, 2007, when the federal determination of surplus property was made. Notices were sent to area homeless providers and advertisements were placed in local newspapers to solicit proposals from area homeless providers. State and local government agencies and not-for-profit organizations that provide assistance, programs or services that meet the needs of homeless persons and families in the communities in the "vicinity of the base" were also contacted. The communities in the "vicinity of the base" were determined to be the towns of Brunswick, Freeport, Durham, Harspwell, and the communities within Sagadahoc County (Arrowsic, Bath, Bowdoin, Bowdoinham, Georgetown, Phippsburg, Richmond, Topsham, West Bath, and Woolwich). The following process was followed to meet the federal requirements for state and local screening:

Homeless Agency Provider Notice of Interest

The BLRA State and Local Screening Committee prepared its Notice of Interest for distribution to state and local governments and other interested parties, which was approved by the BLRA Board on June 21, 2006. Elements of the Notice of Interest included the following:

- Understanding the Base Realignment and Closure (BRAC) Process
- Homeless Assistance and the Homeless Screening Process, including
  - Outreach and Education Process
  - Integration of Requests from Homeless Provider Organizations
  - Legally Binding commitments
- The Application, including:
  - Homeless Provider Application Questions
  - Application Contact Sheet and Certifications
  - The Application Checklist
  - Goals of the Homeless Screening Process
  - Role of the BLRA Board, Homeless Committee and Staff
  - Homeless Screening Process and Schedule

Workshops

Homeless agency providers were invited to attend one of two workshops to receive a briefing on the homeless screening process, a review of the Application, and to tour BNAS.

Applicant Submissions and Presentations

Homeless service providers were invited to submit and make presentations to the BLRA Board on May 16, 2007.

- Review Process – The BLRA and its Homeless and Housing Committee reviewed submitted applications, met with applicants and others to determine whether the agencies had sufficiently identified the availability of existing services to meet the needs of the homeless in the "vicinity of the base," and to determine how any unmet needs could be addressed by property and building assets on the base. The Homeless and Housing Committee then prepared its findings and forwarded a set of recommendations to the Board for its consideration.
- BLRA Board Review – The BLRA Board received a report from the Homeless and Housing Committee on June 20, 2007 with a set of recommendations on whether there is a suitable reuse of land or property to assist homeless providers

in the vicinity of the base to meet the unmet need of homeless individuals or families. The Board then considered those recommendations, and made recommendations accordingly for consideration into the Base Reuse Master Plan.

Analysis of Homeless Needs in Midcoast Maine

The BLRA and its Homeless and Housing Screening Committee recognized that it needed to better understand the issues related to the homeless in order to respond to applications from homeless providers, and to make informed and appropriate recommendations. An analysis, therefore, was conducted as part of the Matrix Design Group Planning Team's investigation of issues and existing conditions related to homeless needs in the Midcoast Maine area. The purpose of this report is to assist the BLRA in understanding the scope of needs in the area, so that it can more effectively engage with homeless providers in creating programs that will make a difference for the homeless in 2011. The analysis, along with supporting documentation, is provided in **Appendix F** of this report. In summary, the following conclusions and/or recommendations were made:

- There is only a modest demand, if any, for shelter beds for adults. There is some demand for family shelter beds, but if sufficient alternatives develop, and the average length of stay can be reduced to a couple of weeks, that demand nearly disappears. On the other hand, there does appear to be a need for four or five shelter beds for transient youth under any scenario.
- There is a much larger demand for supported housing apartments. The reason that this demand is so high, even though it is only for a portion of the homeless population, is that the length of stay is much longer. If seven single adults per month need supported housing, and each of the seven people stays in his or her apartment for a year, then this translates into a need for 49 beds.
- Assuming there are adequate resources in the system to enable people to move quickly from shelters to supported housing to the private housing market, then the overall need for apartments, both shelter and supported housing, is a little over 20 beds.
- The low demand for shelter beds, and the high demand for supported housing, is problematic in the base closing process. The base closing process is designed to provide physical units to nonprofit agencies, not ongoing service funds. A challenge for the process will be to find creative ways to help not-for-profit agencies find service funds.
- Along the same lines, the administrators and not-for-profit staff both emphasized the importance of a physical location from which "one-stop" and referral services could be provided to homeless people.

- A Tedford Housing official mentioned that, even if more shelter beds aren't needed, it may be more efficient to convert existing shelter structures into supported housing, and to seek new shelter beds at the base. This is one way to increase supported housing, even though shelter beds would be requested at the base.

Exhibit 6: Estimated Demand for Homeless Shelter and Supported Housing shows this analysis of homeless needs in Midcoast Maine.

Exhibit 6: Estimated Demand for Homeless Shelter and Supported Housing

Unmet need in 2011	Families	Single Adults	Single Youth	Total Apartments
Shelter	2 apartments	0 beds (0 apts)	4 beds (1 apt)	3 apartments
Supported Housing	4 apartments	34 beds (11 apts)	12 beds (3 apts)	18 apartments
Total Apartments	6	11	4	21 apartments

Under ideal circumstances, sufficient services are available so that people are not kept in shelters or transitional apartments for longer than necessary

Source: Market Decisions

The Master Planning Process

After soliciting proposals from national planning consultants in May 2006, the Brunswick Local Redevelopment Authority interviewed and selected Matrix Design Group, Inc. (Matrix), a Denver, Colorado-based consulting firm to help it prepare a reuse master plan for Brunswick Naval Air Station. Funded through a grant from the Office of Economic Adjustment (OEA), the Department of Defense, and the Maine Small Cities Community Development Block Grant Program, the Matrix Scope of Work developed for the project and approved by the BLRA Board was based, in part, on the following BLRA objectives:

- Use a forward-thinking and inclusive approach, establish initial community goals and objectives, respecting important community interests and values
- Provide for public outreach and identify the needs of the community
- Conduct a Strengths, Weaknesses, Opportunities and Threats analysis (SWOT) that will include an initial set of property disposition strategies
- Conduct a market study, addressing national, regional, and local potential for redevelopment

- Use existing documents, data, plans and other sources of information, and conduct a detailed facility survey of the property to include land area, buildings, infrastructure, and environmental conditions
- Collate known environmental issues, using existing and such other inventory and other information as may be needed and recommend a reuse master plan that is environmentally acceptable to the Navy, regulators, and the community at large
- Use broad planning principles to develop a series of alternative reuse master plans and property disposition strategies that the BLRA would utilize when working with the Navy in the future; develop the reuse master plan concurrently and in coordination with an airport feasibility analysis
- Identify when, how and what disposition methods should be used for property transfer from the Navy and alternatives for the completion of the environmental cleanup, including "early" transfer under CERCLA and privatization of the environmental cleanup
- Assist the community in the federal and state, local and homeless provider screening process
- Assist the community in reaching consensus around a final reuse master plan
- Develop an operational plan to describe how the redevelopment would occur and recommend the next steps for implementation

The Matrix Planning Team

In order to better understand and respond to local planning issues, community characteristics, and to ensure an understanding and compliance with local planning guidelines and regulations, Matrix Design Group included several local and regional planning and engineering firms as part of its BNAS Planning Team; and, to bring a broader perspective on market and economic opportunities for base redevelopment, a national market and economics firm was included. The Matrix Planning Team, along with project roles and responsibilities, are noted below:

- Planning Decisions - Hallowell, Maine / Public Engagement Programming and Homeless Housing Screening Assistance
- Wright-Pierce Engineers - Topsham, Maine / Transportation and Utilities Infrastructure
- WBRC Architects + Engineers, Inc. - Bangor, Maine / Facilities Assessment and Planning
- Eaton Peabody Consulting Group - Augusta, Maine / Redevelopment and Adaptive Reuse Strategies
- Economics Research Associates, Inc. – Chicago, Illinois / Market and Economic Analysis; Implementation and Operational Strategies

Components of the Planning Process

The final BLRA-approved Reuse Master Plan for the redevelopment of the Brunswick Naval Air Station, as described in **Section 6: The BNAS Reuse Master Plan** is based on a planning process that has considered a variety of significant data related to physical characteristics, environmental conditions of the property, market, economic and financial issues, and regulatory considerations; pertinent on-base, as well as off-base issues have been addressed. The Plan is also the product of an extensive public engagement program that has generated local, regional, and statewide public interest, serious comment and review, and active participation at many community levels, as described in **Section 3: The Public Engagement Program**, which follows this section. No one issue has dominated the process, and no one issue is the basis for the Plan. As with all large-scale, complex, and multi-faceted redevelopment projects, the BNAS Reuse Master Plan reflects the combination of conditions that best positions the property for successful long-term redevelopment, and balances that against community goals and objectives, environmental sustainability, and political / regulatory realities.

The 18-month planning study followed a three-phased process that included:

- Phase A: Pre-Planning Activities, which focused primarily around the formulation and implementation of the Public Engagement Program and the Homeless / State and Local Screening Process
- Phase B: Inventory and Analysis, a three-month period during which physical, market and economic, and facility data was collected and evaluated
- Phase C: Conceptual Master Plans, during which conceptual plan alternatives were formulated, evaluated and compared, and the Reuse Master Plan was finalized

Aviation Feasibility Study Process

As a naval air station, the aviation assets at Brunswick Naval Air Station are significant and represent the largest single component of the base. The BLRA, represented by the Aviation Sub-Committee chaired by Marty Wilk, in concert with the Maine Department of Transportation and the Federal Aviation Administration, retained Edwards and Kelcey of Boston, MA to conduct an Aviation Feasibility Study to evaluate opportunities and constraints to a civilian aviation use on the base. The study, funded by a grant from the Federal Aviation Administration (FAA), was conducted on parallel tracks with the reuse planning and public participation process described in this report. Public outreach conducted as part of the study included a public scoping workshop on June 29, 2006, a public visioning workshop on October 14, 2006, and a final public workshop / public hearing on February 13, 2007. The process described in **Section 5: Reuse Alternatives and Plan Selection** will reflect an aviation reuse scenario, as well as a non-aviation reuse scenario for consideration. The goals and objectives of the study were to:

- Provide a comprehensive update of the inventory of base features and significant community attributes that could influence future aviation redevelopment efforts
- Identify aviation reuse options
- Identify land use and aviation facility requirements for each aviation alternative
- Provide a preliminary analysis of the potential revenues, operating and maintenance costs, and necessary capital investment
- Provide an opportunity for public discussion of aviation reuse that includes a diverse mix of public, private, airport and non-airport perspectives

The results of the Edwards and Kelcey Aviation Feasibility Study are summarized in **Section 4: Existing Conditions Assessment**, and provided in its entirety in **Appendix E** of this report.

Section 3: Public Engagement Program

Understanding and considering community issues on growth and development is important to any public planning effort; learning the public's concerns and ideas about how to replace one of the community's largest employers and longest-standing economic engines in the community and the region makes this issue even more critical. The closure of BNAS for the Town of Brunswick, the Midcoast Region, and the State of Maine is no exception. The Public Engagement Plan undertaken for the BNAS Reuse Master Planning effort was designed to be open and inclusive, interactive and creative, informative and meaningful, and, most importantly, responsive. The following section highlights the components of this program, and describes some of the plan's major outcomes.

Public Meetings and Events

A number of major public meeting opportunities were provided as part of the overall planning process, including the following:

- BRAC to the Drawing Board (Public Meeting One): An introduction to the planning process and team
- Bus to Base Tours: Public tours inside BNAS property
- BRAC to Basics (Public Meeting Two): Four Community Visioning sessions
- Topical Issues Seminars: In-depth meetings exploring four key reuse topics
- BRAC to the Future (Public Meeting Three): Presentation and discussion of the four concept plans
- BRAC to the Future II (Public Meeting Four): Presentation and discussion of the two plan alternatives
- Smart Growth Workshops: Two public sessions exploring Smart Growth design possibilities under the Reuse Master Plan
- Final Public Hearing and Plan Adoption: Presentation and feedback on the final Reuse Master Plan and adoption by the BLRA

Each of these major meetings and events is described in more detail below. In addition to these meetings, the Aviation Committee hosted three of its own workshops to seek public involvement in the development of an Airport Feasibility Study. These workshops were held on June 29, 2006, October 14, 2006, and February 13, 2007.

BRAC to the Drawing Board (Public Meeting One)

On June 21, 2006 over 120 people attended this first of four public meetings at the Brunswick High School. The primary objectives of the session were (1) to introduce the Matrix Planning Team; (2) to describe the reuse planning process; (3) to describe case studies from previous military base closures; and (4) to obtain public input on a variety of issues. During the three-hour meeting, members of the BLRA staff, BLRA Board members, Town of Brunswick staff, and Matrix Planning Team members facilitated small group discussions around the following three major questions:

- What are your best hopes?
- What are your worst fears?
- What are your initial reuse visions?

Comments and responses for these major questions fell under the following common categories:

- Alternative Energy / Sustainability
- Aviation
- Community and Social Services / Institutional
- Community Planning and Design
- Cultural / Arts
- Commercial and Industrial
- Education

- Environment / Natural Resources
- Housing
- Jobs / Workforce
- Planning and Implementation Process
- Transportation
- Quality of Life / Community Connection

Bus to Base Tours

In order to maintain the significant interest in the base reuse planning process as evidenced by the positive results of the *BRAC to the Drawing Board* public meeting, the BLRA organized and initiated a series of weekly bus tours of the base. The tours gave residents the opportunity to go "inside the fence" and to see firsthand the existing facilities, airfield, infrastructure, and natural resources at BNAS and how those physical characteristics of the base could be reused in the future.

Over the course of July and August 2006, over 300 residents and other interested citizens toured the base with BLRA staff and members of the BNAS Base Transition Team. As part of each tour, participants completed surveys, all of which were added to comments from other sources for use and consideration later in the planning process.

BRAC to Basics (Public Meeting Two)

A major goal of the BLRA Board of Directors, as expressed in its Guiding Principles was to maximize participation of the general public in the planning process and to benefit from public comments prior to development of the redevelopment master plan alternatives. To that end, several interactive workshops and meetings were held during the week of September 28 – October 3, 2006 (collectively known as "*BRAC to Basics*") to engage the public in a visioning process. Over this six-day period, the Matrix Planning Team and the BLRA staff orchestrated a variety of presentations of findings, conducted three major public engagement visioning workshops, and created a fact-filled statistical summary of the public's vision for redevelopment of the property, including a computer-animated video "fly-over" presentation of public redevelopment ideas.

The three public visioning workshops described below each followed essentially the same format and agenda and were targeted to a different segment of the Brunswick community. The primary goal of each workshop was to:

- Present and discuss existing on-base and off-base conditions and characteristics
- Discuss base reuse planning principles, including the principles of Smart Growth
- Review preliminary market and economic considerations
- Engage the participants in an interactive visioning exercise
- Share the results from the visioning exercise

Workshop One - Thursday, September 28, 2006

Four teams participated in this workshop which sought to engage those local on-base military and civilian workers who, because of their day-to-day knowledge of the base, its mission, and its resources, could provide a unique insight into the potential future use of the base.

Workshop Two - Friday, September 29, 2006

This second workshop was restricted to a select group of students at Brunswick High School. Eight teams of students participated, totalling approximately 50 youths. Rick Wilson provided assistance with coordination as an instructor at Brunswick High School.

Workshop Three – Saturday, September 30, 2006

Fourteen teams participated in the third workshop, also held at Brunswick High School, which welcomed the public-at-large from the Brunswick area.

Collectively, approximately 200 people from a cross-section of the community participated in the three workshops described above. A total of 26 "visioning" teams, each consisting of approximately eight people, discussed a range of planning and development issues, built consensus among their group, and made suggestions

and recommendations for the future of the property. Public planning ideas and recommendations were focused on two potential future development scenarios: (1) redevelopment of the property based on the continuation of the existing airfield for some form of aviation use (the Airport Scenario); and (2) redevelopment of the property without some form of aviation use (the Non-Airport Scenario). A separate study by Edwards and Kelcey to determine the feasibility of an aviation use for the existing airfield and related facilities was conducted as part of the BLRA's overall planning strategy for the BNAS property. The executive report is provided in **Section 4** and the full Airport Feasibility Study is provided in **Appendix E**.

Planning Areas

As a basis for obtaining the public's general planning and land use recommendations for the 3,300-acre property, the base was divided into nine Planning Areas. The Planning Areas were devised for use only at the public visioning workshops and for the sole purpose of breaking the large, 3,300-acre BNAS property into smaller geographic units to make it easier for workshop participants to contemplate and express their vision for the reuse of the base. Planning Areas were established by considering a combination of natural resource characteristics, topographical features, existing land use characteristics, streets and other logical dividers that could separate and distinguish one Planning Area from another. The nine Planning Areas are shown in **Exhibit 7: Planning Areas Map**, and are briefly described below. A complete description of Planning Areas, along with photographs of existing physical characteristics is provided in **Appendix A** of this report.

- Planning Area 1: An undeveloped 433-acre area within the property, located west of the airfield, extending south from Bath Road to just north of the Mere Brook Golf Course
- Planning Area 2: The 875-acre BNAS airfield and adjacent aviation-related facilities to the north and east, including the adjacent fuel farm and other facilities along the south side of Bath Road
- Planning Area 3: The 117-acre predominantly wooded and undeveloped area immediately adjacent to and south of Bath Road, west of Fitch Boulevard
- Planning Area 4: The 394-acre cantonment area, where a large majority of the existing infrastructure and building inventory exists; and the residential and undeveloped areas north of Neptune Drive, east to the base boundary
- Planning Area 5: The 304-acre area south of Neptune Road and east of the airfield, south to Harpswell Cove estuary
- Planning Area 6: The 524-acre primarily undeveloped area south of the airfield, west of the Harpswell Cove estuary to the western boundary of the property, including the golf course
- Planning Area 7: The 545-acre undeveloped area east of the Harpswell Cove estuary, including the Weapons Compound

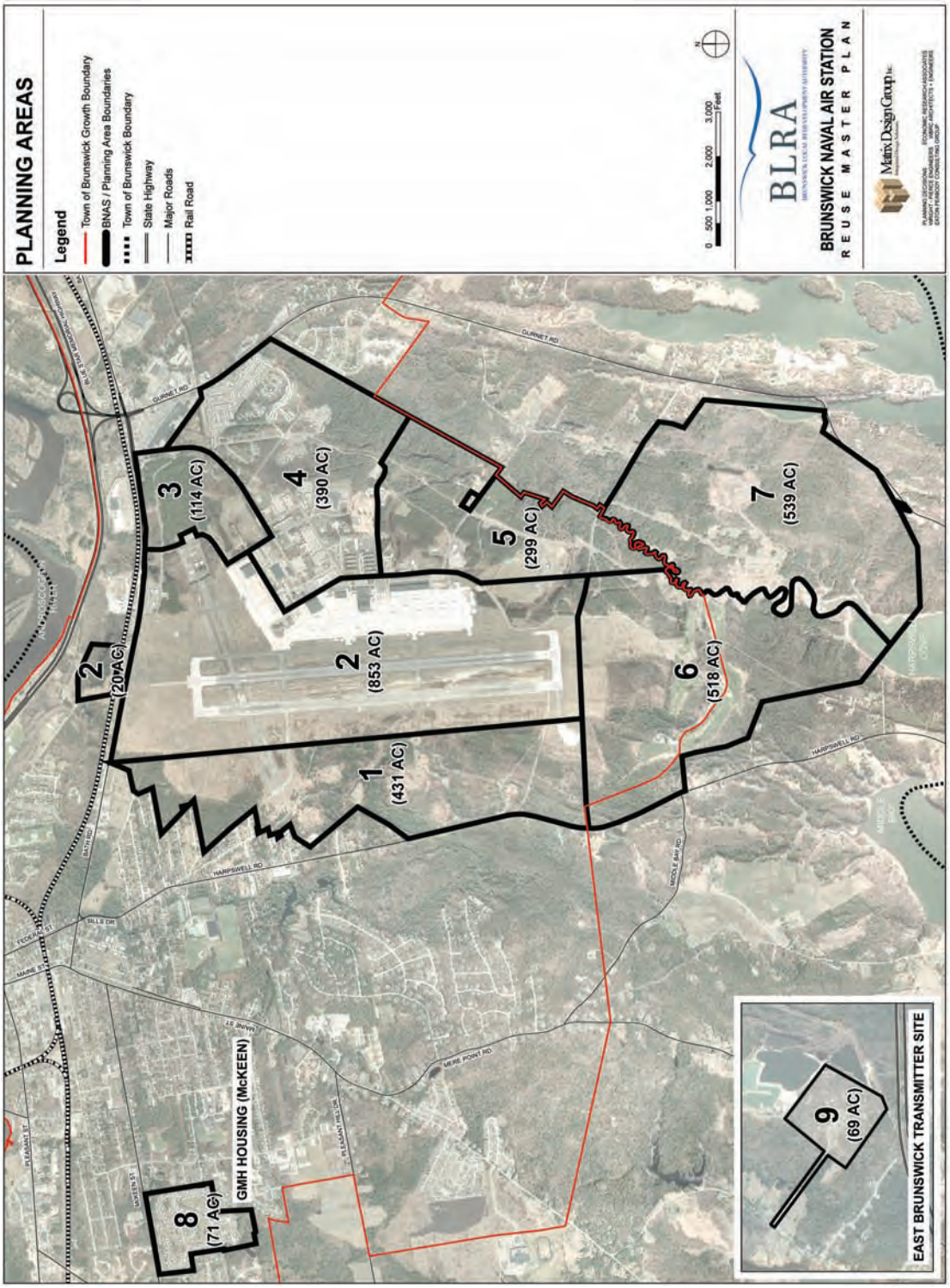
- Planning Area 8: The 79-acre McKeen Street residential area southwest of downtown Brunswick
- Planning Area 9: The 69-acre East Brunswick Transmitter site, located about two miles northeast of the main base on the north side of Route 1

The following section provides an overview of the visioning process and results of the three workshops. A complete description of the unique process used to solicit ideas and characterize future land use for each of the Planning Areas is provided in **Appendix A** of this report.

Planning Area Vision Statements

The first step involved the team identifying and writing down their collective vision for each of the nine Planning Areas. Their vision statements were intended to be conceptual in nature and reflect the future general character they envisioned for that area. These short and concise statements were recorded in bullet point format inside the "Vision Statement" box for each Planning Area on the Visioning Map (see **Appendix A** for a Visioning Map example).

Exhibit 7: Planning Areas Map



Source: Matrix Design Group

Community Preferred Land Uses / Market Sectors

Using a series of colored stickers and markers, each of the visioning teams indicated its team's desired land use(s) within each of the nine Planning Areas. By counting the number of teams that "voted" for a particular land use in a particular Planning Area (through the presence of a colored sticker or marking), a general indication of the popularity of the envisioned land use for that Planning Area could be tabulated across all teams. This count was determined for all nine Planning Areas for the Non-Airport scenario and, separately, the Airport scenario. The results for each scenario are presented from two different perspectives:

- The number of vision plans (teams) specifying different land use / market sector categories for each of the nine Planning Areas
- The number of vision plans (teams) specifying different Planning Areas for each of the land use / market sector categories

Summary of Unique Ideas

Each team was also encouraged to record any "Unique Ideas," special uses, special features, or unique attractions that they envisioned for each of the Planning Areas after base closure. Many unique ideas were suggested by the 26 visioning teams; the list below highlights some of the more frequently mentioned unique ideas:

- Town Common and Public Gardens
- Indoor / Outdoor Amphitheaters
- Expanded Golf Course
- Hotel / Convention Center
- Arts / Cultural Center
- Air Museum / P-3 Monument
- International Multi-Modal Tradeport
- Water Park / Olympic Pool
- IMAX / Festival Grounds
- Shopping Center
- Wind Farm / Solar Energy
- Orchards / Greenhouse
- Working Farm

Summary of Big Ideas

Each of the 26 teams was asked to identify its "Big Ideas" for redevelopment of each teams' Airport and Non-Airport scenario plans. Big ideas were limited to two statements that communicated the most important principles, features, or concepts for future development of BNAS. The 52 total Big Ideas statements were categorized and condensed into the following overarching Big Idea visions:

- Use what is there (buildings, facilities, and infrastructure)
- Maintain as a low-impact airport / capitalize on airport resources
- Integrate into the community
- Create cutting-edge technology and aviation innovation
- Balance ecological preservation with economic stability
- Adhere to sustainable, clean and green growth
- Provide targeted incentives for value-added jobs
- Preserve natural beauty and open space
- Provide more tourism opportunities
- Provide transportation connections (bikes, pedestrians, autos, etc.)
- Provide a college / higher education facility

The following section summarizes and graphically illustrates the results of the *BRAC to Basics* public visioning process.

Results by Planning Area

The following list represents a brief summary of the preferred land use and market sectors identified for each Planning Area by the visioning teams for both the Non-Airport and Airport scenarios. These results are also summarized in bar chart and map formats in **Appendix A**.

Planning Area 1

- Non-Airport: Clear preference for Parks / Natural Areas as the primary use, with Educational / Government as a secondary use
- Airport: Same as Non-Airport

Planning Area 2

- Non-Airport: A broad mix of uses with Business / Industrial and Technology / R&D essentially tied for most primary use, and Parks / Natural Areas and Educational / Government indicated as secondary uses
- Airport: Overwhelming preference for Aviation-Related uses

Planning Area 3

- Non-Airport: Preference for Parks / Natural Areas as the primary use, with Office / Retail and Business / Industrial as secondary uses
- Airport: Same as Non-Airport

Planning Area 4

- Non-Airport: Definitely the area with the greatest mix of uses, with strong support for all six land use / market sector categories
- Airport: Same as Non-Airport, but with Aviation-Related uses as an additional use

Planning Area 5

- Non-Airport: Clear preference for Parks / Natural Areas as the primary use, with strong support for Business / Industrial and, to a lesser degree, all other land use and market sector categories as secondary uses
- Airport: Same as Non-Airport, but with Aviation-Related uses as an additional use

Planning Area 6

- Non-Airport: Overwhelming preference for Parks / Natural Areas as the primary use, with minor support for most of the other land use/market sector categories as secondary uses
- Airport: Same as Non-Airport

Planning Area 7

- Non-Airport: Overwhelming preference for Parks / Natural Areas as the primary use, with minor support for Educational / Government as a secondary use
- Airport: Same as Non-Airport

Planning Area 8

- Non-Airport: Unanimous preference for Residential as the only use
- Airport: Same as Non-Airport

Planning Area 9

- Non-Airport: Overwhelming preference for Parks / Natural Areas as the primary use, with minor support for Business / Industrial as secondary uses
- Airport: Overwhelming preference for Parks / Natural Areas as the primary use, with minor support for Technology / R&D as a secondary use

Results by Land Use / Market Sector Category

The results of the visioning exercise were described in terms of those Planning Areas preferred as locations for each land use / market sector. These results are also summarized in bar chart and map format in **Appendix A**.

Parks / Natural Areas

- Non-Airport: Overwhelming preference for Planning Areas 1, 6, and 7; strong preference for Planning Areas 5 and 9, and moderate preference for Planning Areas 3 and 4
- Airport: Same as Non-Airport

Residential

- Non-Airport: Unanimous preference for Planning Areas 4 and 8, and minor preference for Planning Areas 5 and 6
- Airport: Same as Non-Airport

Business / Industrial

- Non-Airport: Strong preference for Planning Areas 2, 4, and 5, and minor preference for Planning Area 3
- Airport: Strong preference for Planning Areas 4 and 5, and minor preference for Planning Area 3

Office / Retail

- Non-Airport: Strong preference for Planning Area 4; moderate preference for Planning Areas 3 and 5; and minor preference for Planning Areas 2 and 6
- Airport: Strong preference for Planning Area 4; moderate preference for Planning Areas 3 and 5; minor preference for Planning Area 6

Educational / Government

- Non-Airport: Strong preference for Planning Areas 1, 2 and 4, and moderate to minor preference for all other areas except Planning Areas 8 and 9
- Airport: Same as Non-Airport except a significant decrease in preference for Planning Area 2

Technology / R&D

- Non-Airport: Strong preference for Planning Areas 2 and 4, and moderate preference for Planning Area 5
- Airport: Strong preference for Planning Area 4, and minor preference for Planning Areas 2, 5 and 9

Aviation-Related Uses

- Non-Airport: Not applicable
- Airport: Overwhelming preference for Planning Area 2, and minor preference for Planning Area 4

The following tables (**Exhibit 8: Preferred Land Use by Planning Area - Airport Scenario** and **Exhibit 9: Preferred Land Use by Planning Area - Non-Airport Scenario**) summarize the overall preferences that the visioning teams had for each Planning Area and land use and market sector category. Dark green cells indicate a strong consensus with more than 66% of the visioning teams choosing that Planning Area / land use combination; medium green indicates moderate consensus, with between 33%-66% of the teams choosing that combination; and pale green indicates anything lower than 33% preference. Please see the additional bar charts and histogram maps in **Appendix A** that present the teams' visions from a Planning Area and land use/market sector perspective in greater detail.

Exhibit 8: Preferred Land Use by Planning Area - Airport Scenario

Planning Area	Land Use Categories						
	Office / Retail	Residential	Business / Industrial	Educational / Government	Technology / R&D	Aviation-Related Businesses	Parks / Natural Areas
1	0%	8%	0%	50%	0%	8%	100%
2	0%	0%	12%	8%	19%	100%	15%
3	31%	8%	23%	12%	8%	4%	54%
4	77%	92%	73%	46%	65%	23%	58%
5	23%	15%	46%	19%	23%	12%	81%
6	12%	12%	0%	19%	4%	4%	100%
7	0%	4%	0%	23%	8%	0%	96%
8	0%	100%	0%	0%	0%	0%	0%
9	0%	4%	8%	0%	15%	0%	73%

Percentage of the 26 Airport Vision Plans specifying these Land Use Categories (columns) in these Planning Areas (rows)

Source: Matrix Design Group

Exhibit 9: Preferred Land Use by Planning Area - Non-Airport Scenario

Planning Area	Land Use Categories					
	Office / Retail	Residential	Business / Industrial	Educational / Government	Technology / R&D	Parks / Natural Areas
1	0%	8%	0%	58%	0%	100%
2	19%	12%	69%	31%	77%	46%
3	35%	12%	23%	12%	8%	58%
4	77%	100%	69%	46%	58%	62%
5	31%	23%	54%	15%	31%	81%
6	15%	27%	4%	23%	0%	100%
7	0%	4%	0%	23%	8%	96%
8	0%	100%	0%	0%	0%	0%
9	0%	4%	8%	0%	0%	73%

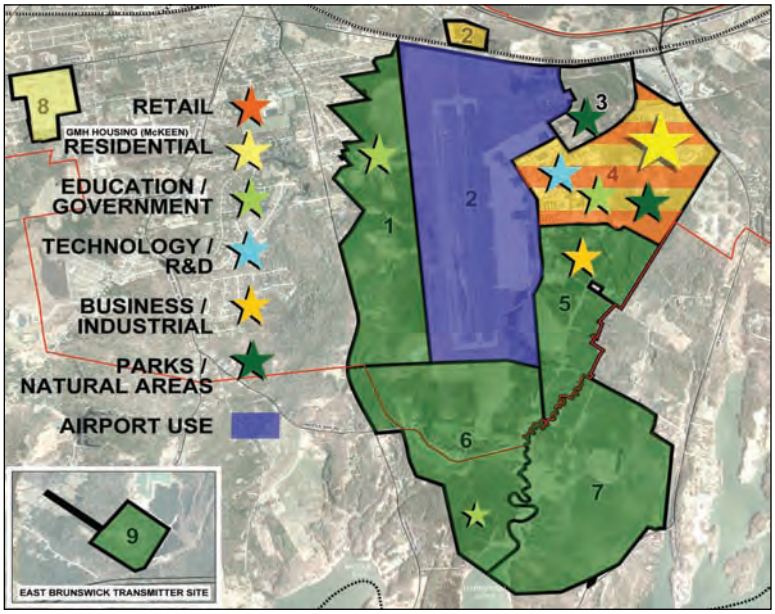
Percentage of the 26 Non-Airport Vision Plans specifying these Land Use Categories (columns) in these Planning Areas (rows)

Source: Matrix Design Group

In summary, the predominant land uses envisioned for five of the nine Planning Areas are parks, open space, and natural areas. The cantonment area (Planning Area 4) is envisioned as a mixed use area under both scenarios, with frequent mentions of most all other uses. The runway area (Planning Area 2) is envisioned primarily as a business and research location if there is no airport, and to continue aviation-related uses if it remains an airport. Planning Area 3 is a gateway to the base, and is envisioned as providing space for uses that need road access (office, business, government); but open space is a preferred use here as well. Planning Area 5 is also considered as a future expansion area for the mixed uses found in Planning Area 4, but in conjunction with open space uses. Planning Area 6 is envisioned as mostly open space, but several teams also envisioned it as a location for an expanded golf course, high-end retirement housing, and/or resort / convention facilities. Educational facilities are seen as possible uses in Planning Area 1, as well as in the cantonment area (Planning Area 4); an outdoor / nature education activity in Planning Area 7 was also suggested.

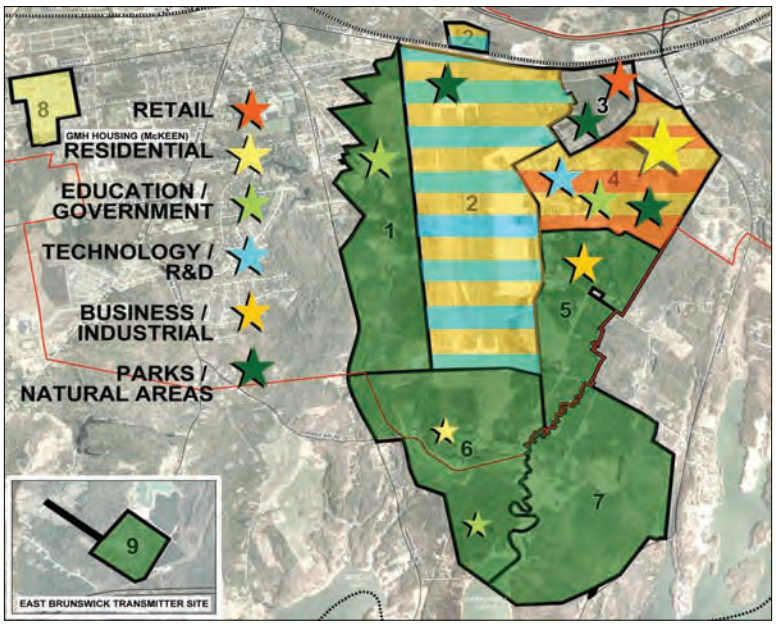
The following maps, **Exhibit 10: Visioning Results by Planning Area Map, Airport Scenario, Exhibit 11: Visioning Results by Planning Area Map, Non-Airport Scenario,** and **Exhibit 12: Visioning Results by Planning Area, Transportation and Access** reflect a geographic summary of the preferred land use and market sector results by Planning Area.

Exhibit 10: Visioning Results by Planning Area Map - Airport Scenario



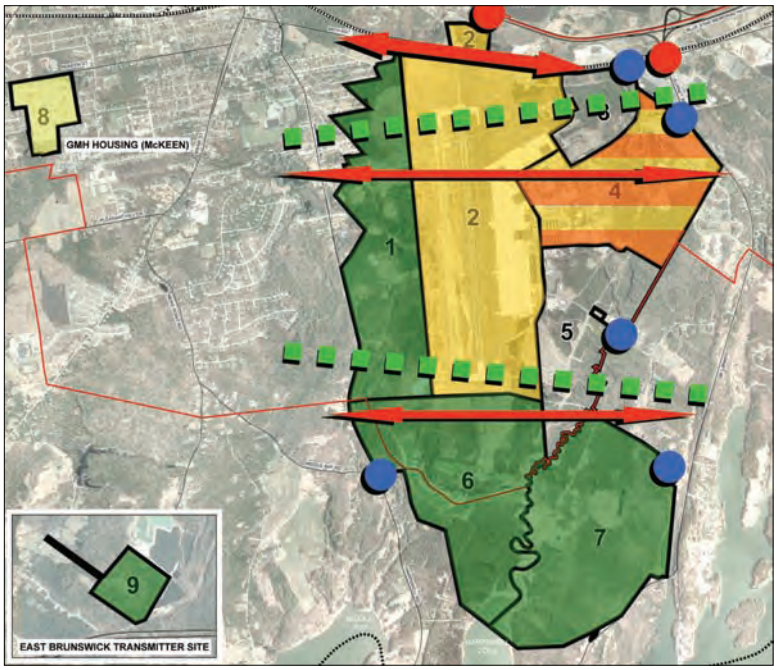
Source: Matrix Design Group

Exhibit 11: Visioning Results by Planning Area Map - Non-Airport Scenario



Source: Matrix Design Group

Exhibit 12: Visioning Results by Planning Area Map - Transportation and Access



Source: Matrix Design Group

Public Visioning Presentation / Open House

On Tuesday, October 3, 2006 the fourth and final element of *BRAC to Basics* was held, at which the results of the three public visioning workshops were presented to the public. During the intervening weekend, the Matrix Planning Team and BLRA staff tabulated the concepts expressed on the various vision maps prepared by the different teams, and summarized them in the form of maps, bar charts, and other exhibits. During the Tuesday Public Presentation / Open House, these summary exhibits were presented and explained to the public. In addition, an 11-minute video "fly-over" of the base was presented that illustrated not only the general layout and view of the base from 10,000 feet in the air, but also simulated five of the major "Big Ideas" and "Unique Ideas" generated by the public during the three visioning sessions. Following the presentation of the public's vision for the base, an open forum period was held, during which members of the public offered comments or observations about the visioning exercise results or asked questions about the next steps in the base reuse planning process. During the open house portion of the event, all of the many teams' vision maps were displayed for public review.

Over the months following the visioning workshops, public ideas and other land use recommendations were tested against the constraints of market viability, physical suitability, environmental cleanup impacts, development costs and phasing, property transfer considerations, BLRA guiding principles, and smart growth principles. The ideas that survived this screening process were then combined into four conceptual plan visions, as described and discussed in **Section 5: Reuse Alternatives and Plan Selection.**

One key result of the visioning process is the recommendation of revisions to the local zoning ordinance to allow the vision to happen. Listed in the **Appendix A** are all of the possible uses that have been suggested in the process so far, both in public sessions and through individual comments, with a comparison to what is actually allowed in the Town of Brunswick's current zoning ordinance.

Topical Issues Seminars

Four different Topical Issues Seminars were held during Spring 2007 that allowed participants to discuss several redevelopment planning topics in depth and to explore some of the fundamental issues surrounding the BNAS base closure that are important to area residents, businesses and others. The four seminars are described below:

Housing Seminar: February 27, 2007

The February seminar focused on housing issues and base closure. Panelists discussed housing-related topics such as:

- Base closing impacts on the regional economy and housing market
- The challenges faced in providing housing and which strategies were successful
- The current regional real estate market and future projections
- The structure and future plans of Northeast Housing LLC

Transportation Seminar: Tuesday, March 27, 2007

The March seminar focused on transportation impacts, access, and opportunities around the vicinity of the base. Panelists discussed topics such as:

- The importance of addressing transportation in land use planning
- Current transportation conditions on base and future projections
- Investment in community transportation
- What is "Gateway 1" and how the reuse master planning effort can be integrated
- Aviation uses and their potential impacts on transportation
- Transportation planning process and funding

Environmental Seminar: April 24, 2007

The April seminar focused on environmental issues and covered in-depth such topics as:

- The legal framework around base remediation
- Effective remediation strategies used in other base closures
- Unknown existing environmental conditions at BNAS

Energy Seminar: May 22, 2007

The final seminar, held in May, focused on energy issues and covered topics such as:

- An energy R&D program focused on distributed technologies
- Regional district energy and cogeneration programs
- Distributed energy technologies and its applications at BNAS
- Bowdoin College student project on developing an alternative energy park at BNAS
- Thinking about energy use in Maine
- Operating a District Energy System
- A cogeneration project for Loring Commerce Centre case study

BRAC to the Future (Public Meeting Three)

At the third major public meeting, *BRAC to the Future,* four conceptual plans were presented to relevant Town of Brunswick boards and committees on August 1, and the public on August 2 for their consideration and feedback (see **Section 5: Reuse Alternatives and Plan Selection**). Of the four concept plans, two maintained aviation uses and two did not. After a presentation on the characteristics of the four concept plans, public and Town representatives were asked to review the concept plan maps in detail and discuss the plan elements, ask questions, and provide verbal and written feedback. The meeting ended with a session to answer questions and gather public feedback on the four concept options and the preferred components of each.

BRAC to the Future II (Public Meeting Four)

BRAC to the Future II, the fourth major public meeting, was held on September 2, 2007. Soon after the third public meeting, based on recommendations in the Aviation Feasibility Study, the community survey, input from the public at previous public workshops, and from the existing conditions report, the BLRA Board recommended that aviation uses be incorporated into the final Reuse Master Plan. Consequently, the two non-aviation concept plans were eliminated and the two aviation concept options were further developed and refined (see **Section 5: Reuse Alternatives and Plan Selection**).

At BRAC to the Future II, the two plans were presented to the public as Plan Alternatives A and B. Similar in nature to the format used at *BRAC to the Future*, after an overview presentation of the two plan alternatives, the public gathered at plan map stations

where they discussed the alternatives in detail with the planning team and their fellow citizens. The meeting ended with a session to answer questions and gather public feedback on the two plan alternatives and the preferred components of each.

Smart Growth Design Workshops

Two Smart Growth Design Workshops were held in October 2007 and were sponsored by the US Environmental Protection Agency to solicit public input on applying "smart growth" strategies and community design features to the Reuse Master Plan. National smart growth experts Dover Kohl & Partners were hired to help lead this effort. Over 70 residents participated in the two design workshop events.

The BNAS Reuse Master Plan establishes the overall pattern of land use for the base, but it does not address how redevelopment could "look" or "feel" within the various land use districts. To begin looking at the physical form and character of future development and to inform the process of drafting the necessary zoning to implement the reuse plan, the Dover Kohl team helped define how development could occur within the framework of the reuse plan using the principles of Smart Growth. The Smart Growth workshop gave residents the opportunity to view renderings and sketches of the potential character of the base after redevelopment and Dover Kohl formulated recommendations on the specific design guidelines and standards that will need to be considered in the preparation of land use and zoning controls and other restrictions that will shape the future development of the site.

Final Public Hearing - November 28, 2007

On November 28, 2007 the draft Reuse Master Plan was presented to the BLRA Board of Directors by the Matrix Planning Team. Following the presentation, the BLRA Board opened a formal public hearing on the plan and invited members of the public present to comment.

Following the public hearing on the Reuse Master Plan, the Board convened a second public hearing specifically regarding the BLRA's recommendation to the Department of Housing and Urban Development that Tedford Housing implement the Homeless Services Provision component of the Reuse Master Plan. Following the public hearing, the BLRA Board of Directors voted to approve the homeless services provision recommendation.

Plan Adoption - December 19, 2007

On December 19, 2007, the Brunswick Local Redevelopment Authority Board of Directors voted unanimously to formally approve and adopt this Reuse Master Plan.

Community Survey

As part of the public engagement effort, the BLRA sponsored a statistically-valid telephone survey of over 400 randomly selected residents from Brunswick and surrounding towns. The survey was conducted in May 2007 by Portland-based consultant Market Decisions and focused on the public's familiarity with BNAS redevelopment activities, potential commercial and residential uses for the base, and potential open space uses and land banking opportunities.

The following summary has been taken from *Brunswick Naval Air Station Community Survey: Survey Report, May 2007* prepared by Market Decisions.

The Importance of Potential Future Uses for the Base

Brunswick Residents

Brunswick residents indicate that important uses for the base include developing new jobs and business and setting the land aside for recreational uses. Less than half see using the land to develop new housing as important. Other findings indicate:

- 96% of residents indicate it is important to use the land to bring new jobs into the area.
- 91% indicate it is important to use the land to bring new businesses into the area.
- Brunswick residents also feel it is important to use the land for recreational purposes.
- 83% indicate it is important to use some of the land on the base for active recreational purpose.
- 73% consider it important to use some of the land for land conservation, wildlife habitat, and passive recreational purposes.
- Only 48% of Brunswick residents indicate it is important to use the base for adding new housing to the area.

Residents in Surrounding Communities

As with Brunswick residents, the residents from surrounding communities indicate that important uses for the base include developing new jobs and business and setting the land aside for recreational uses. Other findings indicate:

- Again, less than half see using the land to develop new housing as important.

- 98% of residents from surrounding communities indicate it is important to use the land to bring new jobs into the area.
- 100% indicate it is important to use the land to bring new businesses into the area.
- Residents from surrounding communities also feel it is important to use the land for recreational purposes.
- 74% indicate it is important to use some of the land on the base for active recreational purposes.
- 76% consider it important to use some of the land for land conservation, wildlife habitat, and passive recreational purposes.
- Only 47% indicate it is important to use the base for adding new housing to the area.

Potential Business Uses for the Base

Brunswick Residents

Two-thirds of Brunswick residents agree that the base should be used to develop an economic engine for the larger Brunswick region.

- On average, Brunswick residents would like to see 44% of the base devoted to commercial and residential uses.
- Brunswick residents support a number of possible businesses uses for the base. A majority of Brunswick residents would support aircraft maintenance and repair (84% supporting), research and development (80%), professional office uses (67%), information technology such as data or call centers (62%), manufacturing (62%), warehousing and distribution (59%), and neighborhood or niche retail stores (50%).
- 61% of residents would support the development of a business park.
- For tourism related businesses, a majority of Brunswick residents would support a performing arts or cultural center (73% supporting), a conference or convention center (62%), and hotels (53%).
- 79% of Brunswick residents would support a facility for general aviation and 90% would support the development of an educational campus on the base.
- There is support among Brunswick residents for retaining the commissary and developing services for veterans. 80% would support keeping the commissary open. 83% of Brunswick residents would support the development of a cluster of veteran's services on the base in addition to the commissary.

Residents in Surrounding Communities

Over two-thirds of residents in surrounding towns also agree that the base should be used to develop an economic engine for the larger Brunswick region.

- On average, these residents would like to see 49% of the base devoted to commercial and residential uses.
- Like their Brunswick counterparts, residents from surrounding communities support a number of possible businesses uses for the base. A majority of residents from surrounding communities would support aircraft maintenance and repair (77% supporting), research and development (77%), professional office uses (68%), information technology such as data or call centers (59%), manufacturing (69%), and warehousing and distribution (51%).
- 61% of residents from surrounding communities would support the development of a business park.
- For tourism related businesses, a majority of Brunswick residents would support a performing arts or cultural center (59% supporting) and a conference or convention center (63%).
- 75% of residents from surrounding communities would support a facility for general aviation and 84% would support the development of an educational campus on the base.
- There is support among residents in surrounding communities for retaining the commissary and developing services for veterans. 75% would support keeping the commissary open. 82% of residents from surrounding communities would support the development of a cluster of veteran's services on the base in addition to the commissary.

Potential Open Space Uses and Land Banking

Brunswick Residents

On average, Brunswick residents would like to see 39% of the base devoted to open space and recreational uses.

- A majority of Brunswick residents support the development of walking, hiking, and biking trails (84% supporting), indoor recreation facilities (82%), playing fields for sports and recreational activities (82%), setting aside land for conservation or wildlife habitat (81%), and land used for farming or agricultural purposes (51%).
- 71% of Brunswick residents would support keeping the current nine hole golf course, though only 39% would like to see it expanded to an eighteen hole golf course.
- Two-thirds of Brunswick residents support setting aside a portion of the land and leaving it to future generations to decide on its use.

Residents in Surrounding Communities

On average, residents in surrounding communities would like to see 35% of the base devoted to open space and recreational uses.

- A majority of these residents support the development of walking, hiking, and biking trails (85% supporting), indoor recreation facilities (74%), playing fields for sports and recreational activities (66%), and setting aside land for conservation or wildlife habitat (85%).
- 70% of residents from surrounding communities would support keeping the current nine hole golf course, though only 39% would like to see it expanded to an eighteen hole golf course.
- 60% of residents from surrounding communities support setting aside a portion of the land and leaving it to future generations to decide on its use.

Potential Residential Uses for the Base

Brunswick Residents

A majority of Brunswick residents would support certain types of residential uses for the base. These include affordable housing for working families (78% supporting), seniors housing (76%), single family homes (71%), and special housing with services for youth and the homeless (71%).

Residents in Surrounding Communities

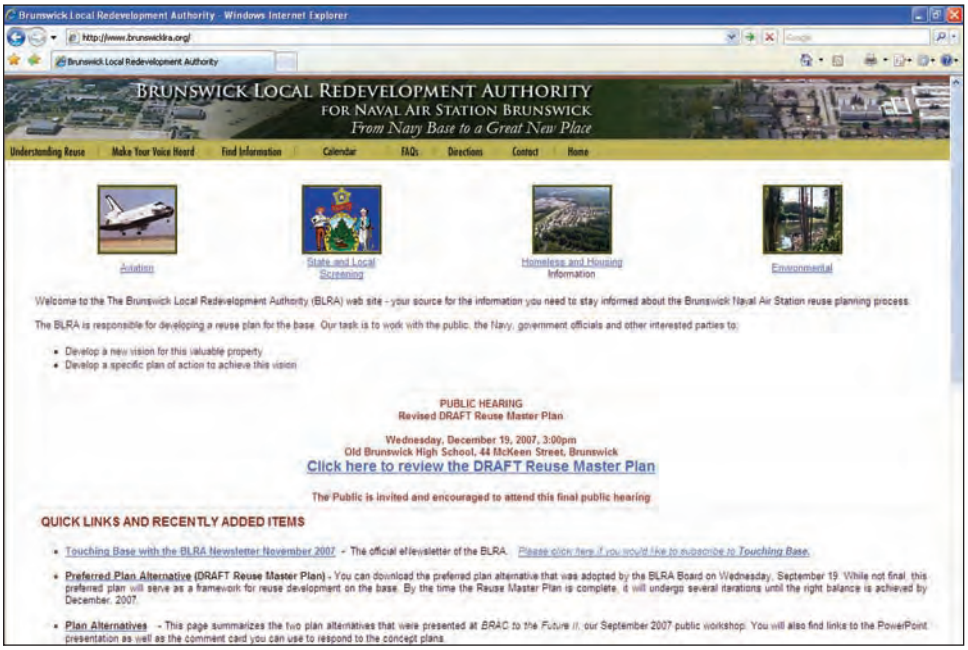
As with their Brunswick counterparts, residents from surrounding communities would also support certain types of residential uses for the base. These include affordable housing for working families (66% supporting), seniors housing (75%), single family homes (61%), and special housing with services for youth and the homeless (62%).

Other Outreach Efforts

In addition to the many workshops, public meetings, and events discussed in this section, the BLRA's public engagement plan also included a number of other public outreach efforts through the duration of the 18-month reuse planning process. Some of these additional efforts included:

- Articles and editorials in the local newspapers
- The BLRA e-newsletter
- Community and business group presentations
- A frequently updated website (www.brunswicklra.org)
- Press releases and newspaper inserts
- Bulletins and meeting coverage on cable TV channels
- Posters for shop windows announcing meetings and workshops
- Ongoing communication with local community organizations

- An “open door” policy at the BLRA office at the historic Fort Andross
- Meetings with student groups at Bowdoin, the USM Muskie School of Public Policy, and Brunswick High School



Section 4: Existing Conditions Assessment

The successful redevelopment of Brunswick Naval Air Station will depend, in part, on understanding and responding to a variety of existing market and economic opportunities and trends, such as composite manufacturing, research and development, and higher education. The redevelopment process must also consider applicable local community issues and policies, physical conditions and characteristics, and environmental conditions of the property. While it is not the intent of this report to provide a detailed and comprehensive inventory and assessment of these issues, it is important to understand the critical elements that can influence, or be influenced by private-sector development of the base. This approach will not only provide input into future land use programming for the base, but also provide valid preliminary costs to acquire, upgrade, and maintain base resources. In addition, this existing conditions assessment will begin to provide the Brunswick Local Redevelopment Authority and the MRRA with the ability to react to and make recommendations for specific reuse proposals that will be submitted by a variety of local, state, and federal agencies, as well as future private-sector interest groups.

While the following information presents an overview of existing market conditions, local community issues and influences, and base issues, conditions and characteristics, no one issue will dominate subsequent land use planning and phasing recommendations. As with any large-scale complex development project, the feasibility of future development will be based on a combination of impacts from physical, market, and political conditions and considerations. At the end of this section, therefore, a summary of redevelopment issues and a preliminary determination of potential suitability for development is provided that will help guide future redevelopment decisions.

Market and Economic Analysis

As part of the Matrix Planning Team, Economics Research Associates (ERA) provided an economic and market analysis for the overall reuse plan for BNAS. ERA's main tasks were to define the market niche and unique characteristics of the region, product, pricing, demand and market performance of likely targets for reuse that would help shape / define the ultimate Reuse Master Plan. These potentials for reuse are only part of the decision-making process; they represent targets that the market could likely absorb. Critical to the Plan is the assessment of the position the BNAS and the area hold in the business recruitment and development marketplace. This evaluation identifies strengths and weaknesses of the area as a business location, and evaluates an array of development options that could include business, transportation, tourism, resort and conference, and primary and secondary housing, among other uses.

This analysis culminates with a financial analysis that include a financial pro forma that addresses all conceptual reuse plan alternatives considered, and addressed in the Plan Evaluation and Comparison portion of **Section 5: Reuse Alternatives and Plan Selection**. That section also evaluates potential debt structures to finance the reuse concept and an analysis of public incentives and public financing vehicles available to the project.

As part of this overall market assessment, ERA conducted several interviews with professional contacts, elected officials and state employees and paid particular attention to the following:

- Regional demographic trends
- Local, regional and statewide economic base
- Real estate market and development potentials
- New technological initiatives
- Industries exhibiting above-average potential for growth

In short, this analysis and final Reuse Master Plan strives to:

- Use existing assets effectively
- Revitalize the local and the regional economy
- Present a vision for reuse that is consistent with community goals
- Stabilize area employment and attract investment

These goals are taken into account along with the guiding principles adopted by the Brunswick Local Redevelopment Authority, as described in **Section 2: Background and Overview**.

- This market and economic analysis study, which is provided in its entirety in **Appendix B**, begins with a brief description of the Midcoast region with special attention paid to the regional economy, including an early history and relevant demographic trends. The report evaluates local and regional real estate markets, contextualizing the Town of Brunswick. The report considers numerous reuse opportunities, including aviation, second homes and retirement housing, resort and conference center components, retail, education, alternative energy developments and cluster initiatives. These general areas represent reuse options that the market could likely absorb, but are only part of the decision process for the ultimate reuse of the BNAS site. The market section of the report concludes with a look at the current business climate and the factors that will affect Brunswick's ability to attract business to a redeveloped BNAS site.

Regional Profile

A key component of the Reuse Master Plan is a comprehensive understanding of the characteristics that make up the Midcoast region of Maine. This includes the region's history, recent population and economic trends and an objective assessment of the development issues that will guide its future.

Early History

According to the Southern Midcoast Maine Chamber, the history of the Bath-Brunswick Region is nearly as old as the nation. Native Americans of the Abnaki tribe are widely believed to have been the first settlers, including the Pejepscots of Brunswick, the Sagadahocs of the lower Kennebec and the Sheepscots of Wiscasset. In 1629, the Plymouth Proprietors were given a grant of land encompassing 15 miles on both sides of the Kennebec River and in 1632 an additional interest was granted to Thomas Purchase, who later obtained more land through dealings with the Native Americans. Later, locals became interested in establishing a substantial fur trade and were forced to compete with the French, leading to repeated wars between the French and the Native Americans through the early 1700s.

The Kennebec River provided the perfect environment for the growth of shipbuilding, and waterfalls between Topsham and Brunswick helped to drive other kinds of industry. Mills and factories appeared in the mid to late 1700s and both communities grew quickly during the period leading up to the American Revolution. On May 31, 1776, Brunswick endorsed, in advance, the Declaration of Independence. After the war of 1812, Brunswick and Topsham continued to become manufacturing centers while Bath emerged as the nation's fifth largest seaport. Immigrants soon arrived in Brunswick from Ireland and French-speaking Canada to spur continuous growth.

Population (Current Trends)

Population change from 1990 to 2000 for listed jurisdictions are detailed on **Exhibit 13: Population Table**. Brunswick grew at a rate slightly higher than the state, but well below the rate of the nation. If the Midcoast region is treated as the aggregate of Lincoln and Sagadahoc Counties and the Town of Brunswick, the region grew from 83,982 to 93,981 residents, at a compound annual growth rate of 0.8%, placing it also above the statewide rate of growth and below that of the nation.

Exhibit 13: Population Table

Jurisdiction	Population			CAGR* 1990 - 2004
	1990	2000	2004	
United States	248,709,873	281,421,906	285,691,501	1.00%
Maine	1,227,928	1,274,923	1,321,505	0.50%
Cumberland County	243,135	265,612	274,950	0.90%
Lincoln County	30,357	33,616	35,240	1.10%
Sagadahoc County	33,535	35,214	36,962	0.70%
Brunswick	20,090	21,172	21,779	0.60%

Source: US Census *Compound Annual Growth Rate

From 1990 to 2000, the Midcoast region grew by 6.1%, compared with a 3.8% increase in state population and a 13.2% increase in nationwide population. Most of the growth within the region took place outside of Brunswick, however. The town population increased by only 1.3% over the same period while Sagadahoc and Lincoln counties grew in size by 5.0% and 10.7%, respectively. In general, population growth in Midcoast Maine exceeds the state, but lags behind the nation. More importantly, the majority of this growth from 1990 to 2000 occurred outside the town center, in more rural communities. This trend is likely the result of relatively less expensive housing options outside of downtown Brunswick.

From 2000 to 2004, the rate of growth within the Midcoast Region has actually outpaced the state *and* nation, which reflects an emerging trend of population growth shifting from Cumberland County to Sagadahoc County, due to a relatively low supply of affordable housing and land for development in the greater Portland area. During the past four years, the Midcoast region has grown by 4.4%, the state by 3.3% and the nation by 4.3%.

The Maine State Planning Office projects the population of Maine towns to the year 2020. According to Planning Office estimates, by 2020, Maine will be home to 1,401,456 residents, Lincoln County 40,388 residents, Sagadahoc County 42,388 residents and Brunswick 23,424 residents. Should these estimates hold, they would result in 2004 to 2020 compound annual growth rates (CAGRs) very similar to the rates of growth achieved from 1990 to 2004, suggesting long-term growth above statewide levels but, again, lagging behind the nationwide rate of growth. See **Exhibit 14: Brunswick Regional 2020 Population Forecast** below.

Exhibit 14: Brunswick Regional 2020 Population Forecast

Jurisdiction	Population				Annual Average % Change		
	2000	2004	2010	2020	2000 - 2004	2001 - 2004	2002 - 2004
Maine	1,277,393	1,317,253	1,363,966	1,415,497	0.80%	0.60%	0.50%
Cumberland County	265,988	273,505	285,401	299,983	0.70%	0.70%	0.60%
Lincoln County	33,708	35,236	37,512	40,706	1.10%	1.00%	0.90%
Sagadahoc County	35,236	36,927	39,207	42,366	1.20%	1.00%	0.90%
Brunswick	21,172	21,688	22,501	23,424	0.60%	0.60%	0.40%

Source: Maine State Planning Office

Regional Economy

According to the Midcoast Economic Strategy Committee's recent Competitive Strategy Reports, the current economic climate in the Midcoast region is best characterized as apprehensive. From a macro standpoint, there has been a substantial decrease in manufacturing employment, with a shift towards more retail and service sector jobs, which has resulted in downward pressure on wages. Overall, however, unemployment remains low compared to that of the state.

Midcoast Economic Clusters

Analysis by the Muskie School of Public Policy at the University of Southern Maine reveals six clusters of economy activity within Midcoast Maine, which is treated as the aggregate of seven labor market areas (LMAs). The following LMAs are included in the analysis:

- Brunswick Micropolitan Area
- Boothbay LMA
- Waldoboro LMA
- Rockland Micropolitan Area
- Camden LMA
- Belfast LMA
- St. George LMA

Exhibit 15: Midcoast Economic Clusters shows the six predominant economic clusters in the Midcoast. In general, these clusters have higher location quotients than the state. In other words, the local economy supports more than its share of economic activity, in this case employment, for the industries within the cluster. Overall, the six clusters represent 45% of the total Midcoast economy, which is a clear indication of how much these industries drive the regional economy.

Exhibit 15: Midcoast Economic Clusters

Cluster	Employers	Employees	Proprietors	Total
Second Home & Retirement	1,113	11,035	4,000	16,148
Tourism & Arts	947	9,395	2,200	12,542
Defense	60	7,169	-	7,229
Science, Technology & Higher Education	138	2,536	-	2,674
Marine	328	1,906	3,000	5,234
Environment & Civic	38	664	-	702
Total	**2,624**	**32,704**	**32,704**	**32,704**
% of Mid Coast	**43%**	**48%**	**35%**	**45%**

Source: Evan Richert, Maine Dept. of Labor, Muskie School & US Bureau of Economic Analysis

In addition to understanding the current Midcoast economy, it is also important to understand its potential. The following table (**Exhibit 16: Fastest Growing Sectors in Midcoast 2004-2020**) shows the fastest growing sectors in the Midcoast from 2004 through 2005, as calculated by the Muskie School. Those sectors likely to experience a *decline* in employment over the same period include forestry and fishing (-45%), manufacturing (-13%) and wholesale trade (-6%).

Exhibit 16: Fastest Growing Sectors in Midcoast (2004-2020)

Sector	% Change	# Increase
Health care & social assistance	77%	6,900
Educational services	55%	800
Construction	40%	3,200
Administrative services	37%	1,300
Arts, entertainment & recreation	36%	1,000
Real estate, rental & leasing	35%	900
Professional & technical services	25%	1,000
Accommodations & restaurants	24%	1,500

Source: Charles Colgan, Muskie School of Public Service, University of Southern Maine

Exhibit 17: Change in Midcoast Clusters presents comparable data for the previously mentioned clusters. The tourism, arts, second homes and retirement clusters are likely to experience the largest increases in employment over the next 15 years. Defense is likely to experience the sharpest decline, in part, because of the closure of BNAS.

Exhibit 17: Change in Midcoast Clusters

Cluster	% Change	# Change
Tourism & arts	+ 25% to 30%	+ 2,900 - 3,500
Second homes & retirement	+ 45% to 50%	+ 6,750 - 7,500
Defense	- 50% to 60%	- 3,600 - 4,300
Marine	0%	0
Science, technology & higher education	+ 20% to 30%	-250
Environment & civic	+ 20% to 25%	-35

Source: Charles Colgan, Muskie School of Public Service, University of Southern Maine

Strengths and Weaknesses

Based in part on the summary of the Midcoast regional economy previously discussed, Brunswick presents a unique set of strengths and weaknesses that will play an important role in the redevelopment of Brunswick Naval Air Station.

Strengths

- Well-educated population as compared to the state and nation
- Proximity to Portland metropolitan area which benefits from low unemployment
- A second- and third-lowest unemployment rate ranking statewide for Lincoln and Sagadahoc Counties
- A strong educational base provided by Bowdoin College
- Competitive real estate costs as compared to other towns in Cumberland County
- A low crime rate
- A vast supply of natural resources
- A high quality of life
- Significant recreational opportunities
- A trend in attracting retirees

Weaknesses

- Relatively older population as compared to the state and nation
- Slow growth in central Brunswick housing
- Perceived lack of affordable and diverse housing options which can be corrected with BNAS residential redevelopment
- Relative geographic isolation

- Cold climate
- Rising housing prices
- Low wages in retail and service sector
- Possible over-reliance on large operations such as Bath Iron Works

Real Estate Markets

ERA's comparison of the Brunswick real estate market to surrounding counties and the state highlighted issues of affordability, demand for different housing types, and recent trends in housing construction across jurisdictions.

Residential Market

Signs point towards a Midcoast housing market that is increasingly beyond the reach of the median household income. Brunswick shows the largest difference between the 2005 median income and the 2005 income needed to afford a median home price, a disparity of roughly $33,000. Slightly more than half of Brunswick's households that rent cannot afford to pay the average rent for a two-bedroom apartment. This percentage is slightly lower than the state, Cumberland County and Lincoln County, but higher than nearby Sagadahoc County.

Commercial Lease Rates

Select brokers claim that the Brunswick market is too small to track with the same attention devoted to the Downtown Portland market; however, as a result of conversations with the brokerage community, ERA concluded that in the Brunswick market, medical office space ranges from about $15 to $20 per square foot and regular office space ranges from roughly $8 to $12 per square foot. Retail space starts at roughly $15 per square foot and is higher for some of the newest properties. There is little industrial inventory in Brunswick, but industrial space would likely sell between $6 and $8 per square foot. Though local and regional market lease rates are helpful in putting the BNAS site in context, it should be noted that there is the possibility of attracting national tenants to the base. These tenants are unlikely to be influenced by local market rates and so achievable rates at the base would not necessarily be bound by recent activity in the local marketplace.

Summary of Potential Land Use Opportunities

- Business Park Development
  Market analysis of area industrial and business park development shows a projected annual demand for such space to be at a rate between 8.3 and 16.5 acres per year. It is likely, then, that over the next 20 years there will be sufficient demand for more than one business park. ERA estimates that about 120 acres on the BNAS site could be slated for such development, which would result in

enough space to supply the market for roughly 10 years. The key to the success of this effort will likely be the packaging of incentives offered to potential business tenants. The exact scale of development will also depend on building activity between now and when the base is completely closed. There is also the opportunity to locate back office operations at the site.

- Composites and Information Technology Clusters
  ERA sees composites and information technology as two of the most promising industries that Maine currently supports. There are other growth sectors that the state has identified, such as biotechnology, forest products, and agriculture; however, ERA does not consider these sectors to be the highest and best use of the BNAS site. Biotechnology, for example, usually commands an immediate, established university presence, which Brunswick lacks. The forest products or agriculture sectors do not show the potential for growth and high-wage jobs that the composites or information technology industries clearly exhibit.
- Education
  ERA suggests allocating 200+ acres for educational initiatives. Educational activity could help to enhance the clustering effect of the composites and information technology redevelopment efforts. On a more pragmatic level, it could also help those colleges and universities in need of extra space such as Southern Maine Community College and Bowdoin College, both of which have already expressed interest in sizable portions of the projected available acreage. There is also the opportunity to house the center for an online degree program and take advantage of the impressive growth in that market.
- Biomedical
  Biomedical research and development is a promising field in which Maine already boasts several facilities and institutions. The success of recent funding initiatives and the work of existing facilities lead ERA to believe that this is a market worthy of further attention. Much like the composites industry, there is the opportunity to harness existing businesses and research efforts into a center for excellence positioned on the base.
- Radio Frequency Identification
  Recent estimates of market growth for Radio Frequency Identification technologies are impressive. The adoption of such technologies by a variety of users, including Wal-Mart and Target, sheds light on the retail application of the technology, but it is also relevant for the pharmaceutical, medical, aviation, military, security and automotive industries. Part of the attractiveness of RFID technologies is the diverse set of potential industry users. This lessens the exposure of the technology to regular business cycles.
- Maine Learning Technology Initiative
  Building on the existing Maine Learning Technology Initiative, ERA suggests leveraging the market potential of “Open Source” technologies instead of purchasing laptops from a company like Apple Inc. Training initiatives would

help to develop an "Open Source" savvy labor force, which could be an attractive asset to outside companies, particularly from Europe which is farther along in the adoption of "Open Source" than the US. The end result is that more of the economic benefit of the initiative is absorbed within the State of Maine through the education and manufacturing of the technology.

- Alternative Energy Development
  To build on existing efforts in alternative energy development and to position Maine as a market leader in this industry, ERA recommends pursuing alternative energy initiatives as part of a redevelopment plan. Currently, there are select efforts to develop energy production through wind and hydrogen initiatives; these are two processes that could prove viable. The opportunity to generate revenue by owning and operating the on-site grid is also an attractive option.
- Resort Hotel / Conference Center
  Though it attracts roughly 20 percent of Maine's tourism visits, the Midcoast region, specifically the greater Brunswick area, lacks a true destination resort with significant conference space. Regional comparables show extremely seasonal operating statistics. An indoor waterpark and an 18-hole golf course would help to flatten shoulder months and likely raise overall occupancies and average daily rates. Such a resort would also tap what is currently a largely untapped market in state associations, corporate meetings and SMERF events (social, military, educational, religious, and fraternal associations). ERA estimates that a resort of a sufficient scale, with an indoor waterpark, could even pull from nearby Canadian markets.
- Retail
  ERA pull factor analysis confirms that the current Brunswick and Midcoast markets are sufficiently supplied with existing retail space. However, with residential development, a hotel resort, business park space, etc there will be added on-site demand for retail and restaurant offerings. Development that is targeted only to meet this need is unlikely to compete with Cook's Corner or other Brunswick retail space.
- Second Homes / Retirement Housing
  Besides the fiscal benefit of additional taxes that help fund school, municipal, and county budgets, economic development of all types can accompany the influx of new second homeowners to an area. This holds true for both vacation and retirement housing; however, retirement housing has the added advantage of being occupied year-round as a principal residence. The economic benefits of vacation housing, besides the fiscal ones, are primarily those of tourism, with some additional retail activity associated with upkeep of the vacation home and the purchase of household supplies and furnishings. Some additional retail business can be expected, along with development of tourist attractions, restaurants, and services. The multiplier effect of one retirement household is significant and estimated by some studies to be roughly 3.7.

- Niche Hangar Reuse Considerations
  In conjunction with ERA's analysis of general reuse opportunities, ERA explored additional options specifically for hangar reuse. Based on public input and ERA's experience with other military redevelopments and emerging industries, ERA identified hangar reuse options that present opportunities to either harness emerging industries or meet local demand for select activities. ERA focused on business activities that would help in economic development efforts. There are other, non-business uses that could prove to be viable. Converting hangar space into a community arts center is an option that has worked in past military base redevelopments, and that would fit well into Maine's efforts to bolster their existing "Creative Economy." ERA focused analysis on the potential for a movie production facility and a community sports center. The former would take advantage of the increasing decentralization of the movie production industry with the potential for significant economic impacts for the Brunswick region, while the latter is in response to noted community desire for an on-site sports complex. There is potential for both, but movie production would require significant incentives and the economic impact of any sports complex is likely hinged on the ability to attract visitation from outside the State for tournament play.

Business Attraction

The closing of BNAS will lead to the loss of direct and indirect jobs in the local market, removing currently existing income and revenue. Clearly, in the post-BNAS economy, it is imperative to counter significant loss of jobs and revenues through business attraction. Such an effort will depend on the local tax climate and overall cost of doing business, the labor force, venture capital opportunities, available incentives and, potentially, the supply of business park space.

Tax Climate

While there has been a perception that Maine has an unfavorable business tax climate, the State of Maine has been very aggressive in recent years in creating a competitive business support structure that encourages sustainable business investment and quality jobs. Over the past decade, the state legislature has established a number of substantial business and tax incentive programs to provide Maine with a competitive edge, including:

- Elimination of the business equipment tax
- Development of Pine Tree Development Zones, which provide tax credits, tax exemptions, tax rebates, insurance premium reductions, electric rate reductions, and preferences on workforce training
- Employment Tax Increment Financing

Utility Cost

Any decision to locate to the redeveloped BNAS property is, in part, a function of energy costs. New England is home to some of the most expensive electricity in the nation. In Maine, utility bills are separated into a delivery cost and a supply cost. Delivery of electricity uses the poles, wires and meters on streets and buildings and remains a fully regulated monopoly service, provided by one of Maine's transmission and distribution utilities. Brunswick is currently served by Central Maine Power. According to Maine's Office of the Public Advocate, as of March 1st, 2000, electric power supply began to be priced under the forces of competition. There is a wholesale market in New England and throughout the Northeast, and many suppliers who operate in that market obtained licenses from the Maine Public Utilities Commission in order to sell power at retail in the state. Most residential customers' supply comes through the standard offer, but commercial customers are likely to test market rates. For residential and commercial end users, Maine shows average retail prices far higher than national averages. In 2006, the national average retail price for electricity over all sectors was $8.58 per kilowatt hour compared to Maine's average retail price of $10.98 per kilowatt hour.

Labor Skills

- Educational Attainment
  While not a direct determinant, the level of education is often a useful approximation of labor skills. Cumberland County shows the highest educated resident base. Lincoln and Sagadahoc Counties show a slightly less educated resident base, but both show a higher percentage of residents with college and graduate degrees as compared to the state and nation. Another method of estimating labor market skills is through an analysis of area wages. All things being equal, highly skilled jobs are relatively rare and command relatively high market wages. The Brunswick micropolitan area shows a proportionally large share of local area employment in construction, education and health services, leisure and hospitality services and local government compared to other jurisdictions. When compared with the state and the Portland MSA, it shows a relatively small presence of employment in information, financial activities and the professional and business services. This lower share will impact demand for office of tech space at BNAS.
- Educational and Training Resources
  The University of Maine and the community college system have both expressed strong interest in supporting the research, education, and training needs of the economic development of BNAS, as well as for the entire Midcoast region.
- Venture Capital and Entrepreneurship
  According to a recent study by Professor Michael E. Porter of Harvard Business School, Maine ranks 39th in the nation in regards to number of patents per 10,000 employees. The state generates roughly 3.0 patents for every 10,000 employees while the national average is nearly 8.0. Maine is lagging behind most

other states with regards to innovation. Maine is home to only a few large-scale firms that fund a significant share of the state's total research and development efforts.

- According to the 2004 National Venture Capital Association Yearbook, Maine ranked tenth in venture capital funds raised ($183,000,000), but only $13,000,000 was actually deployed in only three deals. The Brookings Institute submits that there is not so much a lack of funding as there is a lack of businesses that meet the criteria for significant investment. Maine's small size and relatively thin clusters may be responsible for the lack of "deal flow" or actual number of deals. Brookings also cites an apparent lack of funding of existing organizations whose original purpose was to provide "patent" venture capital to Maine firms. The Small Enterprise Growth Fund, part of the Finance Authority of Maine, was created with this task in mind. However, it is allocated a less than optimal annual budget, which prevents the hiring of substantial senior staff, and has capitalized only $9,000,000 over the past decade. As a result, deal activity suffers.

Summary and Overall Conclusions

The following observations and conclusions are made as a result of this study:

- Demographic trends and market data show Brunswick to be slightly above the state but below the nation in areas such as population growth, employment growth and per capita income. One category where the state is far above the nation is trends in aging, as Maine is currently the oldest state in the Northeast. The town boasts a relatively diverse economic base, as compared to the rest of the state, and has historically relied on activity from Bath Iron Works, Bowdoin College and, of course, BNAS. Market trends underline the fact that Cumberland County and the Midcoast continue to be the economic driver of the statewide economy, but that the State of Maine lags behind the nation in most economic measures. Since 2000, the state's population has grown at an increased rate.
- Tourism data reveals that the Midcoast area attracts roughly 5.7 million day visits and 1.3 million overnight visits each year. The area is one of the more popular regions of the state, generating about 20% of overall tourism visitation. Maine's tourism activity is highly seasonal and the majority of tourism activity occurs between July and September. Lodging properties in the greater Brunswick area are relatively old and poorly maintained. Smith Travel Research characterizes most of the existing nearby product within the Independent Lower status.
- Real estate market data shows that the Brunswick housing market is relatively less affordable for the median household income than it has been in the past. As a result, buyers are locating farther outside the town center, and development is increasingly spread out. Compared to Portland and other areas in Cumberland County, however, Brunswick offers better value.

- In general, Maine is not perceived as an affordable location to conduct business. Overall business taxes are near the highest in the nation, utilities are relatively expensive and indices of innovation (measured by patenting activity) are low. The state offers incentive schemes including the Pine Tree Development Zone designation.
- The feasibility of passenger aviation at BNAS has been preliminarily determined to be not realistic by Edwards and Kelcey under a contract with the state. Meanwhile, ERA identified alternative aviation uses that show potential for growth including maintenance and training. Regarding the cargo industry, ERA agrees with Edwards and Kelcey that the domestic market is rather limited. Most businesses currently utilize Logan International Airport or John F. Kennedy International Airport when transporting cargo from the northeast.
- ERA identified second homes and retirement housing as viable redevelopment opportunities at the BNAS site. Maine shows a proportionally high population of baby boomers and senior citizens, both of whom would be candidates for such housing in the near future. Historically, coastal Maine has attracted substantial second home construction and the Midcoast region is poised to absorb additional demand in future years. Demographic trends, industry surveys and recent successful senior housing developments, in Topsham and Falmouth, Maine, underline significant market potential for second homes and retirement housing. The potential for second homes at the site is likely to be around 300 units or more. Current demand for retirement housing is estimated in the range of 180-270 units and is expected to continue to grow each year. Units on-site could be at least 500 over a 10 year build-out.
- ERA sees potential in the development of a resort property as part of the overall reuse plan. Brunswick currently offers mostly low- to mid-market properties and lacks an up-market resort to leverage existing tourism activity. Moreover, across Maine, there is a current lack of conference space supply which forces associations, corporations, and SMERF groups to meet at poorly suited facilities. Business generated by these three meeting groups remains largely untapped. Part of what will determine the success of an on-site resort is how much peripheral development occurs, particularly in the form of business attraction. An indoor waterpark and golf course are two facilities that would help to establish year-round occupancy in an extremely seasonal market. It is ERA's preliminary conclusion that demand for a golf / conference / resort hotel would be derived from:
  - Existing tourism demand and golf play
  - Meeting activity (corporate, association, SMERF)
  - Water park

  The site could support at least 300 rooms.

- Based on modest economic growth throughout Cumberland County and a current lack of available space in local and regional business parks, there could be an opportunity to redevelop a portion of the BNAS as a business park. Recent patterns of growth show annual increases in business park space ranging from 36,000 to 76,000 SF and from 8.3 to 16.5 acres. Depending on development activity between now and 2011, there could be a need for more space in the local market. In that case, the BNAS site would be a logical location for business park development.
- Much of Brunswick's retail inventory is located at Cook's Corner. Pull factor analyses confirm that Brunswick and the Midcoast region, overall, are well served by existing retail space. The retail component of the Reuse Master Plan should be relatively moderate, complementing other facets of the plan rather than competing with existing retail offerings at Cook's Corner or other locations.
- There is the potential to designate a portion of the reuse plan for educational initiatives. The Advanced Engineered Woods Composite Center based at the University of Maine at Orono could prove to be a logical partner in efforts to create a cluster development in composites. Southern Maine Community College, rapidly expanding and in need of more space, has already submitted a grant seeking reuse of existing BNAS facilities for an Advanced Technology Center.
- ERA analysis showed that composites and information technology are appropriate sectors to target through clustering development initiatives at the base. These show relatively high wages, but more importantly, the potential to tap local, national and even global markets in the coming years.
- Finally, ERA identified biomedical research, Radio Frequency Identification and Open Source software as three target industries that show significant market potential in years to come. Maine is home to select companies already involved in these markets, but would likely benefit in future years by committing additional resources to develop centers for excellence, research and manufacturing facilities as part of a redeveloped BNAS.

Community Planning Issues and Influences

Brunswick Naval Air Station, as with most military installations located throughout the country, has developed haphazardly over time without sensitivity or direct consideration of local community issues, systems, or conditions. As a federal property, compliance with local land use and zoning, development, and other regulations do not generally apply. With the scheduled closure of BNAS in 2011, however, the military status of the property and subsequent development of the site will be under the jurisdiction of the MRRA, the Town of Brunswick, and other local, regional, and state regulatory agencies. As part of the overall planning process, therefore, it was important to identify, map, and respond to a variety of community issues and adjacent and nearby influences that could

impact, or be impacted by the property's redevelopment, including the issues described below. **Exhibit 2: BNAS Vicinity Map** illustrates the location of the 3,300-acre property and its immediate surrounding areas of influence.

Land Use and Zoning

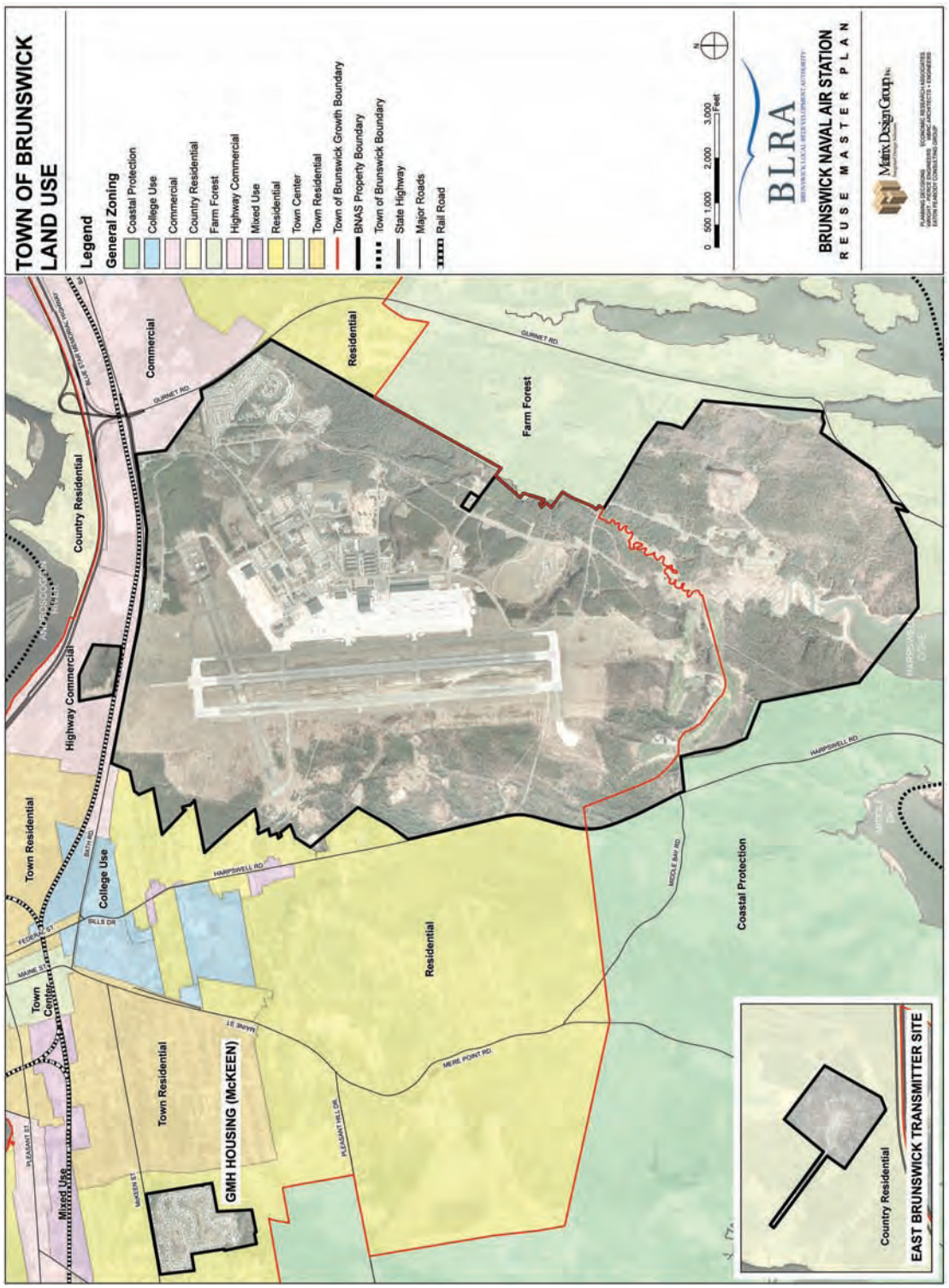
The existing land uses that surround Brunswick Naval Air Station have been derived, for the purposes of this Reuse Master Plan, from the general zoning district categories identified in the "Zoning Ordinance of the Town of Brunswick" and its accompanying "Town of Brunswick Zoning Map." This section discusses those different land use and zoning areas and their potential influences on future redevelopment of the base.

The town's various zoning districts are divided into two broad groups: Growth Districts and Rural Districts. This division into Growth and Rural groups reflects not only a conceptual organization of the town's zoning districts by the districts' predominant land use types and intensities, but a geographical division as well. Brunswick's "Growth / Rural Boundary" divides the Town into two geographic areas, with all the Growth zoning districts found inside the boundary, and all the Rural zoning districts found outside the boundary. The Brunswick growth boundary also transects Brunswick Naval Air Station, with the northern two-thirds of the main base and McKeen Homes located within the Growth area, and the southern one-third of the main base and the East Brunswick Transmitter site located outside of the boundary within the Rural area. **Exhibit 18: Town of Brunswick Land Use Map** delineates the location of the Town of Brunswick's growth boundary, as well as the location of the different zoning districts.

Growth Area Land Uses and Zoning

The areas immediately adjacent to BNAS and located inside the Town's growth boundary consist of two different Growth zoning district categories: Residential and Commercial. The following descriptions of allowed uses, densities, etc. have been summarized from the "Zoning Ordinance of the Town of Brunswick" and the "Town of Brunswick Zoning Map."

Exhibit 18: Town of Brunswick Land Use Map



Source: Matrix Design Group

Residential

Areas with a Residential land use and zoning classification adjacent to BNAS property include the land surrounding the McKeen Homes site; the land immediately abutting the western fence line of the main base from the town's growth boundary north almost to Bath Road; and the land at the far eastern end of the main base along Gurnet Road south of Cook's Corner. The portion of the Residential zoned area immediately north of the growth boundary along Harpswell Road, known as the Meadowbrook-Parkview neighborhood, is mostly undeveloped and heavily wooded; in fact, this is the location of the existing Town Common. Low density single-family residential uses become more common farther north, with a number of short subdivision streets—several dead-ending at the BNAS fence—branching off Harpswell Road. This area is known as the McClellan-Garrison neighborhood. The residential area south of Cook's Corner, known as the Cook's Corner neighborhood, is a mix of low-density residential homes along with several large areas of undeveloped wooded areas. The area surrounding the McKeen Homes is known as the Meredith Drive-West McKeen Street neighborhood, and features single-family residential and school uses.

Commercial

The area adjacent to the north side of the BNAS main base along Bath Road and extending south from Cook's Corner along Gurnet Road to about Antietam Street, is zoned Commercial. This area contains a mix of highway-oriented retail, primarily along Bath Road, several large shopping centers such as Merrymeeting Plaza and Cook's Corner Mall, and a mix of medium and small scale commercial enterprises such as pad restaurants, lodging, a movie theater, convenience retail, and gas stations. The portion of the Bath Road corridor directly north of the BNAS runway is mostly undeveloped and restricted by the BNAS Flight Path Zone and Aquifer Protection Zone overlay districts.

Other Nearby Uses

In addition to the land use and zone districts described above that are immediately adjacent to BNAS property, several other zone districts / land use types exist relatively near a BNAS boundary. Near the northwest corner of the main base is a small area with a Mixed-Use zone district along Harpswell Road, as well as College Use zones that comprises the Bowdoin College campus and athletic fields. Also, near the northwestern corner of the main base, as well as near the McKeen Homes, are areas zoned Town Residential, which provide for a mix of both residential and commercial land uses.

Rural Area Land Uses and Zoning

In the parts of the Town of Brunswick that are adjacent to BNAS and outside the growth boundary, there are three Rural Zoning Areas: Farm-Forest, Coastal Protection, and Country Residential.

Farm-Forest

The Farm-Forest Conservation Area is located to the south and east of the main base, from Harpswell Cove east to the New Meadows River, and along both sides of Gurnet Road north to the growth boundary. This area is characterized by large tracts of unfragmented forest areas, smaller patches of non-forested and agricultural lands, and limited rural residential properties found primarily along Coombs Road. The Farm-Forest Conservation Area permits low-density residential and farming uses, along with low-impact commercial and professional uses such as bed and breakfast establishments, veterinary offices, and greenhouses and florists.

Coastal Protection

The Coastal Protection Area is located to the south and west of the main base, from Harpswell Cove west and north to the growth boundary. The Coastal Protection area has a land use pattern similar to the Farm-Forest area, in that it features large blocks of natural areas such as forests and wetlands, and limited development found primarily in the form of scattered single-family residences on large-lot sites. The Coastal Protection Area permits low-density residential and farming uses and very limited commercial activities, along with an emphasis on regulating and managing water resources, non-point source pollution, and other uses and practices that potentially impact coastal areas.

Country Residential

The Country Residential Area completely surrounds the East Brunswick Transmitter site along Old Bath Road northeast of the main base. This area consists primarily of scattered single-family homes on 1.5-acre-or-larger lots fronting Old Bath Road or along several rural subdivision drives that branch off from Old Bath Road and dead-end after a few hundred yards. Immediately to the north of the EBT site is a large gravel-mining facility.

Other Regulatory Zones

Several areas near or adjacent to BNAS property are regulated through Overlay Districts developed by the Town that restrict development beyond that of the existing base zoning.

Aquifer Protection Zones 1 and 2

At the northwest corner of the BNAS main base along Bath Road are Aquifer Protection Zones 1 and 2. The purpose of the Aquifer Protection Zones is “to protect the quality and quantity of Brunswick’s present and future ground water resources by regulating activities and land use practices which are likely to affect those resources.” Please see Exhibit 16: Regulatory Zones Map for the location of Aquifer Protection Zones 1 and 2.

Immediately north of the BNAS main base, near the intersection of Bath Road and Jordan Avenue, is the more-restrictive Aquifer Protection Zone 1, which is "the area within which leachable materials disposed of or applied into or onto land or waterbodies can travel to the public water supply wells within 200 days." Aquifer Protection Zone 1 restricts uses to activities such as outdoor recreation, timber harvesting, and public water supply operation and maintenance.

Aquifer Protection Zone 2, which covers a larger area along Bath Road and onto BNAS property, is "the area within which leachable materials disposed of or applied into or onto land or waterbodies can travel to the public water supply wells in more than 200 days." Aquifer Protection Zone 2 prohibits activities that could potentially impact groundwater resources, such as the use, storage, or disposal of substances such as pesticides, fertilizers, petroleum products, or other hazardous materials, as well as activities such as dry cleaning, metal plating, surface mining, engine repair and maintenance, and furniture stripping and painting.

Natural Resource Protection Zone

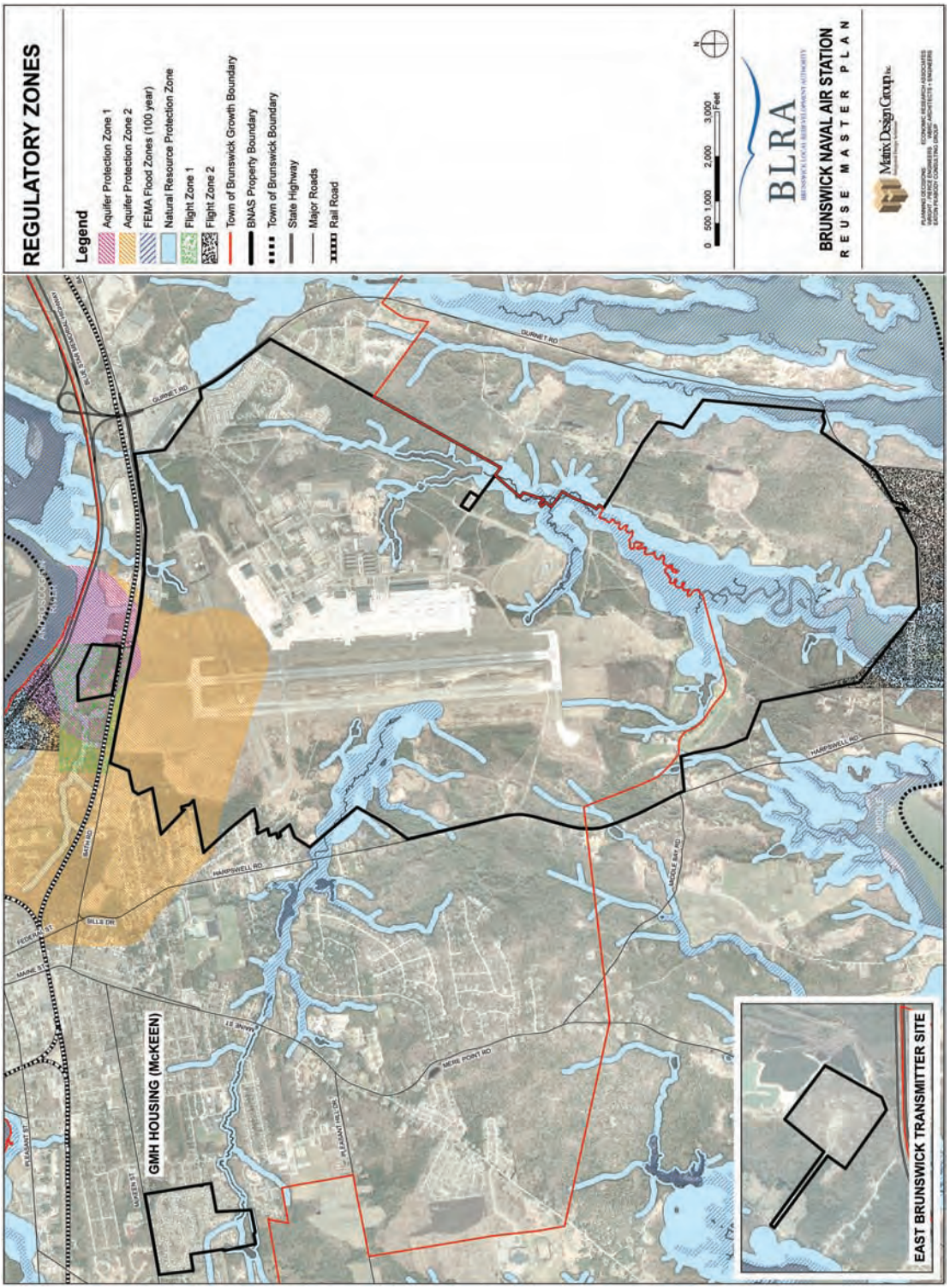
The Town of Brunswick maintains a Natural Resource Protection Zone overlay district that further regulates the location, type, and intensity of uses located within the following two environmentally sensitive areas: Shoreland Areas and Special Flood Hazard Areas. Shoreland Area is defined as "the land area located within two hundred and fifty (250) feet of the normal high-water line of any river or saltwater body; within two hundred and fifty (250) feet of the upland edge of a coastal or freshwater wetland; or within seventy-five (75) feet of the normal high water line of a stream." Special Flood Hazard Area is defined as "any land in the floodplain lying within the 100-year flood boundary as delineated on the Flood Insurance Rate Map of the Town as part of the National Flood Insurance Program." Please see Exhibit 16: Regulatory Zones Map for the location of the areas covered by the Natural Resource Protection Zone.

BNAS Flight Path Zones 1 and 2

The Town of Brunswick also maintains two Flight Path Zone overlay districts "to prevent development which is incompatible with the levels of noise and accident potential within the approaches to the Naval Air Station runways." These zones are located north of Bath Road at the northern end of the BNAS runway and around Harpswell Cove at the southern end of the BNAS runway. The boundaries of the Flight Path Zones are based on the Air Installation Compatible Use Zone (AICUZ) Study for BNAS from 1977, revised 1986.

Flight Path Zone 1 is the most restrictive and is the "clear zone" closest to the ends of the runway. All uses are prohibited in Flight Path Zone 1 except for certain agricultural uses, which are granted only through special permit with the Town. Flight Path Zone 2, the "noise / accident zone" allows limited low-density residential development as well as a number of other uses through special permit with the Town. Please see **Exhibit 19: Regulatory Zones Map** for the location of the areas covered by the Flight Path Zones.

Exhibit 19: Regulatory Zones Map



Source: Matrix Design Group

Transportation Issues and Influences

Direct, safe, and convenient vehicular access, along with reliable (and in some cases redundant) utility infrastructure services are requirements for the efficient operation of any military installation, regardless of property location or size. The successful redevelopment of the 3,300-acre Brunswick Naval Air Station, as with any other large-scale private-sector development will require that same (or expanded) level of transportation and utility infrastructure to meet future non-military and potentially increased growth and redevelopment needs of the Brunswick community. This section, therefore, summarizes the existing transportation and utility infrastructure systems that could influence, or be influenced by, redevelopment of the Brunswick Naval Air Station.

Transportation Systems

From a regional geographic perspective, Brunswick Naval Air Station is located 150 miles north of Boston, Massachusetts; midway between Portland, the state's largest metropolitan area, and Augusta, Maine's capital; Bangor is located 90 miles to the north. Although the 95 / 295 Interstate Highway system connects all of these urbanized areas, the Brunswick Naval Air Station is not directly accessible from this major vehicular corridor (located approximately five miles to the west of the site); the base is, however, located within proximity of several major state, regional, and community arterials that serve the region, including:

- US Route 1, which serves the towns of Brunswick and city of Bath, and communities north along the coast

- I – 295 / Highway 196 Coastal Connector, which connects US Route 1 with Interstate 295 through the Town of Topsham
- Bath Road, which serves the local Brunswick, Bath, and Harpswell communities

As part of the Matrix Planning Team's assessment of local and regional transportation systems, a review of traffic issues associated with the current operation of the Naval Air Station was conducted. The review included an assessment of traffic volumes with respect to the capacities of key intersections and trends in area land use that can be expected to impact level of service on the adjacent roadway network, as well as discussion of certain elements that may be implemented to mitigate congestion within the area. As illustrated on **Exhibit 20: Regional and Community Transportation Systems**, the most direct access to the BNAS property is via US Highway 1, at the Cook's Corner exit; the most direct access from downtown Brunswick is via Bath Road, which parallels the base on its northern border.

Exhibit 20: Regional and Community Transportation Systems Map

Source: Matrix Design Group

Local and community access to the base is provided from Bath Road, Harpswell Road, and Gurnet Road. Harpswell Road runs south of Bath Road on the western side of the base, and currently provides public access into the base. Currently referred to as the Dyer Gate, this two-lane roadway serves as the southern entrance into BNAS, and also serves the Mere Brook 9-hole golf course, open to the public. Gurnet Road runs north and south on the eastern side of the base, and connects directly to US Route 1 just north of the Cook's Corner / Bath Road intersection, and terminates at Harpswell Cove, approximately 10 miles south of the base. Although no current access is permitted into the base along Gurnet Road, there are several historic gates, now closed to public access. **Exhibit 31: Point of Access Map** illustrates these existing and historic access points. In general, recent trends indicate continued growth in traffic in the Cook's Corner area. Because Bath Road appears to be at or near capacity, most new traffic will enter the area via US Route 1. This condition will put additional pressure on the Cook's Corner intersection, which is probably physically as large as it can get (in terms of travel lanes).

Several bicycle and pedestrian trails are found within the vicinity of BNAS, but the presence of the base and its restricted access has prevented north-south and east-west connections across the community. Existing bicycle and pedestrian trails are located along US 1 and the Androscoggin River, in the Cook's Corner area, along Gurnet and Coombs Roads, and in the neighborhoods west of the base near Harpswell Road. An important consideration of the redevelopment of the base is to provide east-west connectivity for bicyclists and pedestrians across the base as well as north-south connections with existing trails.

Potential Community / Regional Transportation Improvements

One short-term improvement that has been identified to improve capacity of the Cook's Corner intersection is the addition of a through lane from New Gurnet Road to Wal-Mart, retaining the exclusive right-turn lane into Wal-Mart. Currently, the dual left turn lanes approaching the Cook's Corner intersection from Route 1 are unbalanced, with the inside left lane being used more heavily than the outside. This is because the two receiving lanes on Bath Road eastbound drop to a single lane at Thomas Point Road, a total distance of slightly over 300 feet and insufficient for weave / merge maneuvers by vehicles that have just maneuvered through a double left turn. Better balance in volume in the dual left-turn lanes from Route 1 could reduce the green time requirement for this movement and free up some capacity for other movements.

It has been noted that the poor operation of the signal system on Bath Road from Merrymeeting Plaza to Cook's Corner Mall have, in effect, limited the capacity of Bath Road west of Merrymeeting Plaza. This three signal system is controlled by a single traffic controller, which is a technique commonly used to guarantee coordination for closely spaced traffic signals (i.e. it can preclude traffic from backing up through an intersection and causing gridlock). In this case, a single lane on Bath Road eastbound at

Merrymeeting Plaza proceeds into three receiving lanes, two continuing eastbound on Bath Road and one serving as an exclusive right turn lane to BNAS. The outside (right) through lane tends to get overloaded, which blocks access to the inside through lane and causes traffic to back up through the Merrymeeting Plaza intersection. It is not unusual to see eastbound traffic on Bath Road backed up to, or beyond, the Fat Boy restaurant during the Christmas season.

A short term solution to this would be to convert the exclusive right turn lane into BNAS as a shared through-right turn lane. This would allow drivers traveling to the Cook's Corner Mall (which also has an exclusive right turn lane) to use this lane thus freeing up the other two lanes for through traffic (and likely minimizing the potential of back ups. For the longer term, two other actions are suggested. First, there must be two eastbound through lanes on Bath Road at Merrymeeting Plaza, plus the existing exclusive left into the Plaza. These two lanes need to extend westerly enough to store all the vehicles that can be moved for a typical peak hour green phase; a single lane cannot move enough traffic fast enough into a multiple lane section of roadway, thus it requires more green time (reducing the level of service for other movements) and can easily lead to the creation of long vehicle queues, which further reduces efficiency due to additional stopping and start-up delays. Second, it would be advisable to relocate the BNAS access road to be aligned with Merrymeeting Plaza. This would increase the distance between intersections and allow use of single controllers at each intersection, operating under coordinated control.

Additional Points of Access

With regard to additional access to BNAS, it would be desirable to provide an improved general access to the site from New Gurnet Road south of Cook's Corner Mall. In this area, New Gurnet Road is a four lane facility with no exclusive left or right turn lanes. An exclusive left turn lane (or alternately a two-way left-thru lane) would be desirable from the traffic signal at Cook's Corner Mall to at least just south of any new access. This new access would allow vehicles from Route 1 to travel straight through the Cook's Corner intersection and reduce the volume of left turns off Bath Road westbound into BNAS. Connection of the New Gurnet Road access to the Bath Road access would also be desirable; the connection should be kept as short as practical to maximize its use in the overall circulation of the Cook's Corner area. Given the extent of frontage on Bath Road, the provision of a new access point directly opposite to Jordan Avenue has been discussed in the past.

There are several dead end residential streets that extend from Route 125 and terminate near the boundary of the northwest corner of the base. Given the residential nature of this area, it may be appropriate to avoid through-connections from these streets.

Depending on the nature of land use proposed for the base, it may also be appropriate to develop enhanced access to Middle Bay Road, in the vicinity of the existing Dyers Road gate. A connection could be made between an access point in this location and New Gurnet Road, possibly via the Coombs Road.

Improved Access to Route 1 and Interstate 295

One final issue is the development of an additional connection between Bath Road and the adjacent four lane divided highway (Route 1) which serves at the primary transportation artery linking the Midcoast with Interstate Route 295. In the past (approximately mid-1980s), analysis was performed to gauge the viability of constructing a new connection west of the existing interchange. At that time it was not found to be cost-effective, and a major upgrade of Cook's Corner intersection was implemented. At this point, however, the issue warrants reexamination, as well as alternate mechanisms, including the potential for a new connection east of the existing Cook's Corner interchange, which would effectively free up capacity at the existing interchange.

Based on a review of mapping, as well as discussions with individuals involved with the earlier evaluation, it appears that there are several factors that would complicate the construction of a new Route 1 interchange between the present interchange at Cook's Corner and the Coastal Connector to the west. The most significant of these obstacles includes the lack of space between Route 1 and the Androscoggin River (for construction of embankments, ramps and overpass abutments); potential impacts to the Brunswick-Topsham Water District's wellhead protection area; and, the magnitude of capital cost required for construction (projected at $12 million to $17 million).

As noted above, a possible alternative mechanism for achieving additional interchange capacity would be the construction of a new interchange to the east of Cook's Corner. The relocation of Midcoast Hospital off Bath Road to the east of Cook's Corner, along with the recent opening of a Lowe's and an expansion of Wal-Mart, has increased traffic demand in this area. The hospital is likely to spur additional growth in this area in the form of medical office buildings, clinics, etc., thus it will be necessary to look carefully into the levels of traffic generation associated with the area east of Cook's Corner in addition to what might be projected as part of the redevelopment of BNAS.

A potential further area of concern relates to the addition of new traffic onto Pleasant Street in Brunswick and the Coastal Connector in Topsham, the two primary routes between the four-lane divided section of US Route 1 and Interstate 295. Both of these routes are subject to peak hour congestion. Creation of an additional link to the interstate has been suggested by some, although further evaluation would be necessary to identify likely routes and establish costs and a realistic schedule for implementation.

Baseline Traffic Numbers

The Parking and Traffic Master Plan, issued by Oak Point Associates / Casey & Godfrey in September of 2002 includes the results of traffic counts at several locations on the base. Based on all of the readily available materials, it appears that the data reflected in this report provides the best basis for establishing approximate baseline figures for traffic generation at the facility. Using existing peak hour figures from the intersection of Fitch Avenue and Forrestal Drive, the following summary of vehicle volumes entering and leaving the base at the main (Bath Road) gate for the AM, PM and mid-day peaks was developed.

Exhibit 21: Baseline Traffic Figures

Time	Entering Base	Leaving Base
AM Peak Hour	765	96
PM Peak Hour	192	642
Mid-Day Peak	331	329

Source: Wright-Pierce Engineers

Future Trip Generation

While it will not be possible to make any detailed projections relative to traffic generation until the master plan is further developed (i.e. specific uses are determined and space is allocated among them), it was determined that an "order of magnitude" projection of future traffic volumes would be useful. Based on an estimated 1.8 million SF of available office / light industrial space and 200 residential units we have developed the following projections:

Exhibit 22: Future Trip Generation

Time	Entering Base	Leaving Base
AM Peak Hour	1589	281
PM Peak Hour	350	1690

Source: Wright-Pierce Engineers

As noted, the future traffic generation could quite easily result in doubling of the Base-related traffic on the adjacent street system during the AM and PM peak hours. It is expected that traffic entering / exiting the base would be distributed over several points of access depending on origin / destination, and that there may be some "pass through" traffic across the base property that is simply taking advantage of the newly accessible base roadways as shortcuts within the area.

Rail Service

Rail access exists in proximity to the northern boundary of the base, in the form of an active line that runs just north of, and essentially parallel to, Bath Road. In the past, a rail siding once extended across Bath Road and onto the base; however, this has long since been discontinued and the rails removed. While activity on the main line has been very limited for a number of years, the Maine Department of Transportation has made significant investment in the track (primarily ties and ballast) over the past several years, and passenger rail activity has been active on a seasonal basis.

The ultimate attractiveness of rail as a mode of transportation to serve potential redevelopment of the base will depend largely on the nature of the redevelopment. Certainly, the use of the existing facilities for passenger service offers an attractive alternative to automobile traffic, particularly under redevelopment scenarios which create significant employment or tourism opportunities. It is possible that these elements could help provide the critical mass necessary for an economically viable passenger rail system in the region. However, the potential for use of freight rail by future occupants of the base will be largely a function of the nature of any businesses that locate on the property. It is important to note that the present geometry of the rail line and its location on the north side of Bath Road would require an at-grade rail crossing of Bath Road in order to serve the base. Given the current level of traffic congestion on Bath Road, this option would meet with some resistance.

Rail Crossing of Bath Road

A field review of topography and existing land use along the Bath Road was conducted in order to gauge the viability of crossing the road with a rail spur onto the base. The viability of such a crossing was based on the following assumptions:

- 18 feet vertical clearance over the rails
- 4-foot depth of the overpass superstructure
- 4% street grades to accomplish the elevation differential

This review suggested that a crossing would require 550-600 feet either side of the overpass, or a total length of not less than 1,200 feet. The logical location appears to fall slightly to the east of the present intersection with Jordan Avenue where the elevation of the rail line appears to be about 8 feet lower than the elevation of Bath Road. The connection to Jordan Avenue would need to be relocated to a point further west on Bath Road or to a future access roadway extended to connect to Route 1 in this area. Costs have been estimated to be on the order of $1.0 - $1.2 million for the roadway construction element. We have not estimated costs for the construction of the rail spur or certain “soft” costs such as acquisition of properties necessary to implement the improvements.

Note that this option would result in severe access impacts to several properties on Bath Road, including a gas station and a residence. Although no detailed engineering has been performed, it appears that the new Bath Road profile would match the existing profile in the vicinity of the Fat Boy restaurant. The rail spur would be placed in a fairly deep cut as it enters the base property. Clearly, these grading and access elements would need to be reviewed in the context of impacts to airport “clear zones” if aviation uses are retained at the base.

Natural and Cultural Resources

The lands surrounding Brunswick Naval Air Station property contain a variety of ecosystems, habitats, landforms, and other natural resources that not only serve as a tremendous asset to the town and its citizens, but also influence and affect the location, type, and intensity of development within the town. Brunswick is also home to a number of historic, archaeological, and cultural sites that also influence development in the community. This section reviews some of the important natural and cultural resources found within the Town of Brunswick and adjacent to BNAS property.

Wetland Conditions

There are several locations within the Town of Brunswick and near or adjacent to the BNAS property that contain wetlands or vernal pools. Information on the location and extent of vernal pools was obtained from the Town of Brunswick, and information related to the location and extent of wetlands was received from the State of Maine and the United States Navy. These sources used different methods to define and identify land considered to be wetlands. While there was geographic overlap between the areas identified as wetlands by these sources, there were also areas where each source had alone identified a particular area as consisting of wetland conditions. Consequently, since determining the accuracy and reliability of the wetlands data obtained from these sources is outside of the scope of this effort, all the land area identified as wetlands by any of these sources has been considered in this Reuse Master Plan process.

There are four primary areas of wetland conditions found within the town and located near or adjacent to BNAS property: (1) near the McKeen Street housing; (2) south of the BNAS main base around Middle Bay and Harpswell Cove; (3) east of the main base on either side of Gurnet Road around Buttermilk Cove and Woodward Cove; and, (4) to the west of the main base in the Town Common area west of Harpswell Road and north of Middle Bay Road. Smaller concentrations of wetland conditions can be found immediately south of the Cook's Corner commercial area east of Gurnet Road, and north of Bath Road in the vicinity of Merrymeeting Plaza and the Androscoggin River. **Exhibit 23: Wetland Conditions Map** illustrates the location of these wetland and vernal pool resources.

Natural Habitats

A number of natural habitats are found near and on the BNAS property in the Town of Brunswick. These natural habitats consist of five main categories, including (1) State of Maine Threatened or Endangered Species; (2) Rare Communities; (3) Deer Wintering Areas; (4) Unfragmented Areas; and (5) Wildlife Corridors.

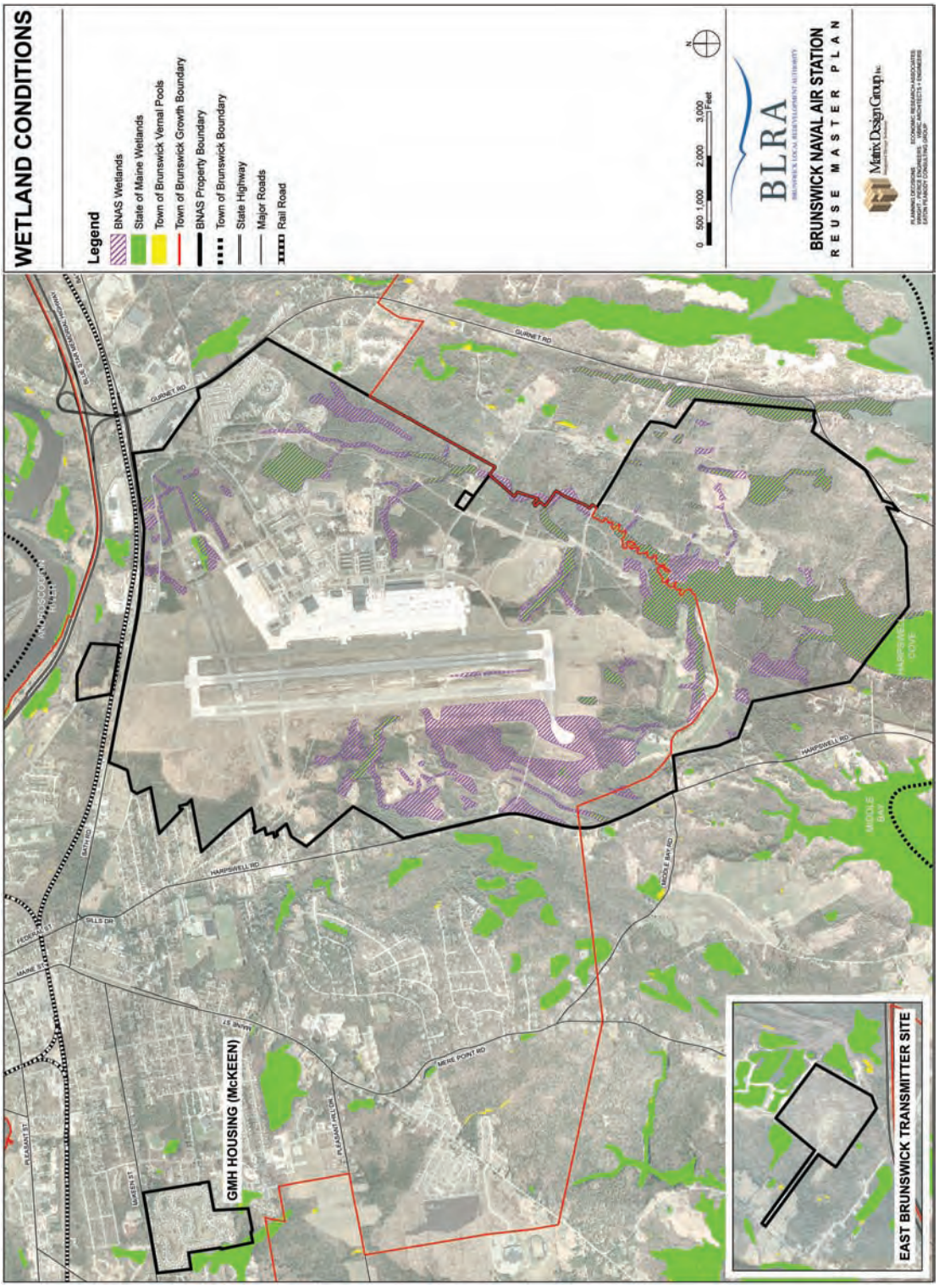
State of Maine Threatened or Endangered Species

The Maine Natural Areas Program has identified a number of plant and animal species that are threatened or endangered in the state that have been identified or observed in the vicinity of BNAS within the Town of Brunswick. These species include:

- Mountain Honeysuckle
- Acadian Swordgrass Moth
- Clothed Sedge
- Dry Land Sedge
- Vesper Sparrow

These and additional species are also found on BNAS property and are discussed in Section 4.3: On-Base Conditions and Characteristics. **Exhibit 24: Natural Habitats Map** illustrates the location of these State of Maine Threatened or Endangered Species using colored icons.

Exhibit 23: Wetland Conditions Map



Source: Matrix Design Group

Rare Communities

The Maine Natural Areas Program has also identified two "natural communities" that have been identified as having "rare" status within the state. According to the Maine Natural Areas Program, a rare natural community is one "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." The two Rare Communities found near BNAS property within the Town of Brunswick are:

- Pitch Pine – Heath Barren
- Little Bluestem - Blueberry Sandplain Grassland

These communities are also found within BNAS property and are discussed in later in this Section.

Deer Wintering Areas

The Maine Department of Inland Fisheries and Wildlife has identified a large wooded area west of Coombs Road near Purinton Road, mostly just outside of BNAS property, that is a known deer wintering area. The protection of wildlife habitats, like Deer Wintering Areas, is a key principle in the Town of Brunswick Parks, Recreation, and Open Space Plan 2002. **Exhibit 24: Natural Habitats Map** illustrates the location of the Deer Wintering Area in blue.

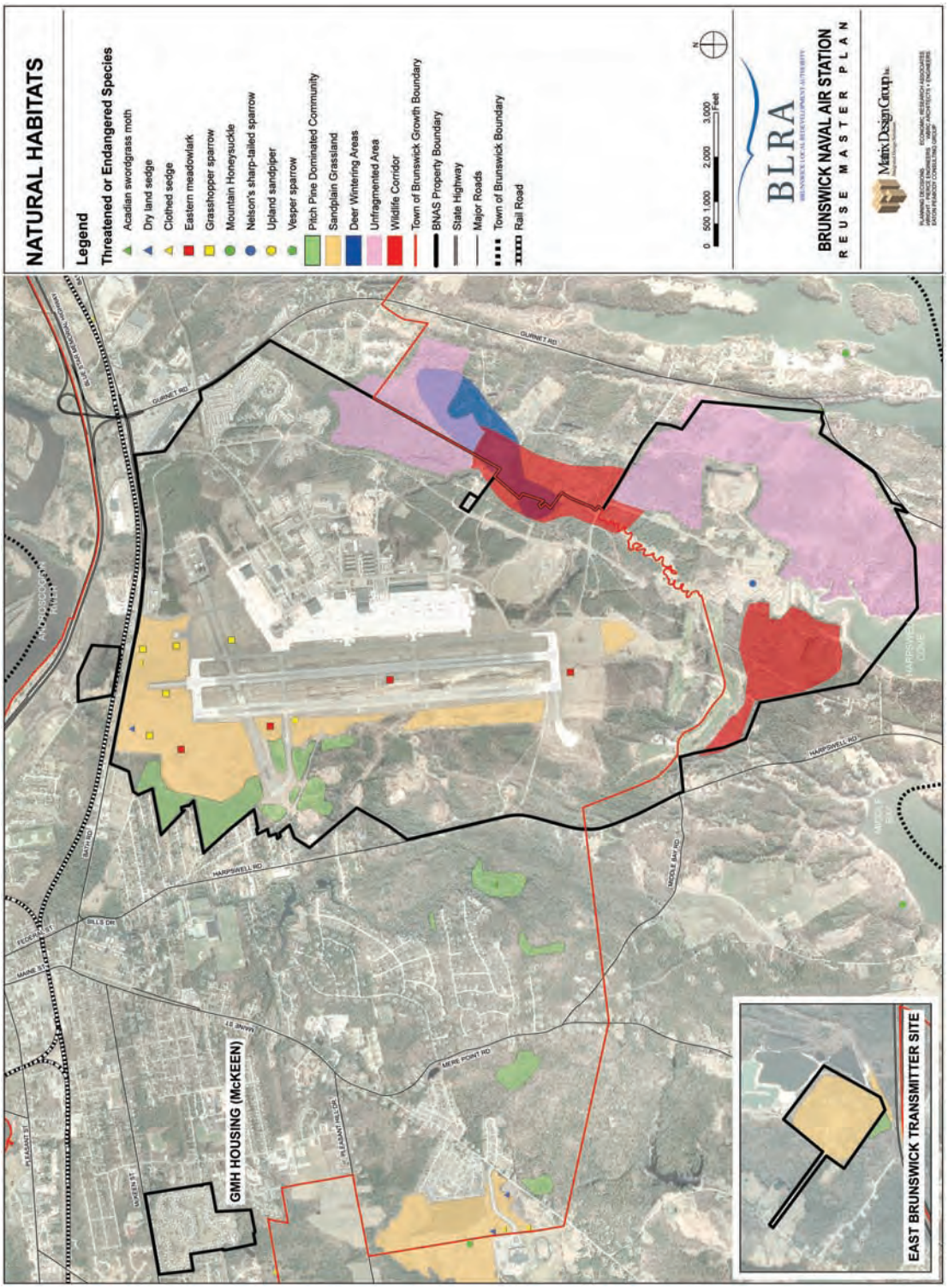
Unfragmented Areas

The Town of Brunswick has identified several large blocks of forested land that have not been fragmented by roads or development. These Unfragmented Areas provide significant habitats to a variety of flora and fauna, and both their protection and preservation are important elements of the *Town of Brunswick Parks, Recreation, and Open Space Plan 2002*. Several of these Unfragmented Areas are identified with purple shading in Exhibit 19; additional unfragmented areas west of the BNAS main base are currently being mapped by the town.

Wildlife Corridors

The Town of Brunswick has identified several areas known as Wildlife Corridors which are areas of habitat that serve as "avenues of connectivity for animal movement between larger habitats" according to the Brunswick Rural Smart Growth Study. These areas, important in maintaining the health of Brunswick's wildlife communities, are shown in red in **Exhibit 24**.

Exhibit 24: Natural Habitats Map



Source: Matrix Design Group

Cultural Resources

In addition to the natural resources described above, there are a number of cultural resources in the vicinity of BNAS, primarily in the form of historic / archaeological sites and cemeteries that could influence the location of land use recommendations for the base. Several historic sites are located immediately north of the main base along Bath Road near Jordan Avenue, and several cemeteries are found in this general area as well. **Exhibit 25: Historic and Cultural Influences Map** illustrates the location of these resources. Cemeteries are depicted as green triangles. Following that, **Exhibit 26: Historic Bowdoin College and Town Common Parcels Map**, shows the location of historic property boundaries associated with Bowdoin College and the Brunswick Town Common.

On-Base Conditions and Characteristics

Within the overall 3,300-acre BNAS property, and particularly within the more urbanized area of the base, a variety of conditions and characteristics exist that could influence or impact the ultimate successful transfer and redevelopment of the property. Understanding the characteristics of these conditions, and how to capitalize on existing assets and mitigate existing liabilities is critical to developing a reuse master plan and implementation strategy that has long-term potential for success. The following section describes a variety of on-base conditions and characteristics that provide a basic level of information required to prepare conceptual master plan alternatives for the base. The ultimate redevelopment and detailed implementation of the Reuse Master Plan will require more in-depth investigation and analysis.

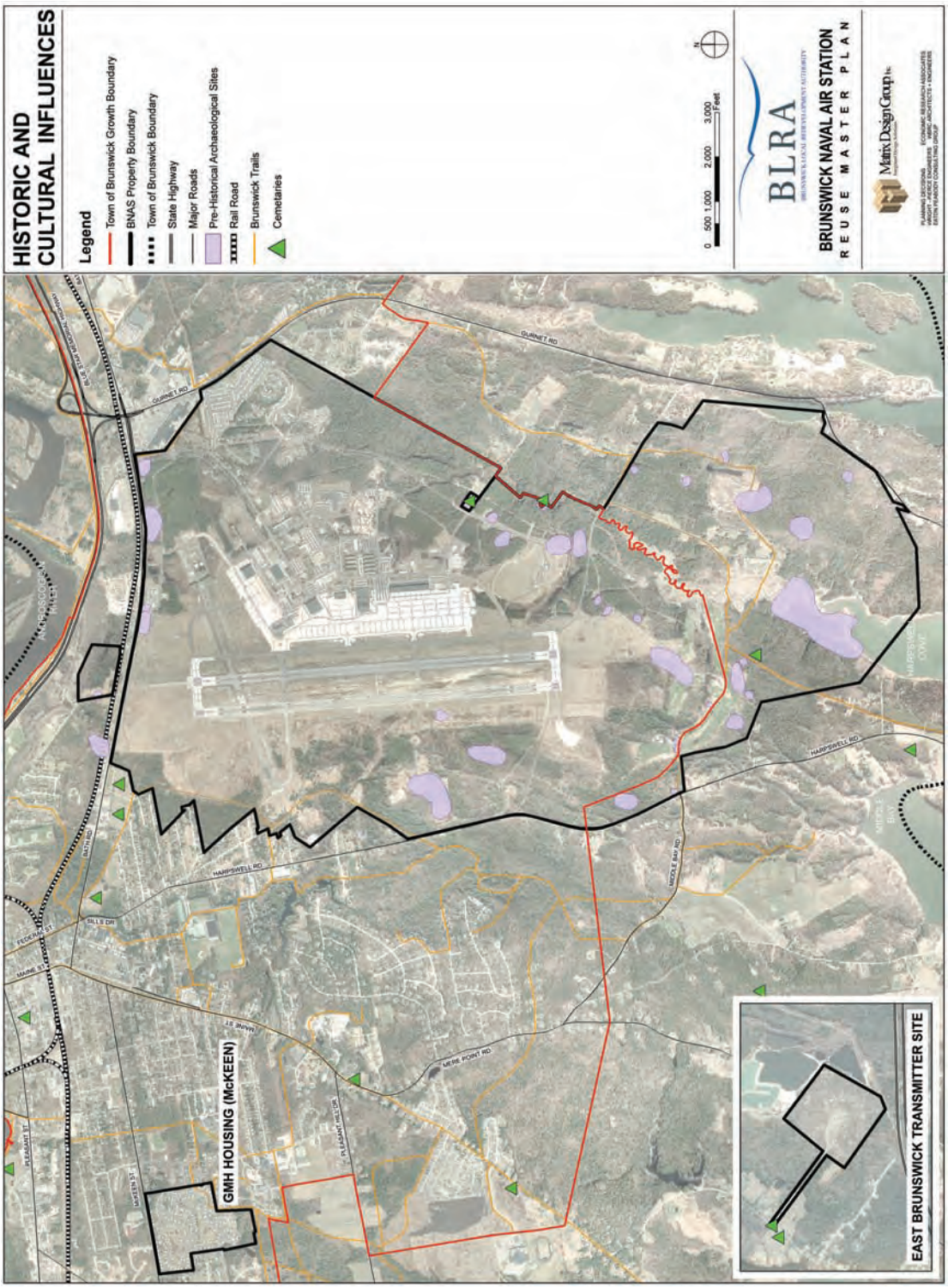
Land Use Patterns

For the purposes of better understanding existing conditions and the relationships among land uses within the Brunswick Naval Air Station property, the 3,300 acres, including McKeen Homes and East Brunswick Transmitter remote sites have been classified into six broad land use categories. These include the following:

- Mixed Use
- Industrial / Aviation
- Recreation
- Residential
- Weapons Storage
- Undeveloped / Open Space

The following sections describe these uses and their respective locations within BNAS property, as illustrated on **Exhibit 27: On-Base Land Uses Map.**

Exhibit 25: Historic and Cultural Influences Map

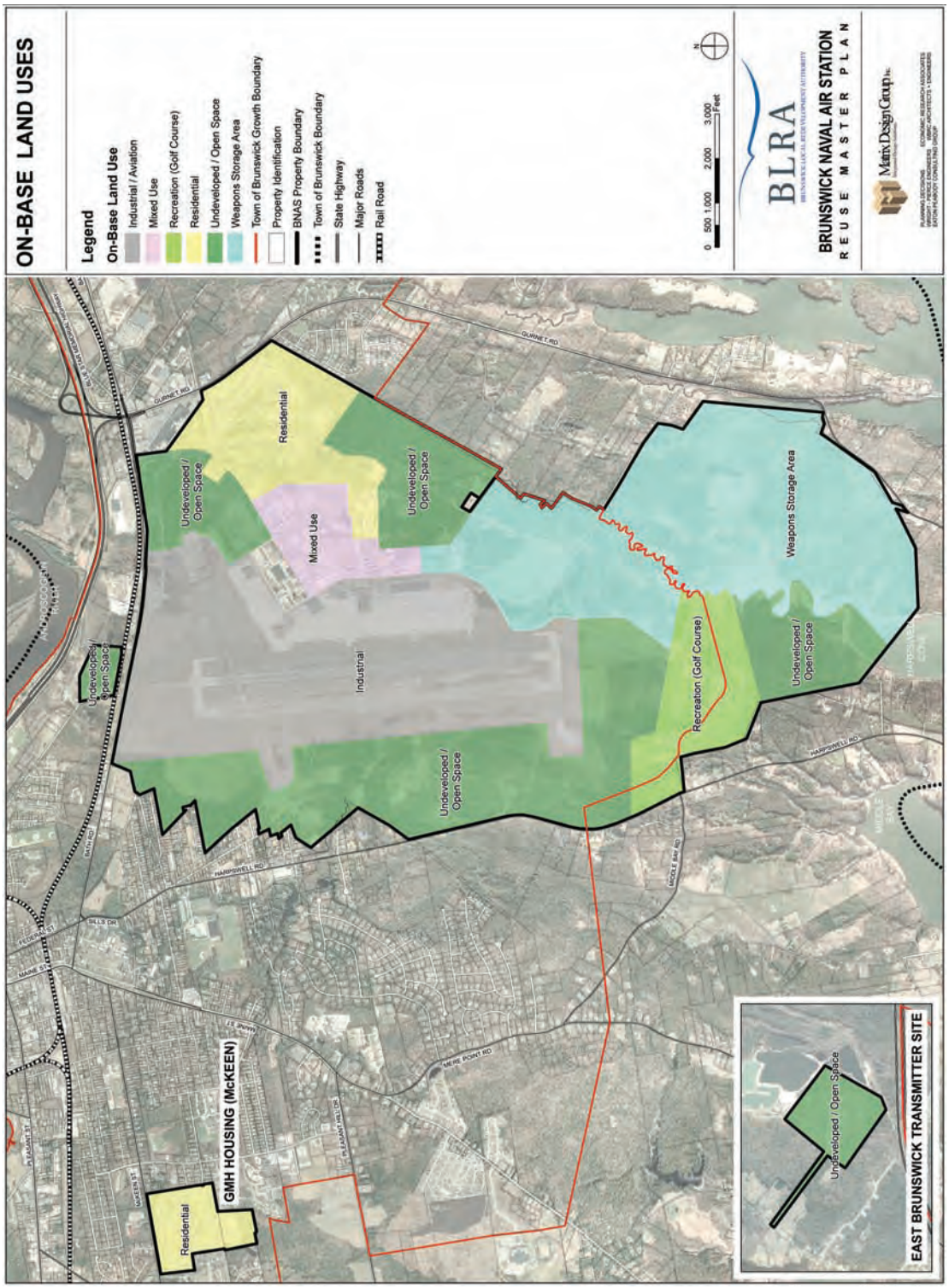


Source: Matrix Design Group

Exhibit 26: Historic Bowdoin College and Town Common Parcels Map

Source: Sitelines P.A. Engineering

Exhibit 27: On-Base Land Uses Map



Source: Matrix Design Group

Mixed Use Areas

The Mixed Use area is found in the cantonment area of the main base south of Fitch Avenue and east of Orion Street. This area is characterized by the concentration of the air station's community and administrative functions, and includes facilities such as the Base Exchange, Wing Headquarters, and Medical Center. The area is also served by major water, sewer, electrical, gas and other major utilities, as well as major streets, roadways, and surface parking lots. The Mixed Use area measures approximately 114 acres.

Industrial / Aviation Areas

The Industrial / Aviation area includes all of the existing BNAS airfield, as well as the aviation-related facilities along the northwest side of Fitch Avenue, along the west side of Orion Street, and north of the airfield along Perimeter Road. In addition to the paved runway and taxiway areas, this area features several significant aircraft and maintenance hangars and other large industrial-type structures, as well as several smaller utility and operational / support facilities. The Industrial / Aviation area covers approximately 835 acres.

Recreation Area

The Recreation area consists of the Mere Brook Golf Course located in the southwest corner of the base. The golf course was assigned its own land use given the acreage that it occupies (approximately 181 acres) and to distinguish it from open space and other passive recreation areas nearby. Other smaller recreation uses, such as ball fields, are included within the Mixed Use area.

Residential

The Residential areas within the BNAS property are found in the northeast corner of the main base, as well as at the McKeen Homes remote site. The residential areas on the main base, located immediately southeast of the Cook's Corner commercial area, consists of several neighborhoods including Marina Landing, Brunswick Gardens, Midway Terrace, and Woodland Village, and covers approximately 231 acres. This area also includes the Permanent Party Quarters and Transient Party Quarters facilities south of the cantonment area. The McKeen Homes area covers approximately 77 acres and is entirely developed as residential with the exception of some small undeveloped drainage areas.

Undeveloped / Open Space

The Undeveloped / Open Space areas are found predominantly in five locations, which include the following:

- Approximately 556 acres along the western side of the runway and north of the golf course (including the small parcel on the north side of Bath Road at the end of the runway)
- Approximately 129 acres at the southwestern corner of the base, immediately south of the golf course and west of Harpswell Cove
- Approximately 159 acres along the eastern edge of the main base, immediately south of the residential and cantonment areas
- Approximately 110 acres at the northeastern corner of the base to the west of the main gate. This area is dominated by the natural landscape of forests, wetlands, or grasslands; the limited development within this area consists typically of small utility, security, or other minor structures
- The 69-acre East Brunswick Transmitter site, which is entirely undeveloped

Weapons Storage Area

The Weapons Storage area is centered at the southeast corner of the main base, from Harpswell Cove estuary east and north to approximately the center of the base. This area covers approximately 807 acres and consists of several sites where weapons are stored and/or tested; consequently, the remaining land is undeveloped natural areas that serves to buffer these potentially hazardous areas from other uses.

Utility Infrastructure Systems

General conditions and characteristics of infrastructure systems that serve the BNAS property are described below for stormwater, sanitary sewer, water supply, natural gas, electrical power supply and distribution, and telecommunication systems. At the onset of the implementation of the Reuse Master Plan, additional inventories and assessments will be necessary to establish the extent to which these systems will need to be improved, expanded and/or extended.

Review of the utility infrastructure systems considered not only historical and existing conditions, but also future needs related to the potential redevelopment of the base. The existing infrastructure on the base, with the exception of natural gas was developed, maintained, and operated by the Navy. Based on review of available reports, discussions with BNAS Public Works staff, and from on-site observations of visible system components, it appears that utility infrastructure systems are in generally good operational condition. The existing on-base wastewater collection, water supply, natural gas, electric power and roadway systems primarily serve the “cantonment” area, that portion of the base that has been developed on the east side of the airfield, in the northeastern quadrant of the base. There are several isolated facilities, particularly toward the southern end of the property, that rely on wells and septic systems (subsurface disposal fields), rather than connection to the water and wastewater utility systems. Issues related to required improvements, acquisition, operation and maintenance of the existing utility systems include the following:

- In most cases, the utility installations at Brunswick Naval Air Station were constructed by the US Navy as needed to serve existing, expanded and new development as the base grew over time; some of the systems, therefore, may presently exist at different standards from those deemed acceptable by certain municipal, quasi-municipal or other entities that may operate these systems in the future.
- Utility use at some locations and facilities within the base are not metered; it is anticipated that all future development will need to be provided with meters as a part of the infrastructure improvement program.
- There are no defined rights-of-way for the road and utility infrastructure.
- Utilities are not always located in the defined roadway corridors and may be impacted by land transfer and/or future development.
- Utility operations (gas, water, telecommunications and electrical) will be subject to certain rules and regulations by the Maine Public Utilities Commission (MPUC), after the property is transferred and the base is redeveloped.

The following information summarizes the issues related to the major utility systems that serve the base:

Stormwater Management Facilities

Stormwater management facilities on the base vary widely in nature, with more sophisticated systems serving the northern and eastern portions of the site, where uses have been more intensive and there has been a correspondingly higher potential for discharge of contaminants. According to the *Environmental Condition of Property Report (Revision 2)* for Naval Air Station, Brunswick, Maine (ECP Report) dated May 30, 2006, a National Pollutant Discharge Elimination System (NPDES) permit was applied for in 1992 and received from the United States Environmental Protection Agency (USEPA) Region 1. In 1995 the USEPA developed a system called Multi-Sector permitting, and in December of that year BNAS issued a Notice of Intent to apply for the permit. As required, in five years (2000) a Notice of Intent was submitted and the permit was approved in 2001. In October, 2005 (as required) a Notice of Intent was submitted and reissuance of the permit was pending as of the date of the ECP Report. Since existing stormwater detention facilities are licensed under MEDEP, that agency notified the Naval Air Station in July, 2006 that they were authorized to discharge stormwater associated Multi-Sector activity pursuant to the terms and conditions imposed by the DEP's Multi-Sector General Permit for stormwater associated with industrial activity. The facility permit number is MER05B247. The Multi-Sector General Permit for Stormwater must be transferred to any new operating entity of the BNAS property and renewed every five years thereafter. All future development will be required to meet requirements of Maine and federal stormwater regulations.

Wastewater Collection System

The existing wastewater collection system adequately serves the majority of the developed portion of the site. The system was constructed by the US Navy, which currently operates and maintains the system. Wastewater is discharged to the Brunswick Sewer District and is metered as it leaves the base along the Bath Road at the Main Gate. **Exhibit 28: Wastewater Collection System Map** illustrates the area served by this system. Records reviewed indicate that facilities were constructed as early as the 1940s. Materials vary depending on the time period within which they were constructed.

As part of the inventory and analysis of existing base conditions, a preliminary assessment of the existing wastewater collection system was conducted by the Matrix Planning Team, with support from representatives of the Brunswick Sewer District, the local service provider. The assessment included a review of available mapping and past assessment reports, as well as discussions with BNAS Public Works staff, and on-site observation of the ten wastewater pumping stations. On the basis of this assessment, it was estimated that the improvements necessary to bring the existing collection system up to local District standards could be as high as $6.4 million. This estimate includes limited improvements to only six of the ten pump stations examined; four of the pump stations were site-specific, serving a single area / facility. Improvements of these systems might best be the responsibility of the end user of each facility.

It is important to note that, from a wastewater treatment capacity perspective, the Brunswick Sewer District has indicated that it possesses the ability to accept average daily flows up to 0.3 million gallons per day (MGD). Future discharges in excess of this figure may require upgrade to the District's downstream pumping and treatment facilities. The licensed treatment capacity of the Brunswick Sewer District's treatment plant is 3.85 MGD. With the addition of a third secondary clarifier and a third trickling filter the Brunswick Sewer District has indicated that it may be able to increase the licensed treatment plant capacity to 5.7 MGD at a cost of approximately $ 8 million. According to BNAS Public Works staff, and as determined as part of the records review and site observation activity, it was also noted that the sewer system that serves Mariner Landing, the privatized residential housing area located on the west side of Route 24, adjacent to the Cook's Corner Shopping Center, experiences flooding of sewers from the manhole located in the low point of the roadway. Anecdotal evidence exists with respect to a problem with grease build up in a sewer line in the area of the galley. It also appears that infiltration / inflow could be a problem, based on flow meter readings.

Exhibit 28: Wastewater Collection System Map

Source: Wright-Pierce Engineers

Water Supply System

The existing water supply and distribution system adequately serves the majority of the developed portion of the site. The system was constructed by the US Navy, which currently operates and maintains the system. Water is provided by the Brunswick-Topsham Water District (BTWD) and is metered at two separate locations as it enters the base, as illustrated on **Exhibit 29: Water Distribution**. Records indicate that facilities were constructed as early as the 1940s. Construction materials varied, depending on the time period that they were constructed. The capacity of the water supply system is limited by two 10-inch metering points, located in the Bath Road and Pine Street area. Areas to the south of the cantonment area are not connected to the primary water distribution system, but are served by local wells and hydropneumatic systems.

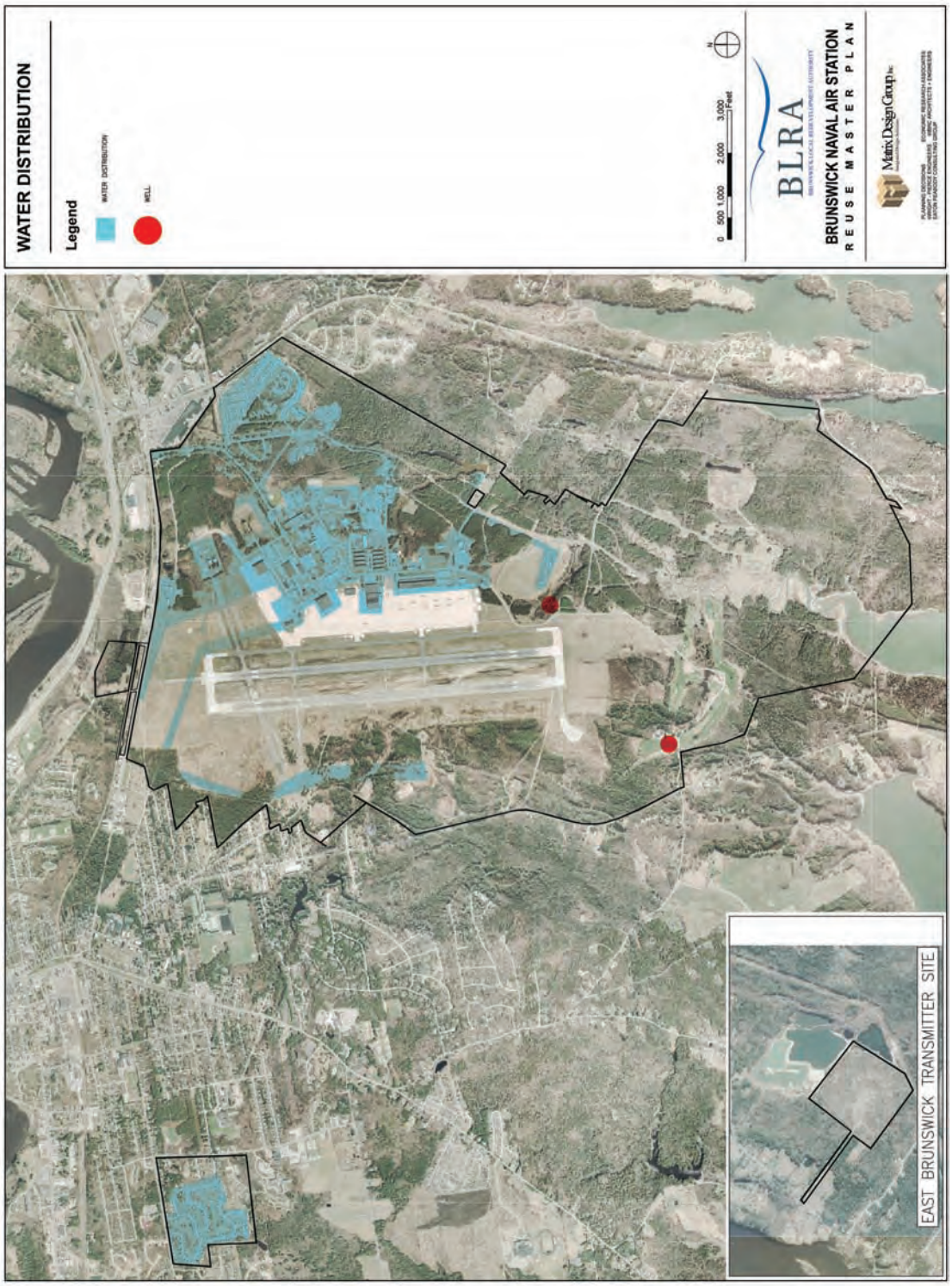
As part of the inventory and analysis of existing base conditions, a preliminary assessment of the existing water distribution system was conducted by the Matrix Planning Team, with support from representatives of the BTWD, the local service provider. The assessment included a review of available mapping and past assessment reports, as well as discussions with BNAS Public Works staff, and on-site observation of visible systems components. On the basis of this assessment, it was estimated that the improvements necessary to bring the existing system up to local District standards could be as high as $ 9.1 million.

It is important to note that, from a water supply capacity perspective, the BTWD has indicated that it has the ability to supply flows up to 90,000 gallons per day (GPD), the level historically used by the base, without negatively impacting its system. The BTWD has indicated that the current system has the capacity to provide an additional 1.5 million gallons per day (MGD) to the Brunswick-Topsham area. The District has further indicated that the reserve system capacity is allocated on a “first come, first served” basis. Future demand in excess of the allowed capacity may require upgrade to the District’s pumping and treatment facilities.

Water System Ownership and Operating Alternatives

The following discussion details potential ownership and operating alternatives for the existing base water distribution system. Each alternative brings with it varying degrees of regulatory, and operation and maintenance responsibilities. Each alternative also assumes that water would continue to be supplied by the BTWD in compliance with all State and Federal water quality requirements. BTWD is required to monitor, treat and remove source based contaminants from the drinking water supplied to its customers. Under current operating conditions, the US Navy is simply considered a “customer” of the BTWD, and is not subject to regulatory monitoring requirements.

Exhibit 29: Water Distribution Map



Source: Wright-Pierce Engineers

Status Quo Scenario

Under the status quo, the MRRA would simply replace the Navy as the bulk water "customer" of the BTWD, and existing BNAS distribution system assets would remain under the ownership and operation of the MRRA. It is assumed that the MRRA would be responsible for the purchase cost of all water-use on the base. The MRRA would also be responsible for the operation and maintenance of all mains, valves, hydrants and services. There would be no other changes or additional regulatory requirements of the MRRA under this scenario.

"For Profit" Operating Entity Scenario

Under a "for profit" scenario, the MRRA would retain ownership of the system and/or transfer the rights of the system to a "for profit" operating entity. It is assumed that water would continue to be provided and billed under a wholesale arrangement with the BTWD; however, the MRRA or "for profit" operating entity would pass along the costs to individual users. This assumes that this "for profit" entity would install individual meters on each service line or create user charge system. It would also be responsible for the operation and maintenance of all mains, valves and services. Currently, the BNAS is not subject to monitoring of distribution water quality. However, if future users were charged a fee for providing water, or if the Brunswick-Topsham Water District selected the base water system as one of its lead and copper or coliform monitoring sampling sites, the property would be considered a "consecutive water system." A consecutive water system is defined as a public water system that receives all of its water from a host or wholesale system that is also a public water system; where the consecutive water system does not provide treatment. The consecutive water system is not technically integral to the wholesale system. If deemed a Consecutive Water System, the MRRA would be required to monitor for contaminants which are generated in the distribution system following treatment by the wholesaler (i.e., lead and copper, coliform, etc.), as well as monitoring for disinfection by-products as defined in the 2005 Disinfectants / Disinfection By-Products Stage 2 rule. In addition, the MRRA would be required to comply with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. These rules would require the MRRA to develop a Vulnerability Assessment Certification and Emergency Response Plan in accordance with the Act.

Brunswick-Topsham Water District Ownership Scenario

Under this scenario, the MRRA would likely be required to satisfy a number of requirements of the BTWD, which could include the following:

- Documentation that mains have been constructed in accordance with the materials and construction standards of the BTWD

- Demonstration of minimum separation requirements between potable water and sewer mains as defined by the State of Maine (potable water mains must be separated from sewers by a minimum of 10 feet horizontally and 18 inches vertically. Where these requirements cannot be achieved, the owner of the system would be required to obtain a waiver from this requirement)
- Documentation of the location of all mains, fittings, valves and service connections
- Demonstration of compliance with the State of Maine Cross Connection Rules
- Provision of water service meters in compliance with the BTWD's standards
- Transfer of the BNAS assets to the BTWD in compliance with "Chapter 65 - Property Taken for Public Use and Assessment of Damages" of the Maine Public Utilities Commission rules
- Prohibition by BTWD of including assets in calculating the depreciation rate base (the BTWD would simply fold the assets into their system)

Electric Power Supply and Distribution System

The existing electric power distribution system adequately serves the majority of the developed portion of the site. The system was constructed by the US Navy, which currently operates the system. Power is provided by Central Maine Power Company and is metered as it enters the base from the east along Route 24 and from the west along Route 123. The westerly metering system serves only the facilities on the west side of the runway. Records indicate that facilities were constructed as early as the 1940s; materials varied, depending on the time period that they were constructed.

As part of the inventory and analysis of existing base conditions, a preliminary assessment of the existing electric power distribution system was conducted by the Matrix Planning Team, with support from representatives of Central Maine Power Company (CMP), the local service provider. The assessment included discussions with BNAS Public Works staff, and on-site observation of visible systems components. While it appears from initial observations that much of the system meets or exceeds Central Maine Power Company's standards, a more detailed review would be required to verify this assumption. On the basis of this more detailed assessment CMP is expected to identify improvements necessary to bring the existing system to bring the existing system up to local standards. CMP's review will also identify any regulatory and/or operational issues that will have to be addressed as part of any transfer of ownership. Once the system assessment has been completed, a cost estimate will be prepared for the improvements identified to make the electrical distribution system compliant with CMP requirements.

Natural Gas Distribution System

The existing natural gas distribution system adequately serves the majority of the developed portion of the site. The system was installed on the base in 2001-2002 and has been owned, maintained and operated by Maine Natural Gas (MNG) since that time. As a result, the system meets all required local standards, and will not require any substantive upgrade for continued operation by that utility. The system has been extended to serve the new Dyers Gate facility to the south, as well as the new Air Control Tower to the west. **Exhibit 30: Natural Gas Distribution Map** illustrates the area serviced by natural gas using an orange color.

Maine Natural Gas has indicated that sufficient reserve capacity exists to serve foreseeable additional development that may take place on the BNAS site, although the metering and regulation station located on BNAS property along the Bath Road may require modifications to meet the future natural gas demands. There is a master gas meter on base as well as meters located at some industrial / commercial facilities, and therefore all structures may not have a dedicated gas meter. The residential housing units are separately metered. The existing Maine Natural Gas metering and regulator station that serves the base, the Cook's Corner area, and East Brunswick, is located adjacent to Bath Road on BNAS property. Maine Natural Gas would continue to own and operate their existing facilities to serve future development.

Telecommunications Systems

There are presently at least two separate telecommunications systems serving the majority of the developed portion of the site. Verizon Communications provides service to the base, and the base then provides communication service to their facilities via fiber optic and cable lines. Verizon Communications has indicated that it will continue to provide service to BNAS and is willing to take ownership of the government-owned portions of the communications system.

Exhibit 30: Natural Gas Distribution Map

Source: Wright-Pierce Engineers

Vehicular Access and Street System

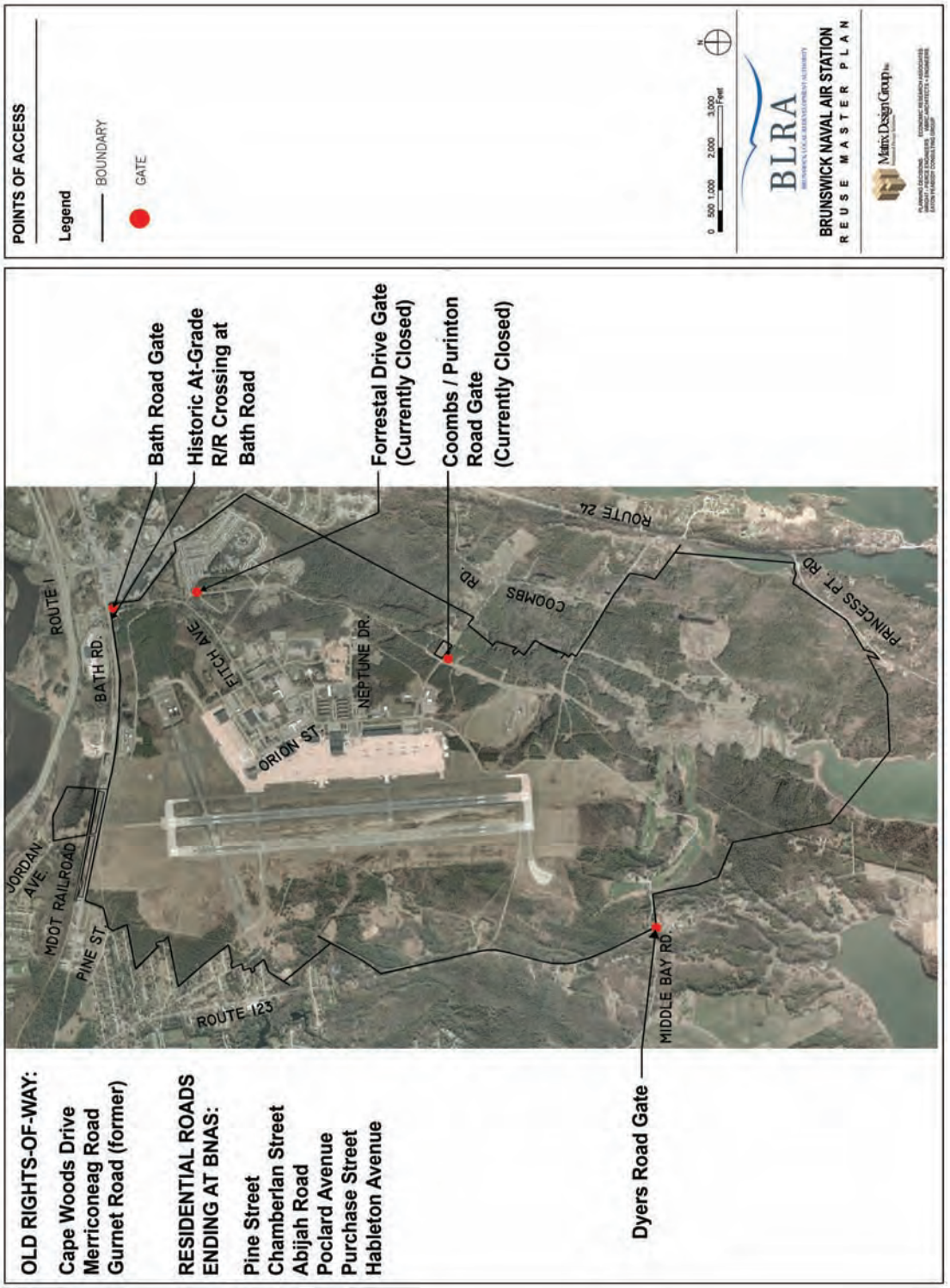
The Brunswick Naval Air Station property is presently served by a system of internal streets and roadways that provide access primarily to the cantonment area of the base, where a majority of the development exists. While vehicular access is provided to more remote areas of the base, such roadways are generally unimproved, and limited in terms of public access. Major portions of the base, located primarily in the southern portions of the property are not accessible by vehicle.

The Main Gate is located just off Bath Road, west of the Bath Road / US 24 intersection that serves the Cook's Corner commercial area. Fitch Boulevard, a four-lane facility serves as the main arterial roadway into the cantonment area. Currently, a security checkpoint is located approximately 500 feet from the entrance at Bath Road. For visitors without approved pass and decal badges, security checks must be processed at Building 38, a new facility constructed in 2004 on the west side of Fitch Boulevard; the former pass building on Bath Road is used for other security purposes.

Vehicular access from the south is limited to the Dyer Gate, located off Harpswell Road on the western side of the base. Dyer Road also provides access to BNAS's 9-hole Mere Brook Golf Course, which is open to the public. The security checkpoint for access into the main portion of the base from Dyer Road is located 1.4 miles east and north of the golf course. **Exhibit 31: Points of Access Map** illustrates the vehicular access points serving the property, only two of which are currently in use.

The existing network of streets and roadways within the base property varies in standard based on the purpose served. In general, streets within the cantonment area are bituminous-surfaced, with storm drainage and granite curbing. Sidewalks are present in many areas. In the more "rural" portions of the base property, particularly the areas to the south and the northwest, the roadways are not curbed and rely on open ditches and culverts for storm drainage. Sidewalks are generally not present within these areas. Given the present use of the site, the internal streets and adjacent street network provide adequate capacity. Some routine maintenance of the streets may be appropriate.

Exhibit 31: Points of Access Map



Source: Wright-Pierce Engineers

McKeen Street Housing Area

The following information on utilities is provided for the McKeen Street Housing Area:

- The wastewater system is connected to the public sewer system and disposed of by the Brunswick Sewer District. The condition of sewers is expected to be similar to those within the base cantonment area.
- The water supply system is connected to the public water system by the Brunswick-Topsham Water District. The condition of the water system is expected to be similar to that within the base cantonment area.
- Natural gas is provided to each residence within the housing complex by Maine Natural Gas.
- Electric power is provided to the property by Central Maine Power.
- Vehicular access is provided to the McKeen Street Housing Area via a private internal street network that connects to the municipal street system at several locations. The streets are bituminous surfaced with storm drainage, granite curbing, and sidewalks. Given the present nature of use of the site, the internal streets and adjacent street network provide adequate capacity. Some routine maintenance of the streets may be appropriate.

Potential Infrastructure Improvement Costs

While current infrastructure systems provide adequate service for operation of the BNAS facility, future private-sector redevelopment activities will likely require significant improvements to bring systems up to local standards, and to meet expectations of the market place. "Order of Magnitude" estimates of capital costs, therefore, have been provided. This level of information will enable area public service providers and/or other entities to make infrastructure acquisition and/or operational decisions as part of the formulation of future implementation strategies. It should be noted that such estimates do not include secondary and tertiary upgrades or site improvement costs that might be associated with specific building demolition or construction, parking and/or landscaping improvements, or other detailed cost estimates associated with specific future project development. As noted elsewhere in this document, the future use of the airport facilities remains undetermined at this point in the process; capital costs associated with its continued operation is addressed separately, by others.

The cost of utility and infrastructure upgrades include: (1) those that are needed simply for new distribution, such as new development areas that previously had no utilities or road access; and, (2) costs that are needed to upgrade an existing system based on substandard conditions and/or added demand. All projections of capital costs in this section of the report are "Order of Magnitude" and for budgetary purposes only; specific items have been identified as part of those opinions of probable costs. Assumptions

of size, type, materials and unit costs of components have been developed based on past experience in the region. No detailed design has been performed to support these opinions.

Current estimated costs to upgrade utility systems without any expansion to address any future land use changes are based on review of the nature and condition of existing sanitary sewer, water, and electric power distribution systems, as well as a review of local standards and requirements in order to operate, maintain, and/or acquire the systems by the Brunswick Sewer District, the Brunswick-Topsham Water District, and/or Central Maine Power, respectively. Estimated improvement costs for these systems include:

- Sanitary Sewer System $6.4 million
- Water System $9.1 million
- Electric Power Distribution System (to be determined)
- Steam Distribution System (Removal) $4.0 million
- Natural Gas System (n/a)

Regarding the Steam Distribution System Removal line item above, there are approximately 18,500 linear feet of steam lines and 78 steam pits that potentially contain asbestos insulation.

Buildings and Facilities

As a major part of the study's inventory and analysis of existing conditions, a Building and Facilities Assessment was conducted for the most significant of the BNAS building resources. The purpose of the study was threefold: (1) to identify and document significant buildings and facilities that might be considered for similar or adaptive reuse in the future; (2) to determine the extent of conditions and characteristics that might impact a building's cost-effective utilization or adaptive reuse; and, (3) to provide a standard method and format to document the data for use during this planning study, and for future marketing of the building and facility resources.

During the data collection and building and site inventory process, Matrix Design Group Planning Team members (specifically, representatives from Bangor-based WBRC Architects and Engineers), obtained in excess of six gigabytes of digital information, comprising over 5,000 record documents (drawings, databases, environmental reports) associated with the study area. The review of the data and resulting summaries are based in large part on data and information provided by the US Navy through the Computer Aided Design (CAD) and Geographic Information System (GIS) it maintains, as well as information obtained during a series of on-site Property Conditions Assessment (PCA) building walkthroughs. More detailed data on many individual facilities, such as

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building floor plans and land use data layers, is available in the CAD and GIS database provided by the Navy and contained digitally on DVD, all of which is provided in the appendix of this report. It should be noted that the data obtained may not include all facilities on the property.

Over the years, since the base was originally developed, facilities were sometimes built, added to or demolished by different Navy organizations, consistent with the Navy's Base Master Plan, the most recent of which was prepared in May 2002 by Prosser & Hallock. Consequently, not all of the information was necessarily recorded in the current database; however, it is believed that pertinent data is substantially complete and provides a reasonably adequate view of the built environment at BNAS. The primary source of this data, consisting of digital information downloaded from the BNAS Public Works Digital File Server located in Millington, Tennessee was made available to the Matrix Planning Team by BNAS Public Works personnel. Data was obtained in the following file formats, which has been provided to the BLRA in digital form on DVD in its entirety:

- TIF (Scans of record drawings, aerial imagery, site photography)
- PDF (Environmental reports, prior master planning efforts, project documentation)
- DWG (CAD files of buildings, either present on-site, or demolished)
- DWG (CAD files of various work efforts including asbestos removals, lead based paint abatement, and routing maintenance)
- XLS or .MDB (Work order summaries, project and infrastructure database, annual inspection summaries, and other related documents)
- JPG (Aerial photography, building interior photography, etc.)
- EOO (Arcview shape files for GIS based mapping)

One source of information that proved to be invaluable during the planning and evaluation process was the BNAS Buildings Database, which is maintained by Base Public Works civilian and military staff. Much of the information contained in this database references category codes and descriptors found within the Navy's NAVFAC P-72 manual entitled *Facility Category Codes*. Information categories include: year built, dimensional data, area, year accepted by government, cost to the government, programmed uses occupying the space, category code descriptions, and other information.

Evaluation Approach and Inventory Assumptions

Members of the Matrix Design Group Planning Team visited the base on several occasions with the assistance of Navy and civilian base personnel representing the Public Works and Public Affairs departments. The purpose of the field visits was to conduct a baseline property condition assessment to obtain readily available information from

site and building walkthroughs. The walkthroughs and data collection were performed generally in accordance with the standards outlined in *ASTM E 2018-01 Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process* to identify and communicate the presence of conspicuous defects or material deferred maintenance by non-intrusive visual observations.

Buildings Inventoried

To provide the maximum benefit to the BLRA for evaluation and implementation purposes, only structures that were considered "significant" to the reuse master planning process were included in the on-site building surveys. Of those buildings, ten were not inventoried or were inaccessible for one or more of the following reasons:

- Buildings with environmental hazards
- Buildings with boarded or blocked access points or windows
- Buildings identified as unsafe for access or in the process of demolition
- Buildings within the cantonment area national security access restrictions
- Buildings within the ordnance and weapons compound

Property Condition Assessment (PCA) Forms

Property Condition Assessment forms were completed for the 48 significant buildings. These forms documented general findings related to building architecture, structure, HVAC, mechanical, electrical, and site conditions. Opinions of probable cost for noted deficiencies and remedies were not provided as part of this process. A list of personnel resources and contacts who assisted the Planning Team in this evaluation, along with a list of current building occupants, are provided in **Appendix D** of this report.

Survey staff consisted of experienced / registered architects or professional engineers familiar with commercial, residential, institutional, and industrial building construction materials and methods. Site reviews documented and/or reviewed the following:

- Record drawing information
- General building information
- Year built, area in size, length, width, height, and number of stories
- Architectural, structural, and electrical characteristics
- Site accessibility
- HVAC, plumbing, fire alarm, and sprinkler systems
- Roofing, interior and exterior characteristics
- Noted deficiencies
- Photographic documentation

Historic Development of the Base

The BNAS cantonment area is a multi-purpose campus that has been built and changed over many years to serve a variety of purposes. It has been an airport since its initial development in the late 1930s, built on the site of a municipal airfield. Its primary mission has been to house and maintain various patrol aircraft and other Navy aviation and non-aviation activities. The base can be considered both an industrial facility where aircraft are hangared, maintained and flown, as well as a support facility with offices, housing and ancillary uses associated with a relatively self-contained operation.

The physical assets found at the base, including buildings, roads, runways, utilities and other infrastructure systems, are of various ages and condition. Some facilities serve very special purposes while others are relatively generic and could be reused for a variety of alternative activities. Because the base is so self contained, there is a wide range of facilities and land uses that are not directly attributable to the primary mission of the base, but support the resident employees and their families. These include retail stores, extensive recreational facilities and other resources.

The main base is divided into several distinct land uses including residential, industrial and administrative, aviation-dependent, recreational and open space. A large part of the open space that is located on the south side of the base consists of a protective buffer around the Navy's weapons storage facilities. With the exception of the industrial and administrative area, most of these areas are relatively distinct and separated from other uses. The central administrative core of the base includes a mix of office, shop and support space along with various public uses such as recreational facilities.

Summary of Base Development 1940-2000

- Maintenance Buildings 601 and 337
- Morale, Welfare, Recreation Buildings 357 and 339
- Bachelor Housing Buildings 205 and 947
- Operational Buildings 115 and 016
- Training Buildings 99 and 822
- General Storage Buildings 57 and 964
- Personnel Support Buildings 45 and 588
- Laboratories and clinics Buildings 33 and 180
- Facilities 21 and 101
- Communications & Navigation Buildings 16 and 785
- Fuel Related Facilities 7 and 479
- Weapons Storage Buildings 5 and 466
- Buildings 1,638, and 554

Exhibit 32 through **Exhibit 38** depict the transition of the base from the 1940s through the current configuration in ten year intervals. The source for these seven diagrams is the United States Navy.

Exhibit 32: BNAS Build-out in 1940s

Exhibit 33: BNAS Build-out in 1950s

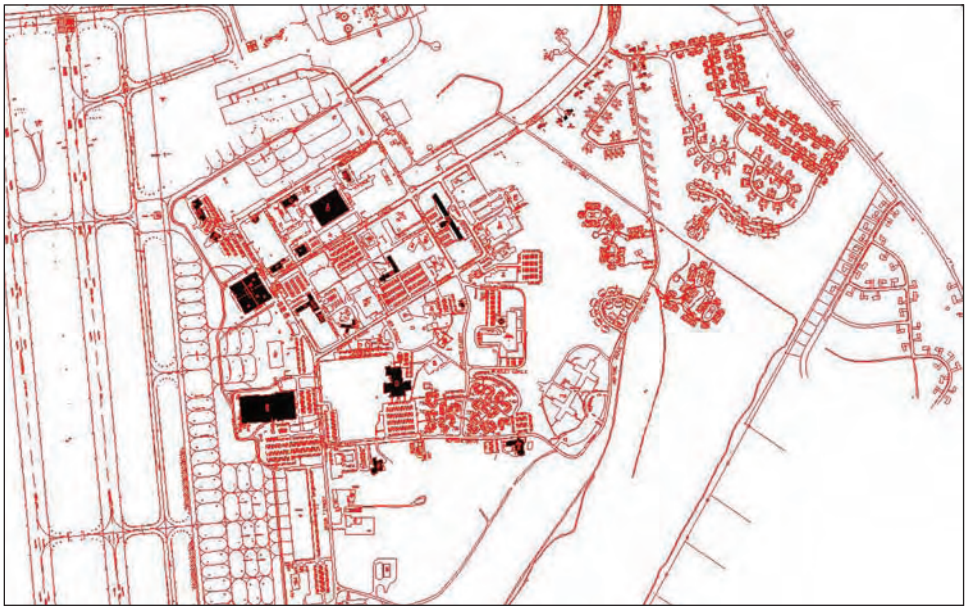


Exhibit 34: BNAS Build-out in 1960s

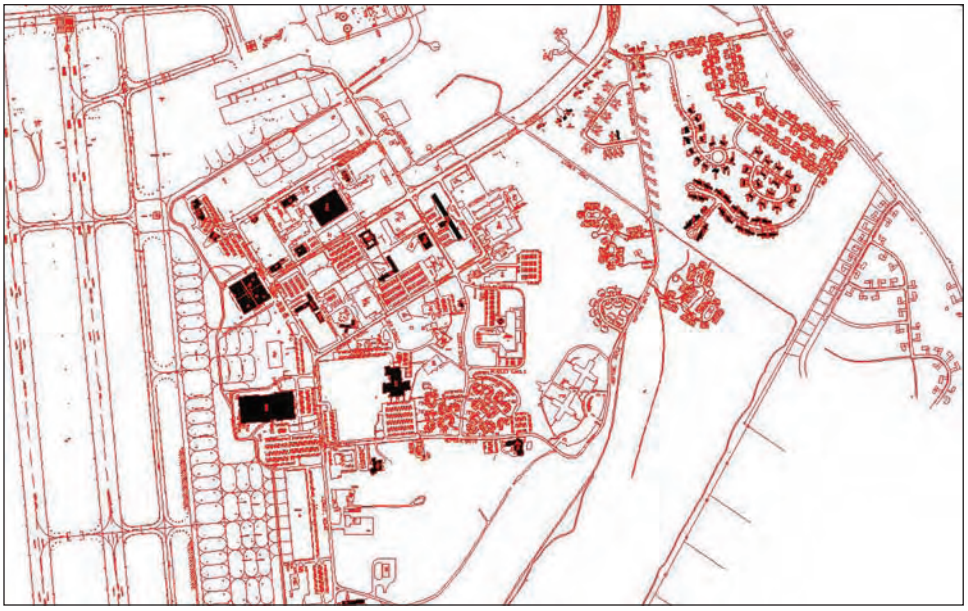


Exhibit 35: BNAS Build-out in 1970s

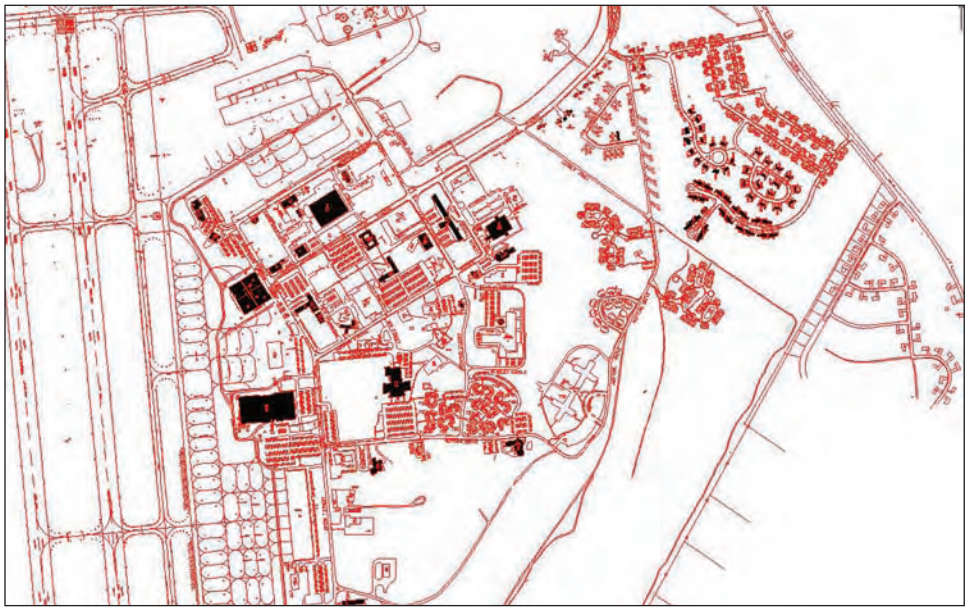


Exhibit 36: BNAS Build-out in 1980s

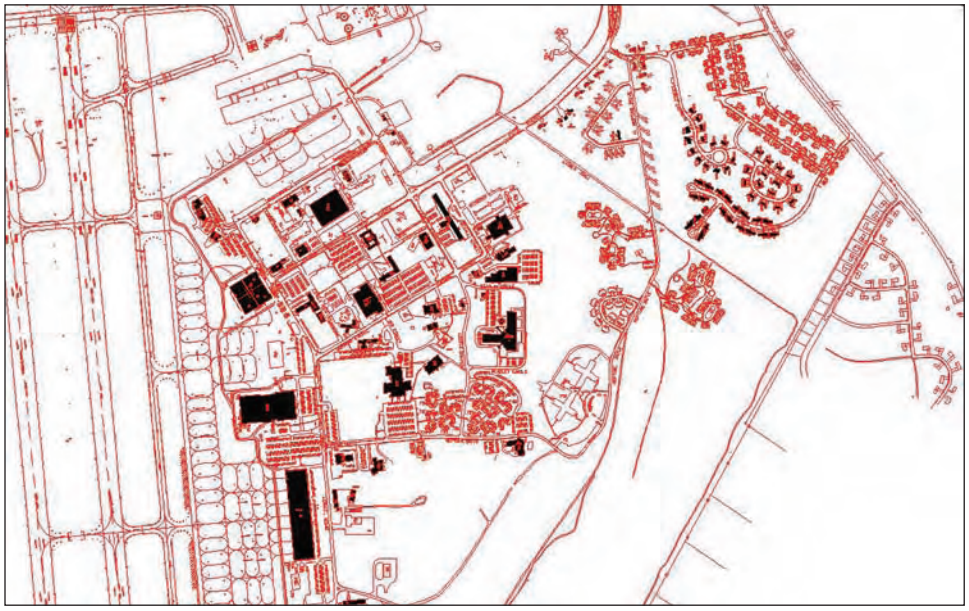


Exhibit 37: BNAS Build-out in 1990s

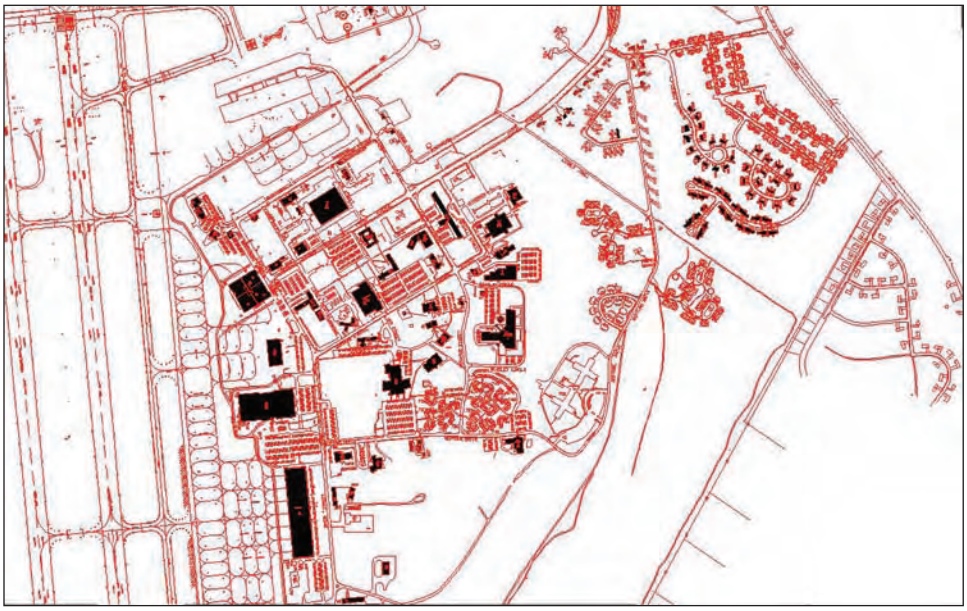
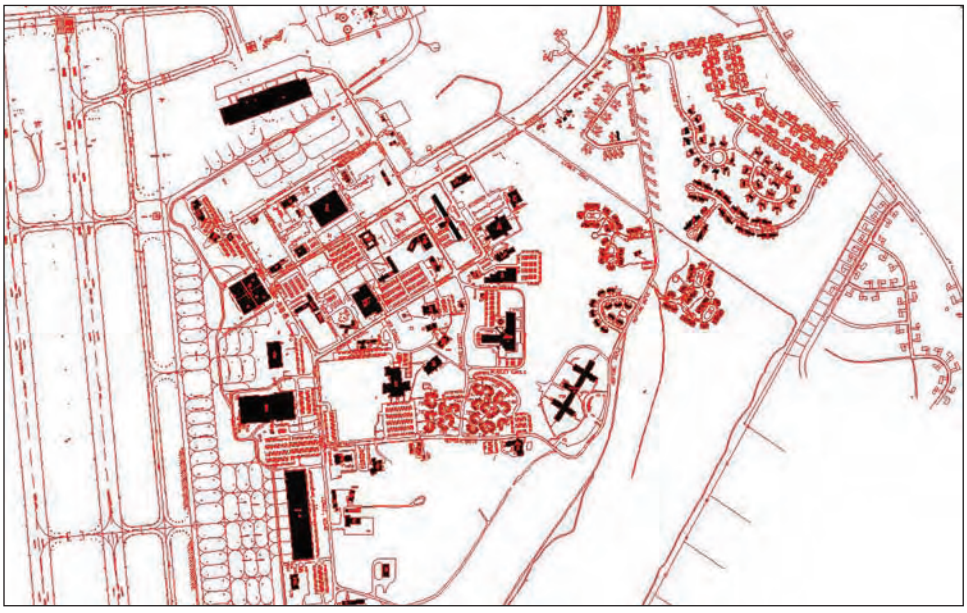


Exhibit 38: BNAS Build-out in 2000s



Summary of Significant Buildings and Facilities

General descriptions of some of the major facilities within the Brunswick Naval Air Station are listed below. The descriptions are provided in a general order from north to south through the central cantonment area of the base. For detailed maps and charts illustrating the facilities inventoried, please see **Appendix D**.

Main Gate Area

The Main Gate is located just off Bath Road west of the Bath Road / US 24 intersection that serves the Cook's Corner commercial area. Access to the base is via Fitch Boulevard, after passing the security checkpoint that is located approximately 500 feet from the entrance at Bath Road. For visitors without approved pass and decal badges, security checks must be processed at Building 38, a new facility constructed in 2004 on the west side of Fitch Boulevard; the former pass building on Bath Road is used for other security purposes.

Air Operations / Fire Station

Building 200 houses Air Operations for the base. With approximately 20,759 square feet, the facility is located at the intersection of Seahawk Avenue and Orion, on the north end of the aviation complex. The facility contains the air traffic control tower and passenger terminal area. A new control tower, which has replaced the functions of Building 200, is located on the west side of the airfield. Adjacent to Building 200 is the base Fire Department Building 292. This 10,665 square foot provides direct access to the airfield as well as access to local roadways. The Fire Department is responsible for responding to airfield emergencies, as well as structure emergencies. This area is also the site of Building 45, a 3,000 square foot warehouse-type structure used for hazardous waste storage and transfer. Building 200 is shown at left.

Naval Mobile Construction Battalion Cluster

Twelve small metal-frame buildings located adjacent to and south of Bath Road provide shop, storage, and office space for the Naval Mobile Construction Battalion. The complex is accessed from internal base roads serving the north end of the base.

Hangar 6

Located on Pegasus Street (extended), Hangar 6 is the newest of the base's hangar facilities. Constructed in 2004, this state-of-the-art hangar has a total of 174,217 square foot, and contains hangar, maintenance shop, and administration space. The hangar deck has six bays capable of handling both the P-3 aircraft, as well as 737-800 aircraft, proposed to replace the P-3 platform. While maintenance shops are located on the ground floor, administrative space is provided on the second floor; 294 vehicular parking spaces are included on the northwest side of the building, with the southeast side dedicated to airplane access associated maintenance activities.

Fuel Farm

Two large fuel tanks and associated facilities, including containment berms, are located in the northern part of the base, just east of the air-field and south of Bath Road. Access to this area is from internal base roads, with no direct access to Bath Road.

Supply Warehouse

The Station Supply Warehouse, also known as Building 294, is a single-story facility containing approximately 64,630 square feet of space. It has a concrete masonry unit exterior, truck loading docks on the northern side of the building, and is situated on Seahawk Avenue.

Public Works

The base Public Works are distributed among multiple buildings in a complex located at the south end of the flight line on Huey Drive near the south end of Orion. The Public Works recently were located off the flight line at the opposite end of Orion, but have since moved to their present location. Building 53 contains the 10,000 square foot administration office, while Building 584 contains 7,200 square feet of general warehouse space and Building 19 contains about 6,000 square feet of carpentry shop space. Additional structures make up the Operations and Maintenance facility, which is the former DPW located on Orion Street. This complex includes the 15,000 square foot Building 225 (1950s era) and the 7,200 square foot Building 252 (built in 2003). These facilities are used to repair heavy equipment. Building 53 is shown here.

Transient Visitor Quarters / Building 750

This two-story, 115,000 square foot military hotel was built in 2004 to serve transient enlisted base visitors. The building includes 248 double-occupancy hotel rooms, central lobby and reception area, administrative office, staff lounge, laundry facilities, and storage and vending areas. The building does not have an elevator, which would be necessary to meet ADA requirements.

Hangar 4 / Building 250

These two structures were constructed in the 1940s next to the airfield on Orion Street as part of the original base development. They contain a combined total of 178,963 square feet of space which is used to serve as hangar and administrative space as well as maintenance shops. The hangar deck, estimated at approximately 90,000 square feet, contains enough room for two aircraft. On the second floor lies administrative space, and next door in Building 250 is the 90,000 square foot base headquarters, which is mostly comprised of administrative space and shops.

AIMD Ground Support

Building 86, totaling 31,980 square feet, is accessible only by the airfield, and is located within the flight line. It is primarily used for the maintenance of ground support equipment for aircraft, including aircraft tugs and stairs for aircraft access. A separate structure of 18,000 square feet constructed in 2004 is also located within the flight line, but is accessible from Orion Street as well as the airfield. It stores equipment used to keep the airfield clear, such as snow removal vehicles.

Wing Headquarters

Building 87 (Wing Headquarters) was constructed in 1988, and at 52,513 square feet, remains the base's most substantial office building. The Commander Patrol and Reconnaissance Wing Five are headquartered at this structure, which is located on the eastern side of the core area off Pegasus Street.

Surface Naval Reserve Center

Building 151 (Surface Naval Reserve Center) is located on Fitch Avenue at the entrance to the cantonment area. This two story, 14,400 square foot pre-engineered metal building was constructed in 2001. Another structure located on Sewall Street is designated as Building 150, and is 13,196 square feet. It is primarily used for classrooms for the naval reserves and office space for the legal department and government workers union. Building 151 is shown below.

Hangar 5

This 163,454 square foot hangar dates from 1982 and is also located on Orion Street. It is used for aircraft maintenance and corrosion control, and has seven aircraft bays for that purpose. The ground floor of the hangar contains the maintenance shops, while the second floor contains some administrative space.

Other Facilities

Community Facilities

Located on Burbank Avenue, Building 20 houses a post office, a credit union, and educational organizations including the Navy College Learning Center, New Hampshire College, and Embry-Riddle University in 25,697 square feet of space. Other community facilities include Building 26, which houses a 6,500 square foot children's day care center, and Building 25, which contains a 10,000 square foot office building utilized by the base personnel office.

Lodging Facilities

Several facilities designed to provide short-term lodging are located on the base, given its role as a major Navy Reserve training center. These include the Navy Lodge, with a 26-room capacity available to military personnel and retirees, and the Orion Inn, located at Building 512, which is designed as a bachelor / transient quarters and contains 65 suites plus 10 executive suites. Also located in the same building are three barracks-type quarters, resulting in a structure totalling three floors and 61,432 square feet in size.

Residential Facilities

Long-term quarters exist within the core cantonment area, including eight buildings which each have three floors and total 22,174 square feet apiece. They are designated Buildings 212, 213, 214, 215, 217, 218, 219, and 220. Buildings also serving similar functions include 512 and two new BEQ complexes.

There are numerous other military housing developments, ranging in size, condition, and age. Most, with the exception of the McKeen Street housing development, are situated in the northeast corner of the base. These developments are operated and maintained by GMH, a private entity with a lease on various parcels of BNAS housing property that will last until 2054.

- Station Quarters, contains mostly 3-bedroom residences (12), plus four 4-bedroom houses along Fitch Street. All residences are single-family detached.
- Brunswick Gardens, built in 1960, almost exclusively contains 3-bedroom units as well, (40 units), with the exception of four 4-bedroom units.
- Midway Terrace, dating from 1982, has a heavy focus on 2- and 4-bedroom units (40 and 22 units, respectively).
- Woodland Village was built in 2001 and 2006 totaling 116 units in various duplex and quadplex configurations. Homes are either 3- or 4- bedroom residences.
- Mariners Landing, 2003, is heavily focused on smaller units, with the vast majority (122 units) being of the 2-bedroom variety. There are two each of the 4- and 5-bedroom types.
- McKeen Street, containing 188 3-bedroom residences as well as 43 4-bedroom residences, is situated to the west of the base, near downtown Brunswick.

Training Facilities

There are six training buildings on base totaling over 270,000 square feet. These structures include Building 54, (30,000 square feet), Building 644, which houses the P-3 aircraft training facilities and contains 10,100 square feet, and Buildings 16 and 82. There is also a small arms firing range on Pegasus Street, constructed in 2004, which is 4,242 square feet in size and contains five shooting lanes, a range master's control area, and storage.

Historic Bunker

This 1,258 square foot facility, classified as historic, is a small earth-bermed arms magazine. Its location at the intersection of Fitch Avenue and Pelican Street is outside the weapons area.

Weapons Storage and Operations

In the southeast portion of the base are located many storage structures and facilities totaling 204,215 square feet that are separated from other uses by a 3,000 foot woodlands buffer that extends clear to the southern border of the base. Ordnance storage facilities are comprised of Buildings 59, 60, 62, 63, 64, 69, 71, 76, 126, 127, and 128. Concrete bunkers with earth-bermed roofs (National Guard Magazines), are designated as Buildings 126, 127, and 128.

Medical Facilities

A 25,354 square foot building on Sewall Street houses medical and dental clinics that provides 24-hour emergency services for local military personnel and retirees. Local area hospitals handle inpatient services.

Recreational Facilities

An outdoor soccer field, baseball / softball fields, tennis courts, and picnic areas are located throughout the cantonment area, as well as other recreational facilities such as a recreation mall and bowling alley (Building 211), a 16,000 square foot fitness center and gymnasium (Building 25), and also an auto / hobby shop located in Building 29. Mere Brook Golf Course is a 9-hole facility in the southern portion of the base that includes a driving range, a 3,000 square foot clubhouse, and snack bar. This course is accessible from Harpswell Road and is open to both military and civilian users.

Environmental Conditions

Overview

This section presents a summary of known environmental conditions at BNAS that should be considered during reuse planning. Further details regarding existing environmental conditions and a data gap analysis are discussed in the comprehensive environmental review document presented in **Appendix G**.

This environmental analysis was prepared using limited data generated by other parties. The findings and conclusions are based on the consultants' professional opinions and on documents provided and produced by others. A complete list of references used during this analysis is presented in the comprehensive environmental review document in **Appendix G**. The potential exists for unreported and unknown environmental issues associated with the site or surrounding area that are not included in this document.

Background

Brunswick Naval Air Station has been the subject of environmental investigations, studies, and cleanup actions since the early 1980s. Aviation activities at BNAS during more than 70 years of operation generated petroleum hydrocarbons, waste oils, paint residues, hydraulic fluid, used batteries, and other wastes. Disposal of some wastes occurred on site. Later, recognition that these wastes might be harmful to human health and the environment resulted in laws and regulations governing their disposal and cleanup (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] and the Resource Conservation and Recovery Act [RCRA]). The Installation Restoration Program (IRP) was developed by the Department of Defense (DoD) to comply with federal guidelines for managing and controlling past hazardous waste disposal actions. The IRP focuses on cleaning up contamination from past hazardous waste operations and past hazardous material spills (i.e., hazardous substances). However, it is not an all-encompassing program. The IRP is intended to address the cleanup of contamination and damage resulting from past, not current, activities.

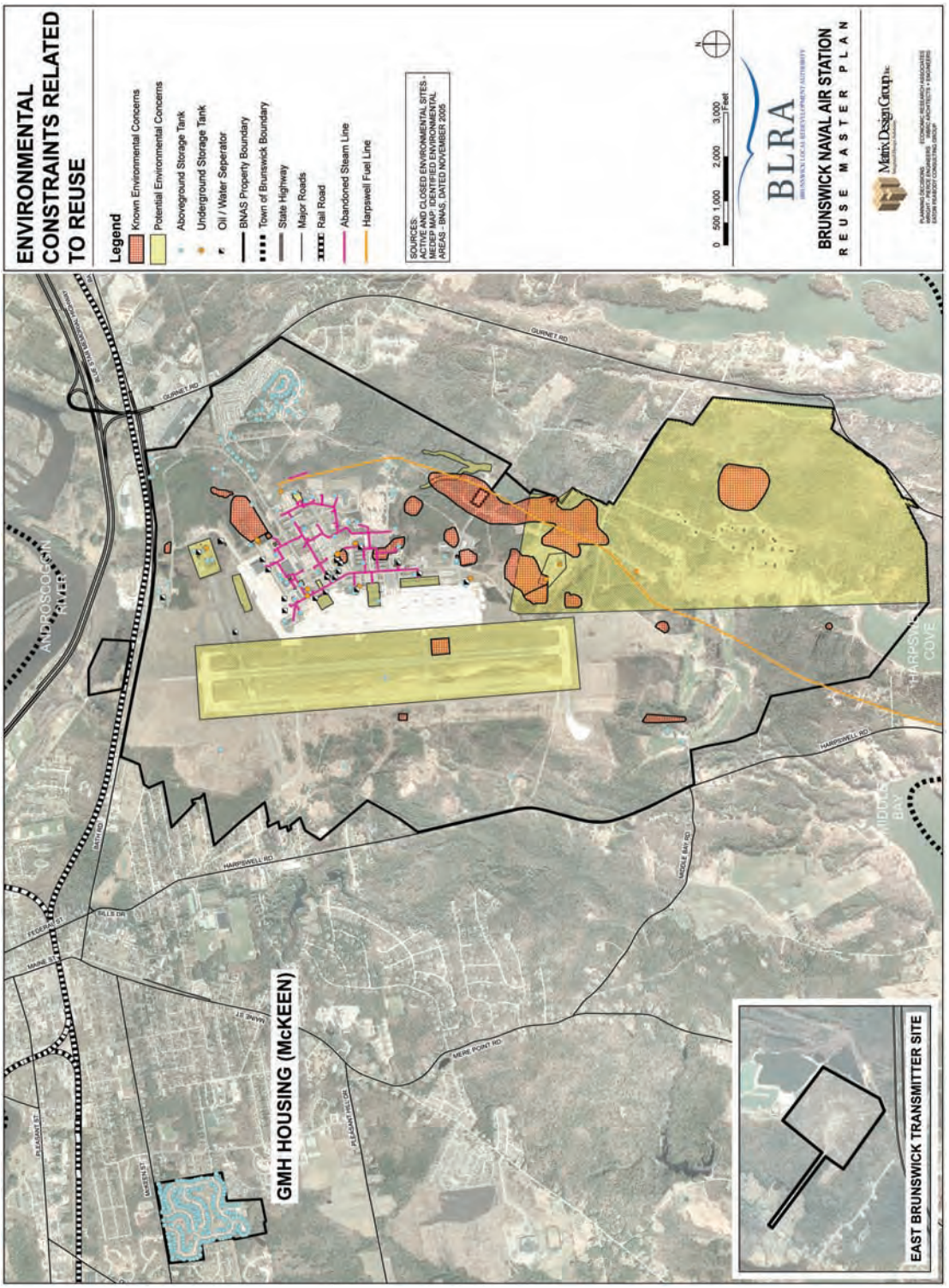
In 1987, BNAS was placed on the Environmental Protection Agency's (EPA's) National Priority List; therefore, the EPA is primarily responsible for overseeing the investigation and cleanup of BNAS, with assistance from Maine Department of Environmental Protection (MEDEP). In 1990, the Navy entered into a Federal Facilities Agreement (FFA) with the EPA and MEDEP. The FFA was the first step to ensuring the environmental impacts were thoroughly investigated and appropriate remediation actions taken. Additionally, the FFA established a procedural framework for developing and implementing Remedial Investigations, Feasibility Studies, Remedial Actions, and Operations and Maintenance at the site in accordance to Superfund policy and federal

and state hazardous waste laws and regulations. A copy of the complete FFA is attached in **Appendix G**. Underground storage tank (UST) and aboveground storage tank (AST) sites contaminated only with petroleum products are managed by MEDEP.

Known Areas of Environmental Concern

Historically, industrial operations were present at BNAS to support a variety of Air Force and Navy operations. Currently, there are known environmental sites in active and inactive phases of investigation and remediation at BNAS. These sites are being investigated and/or remediated by the Navy under the IRP and the Military Munitions Response Program (MMRP). A summary table of known information about each site and a cross reference table listing each of the known environmental sites by proposed land use are included in **Appendix G**. A map showing potential environmental constraints is provided as **Exhibit 39: Environmental Constraints Related to Reuse**.

Exhibit 39: Environmental Constraints Related to Reuse



Source: Matrix Design Group

Active and Conditionally Closed IRP Sites

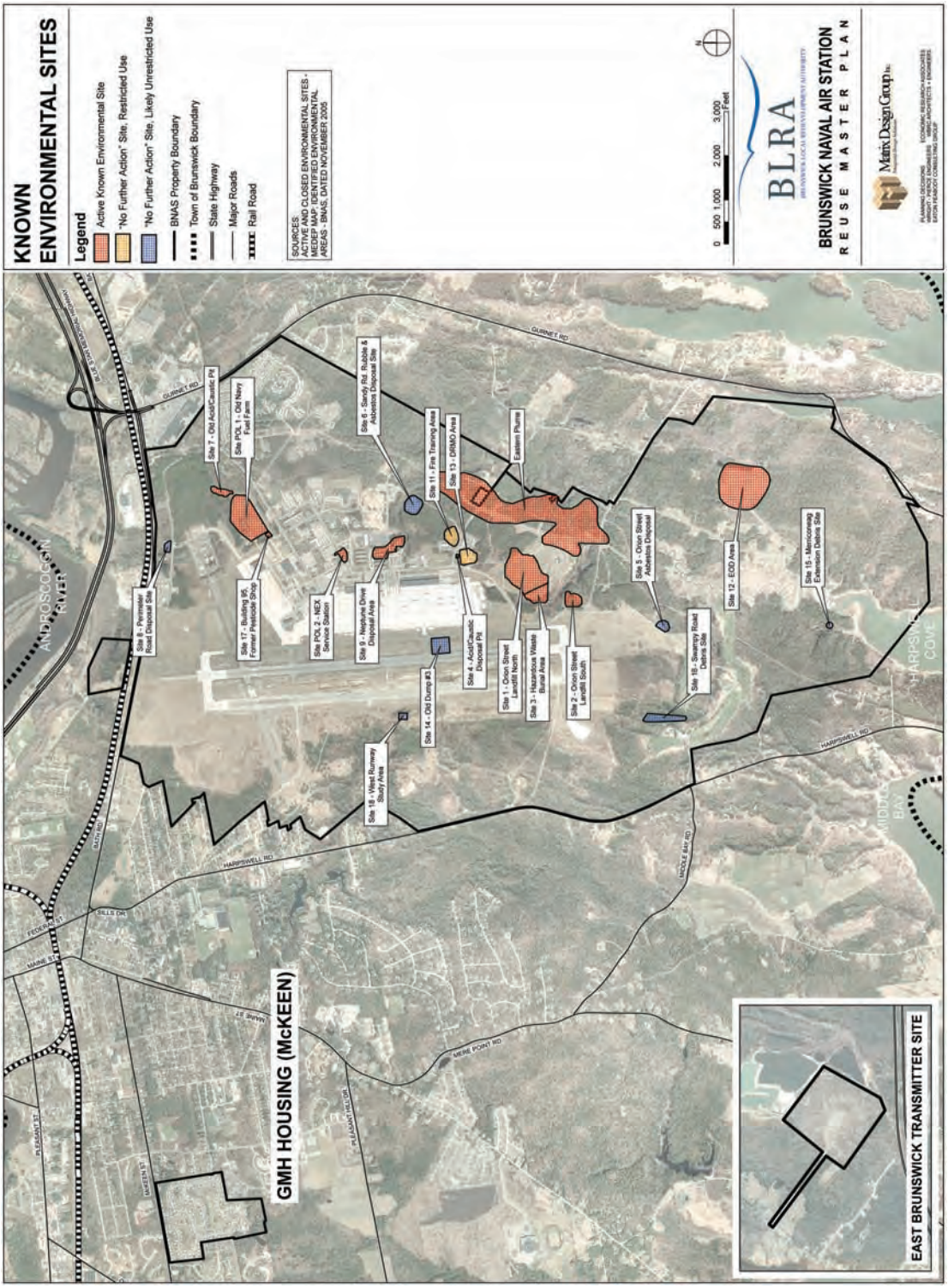
Since 1983, the Navy has identified 20 Installation Restoration Program (IRP) sites and an extensive groundwater contaminant plume at BNAS as summarized the comprehensive environmental review document presented in **Appendix G**. These sites are shown on **Exhibit 40: Known Environmental Sites**. Several source areas have been since addressed by remediation activities including excavation and source removal, and installation of a groundwater treatment system. There are presently 13 active IRP sites including:

- Site 1 – Orion Street Landfill North
- Site 2 – Orion Street Landfill South
- Site 3 - Hazardous Waste Burial Area
- Site 4 – Acid/Caustic Disposal Pit
- Site 7 – Old Acid/Caustic Pit
- Site 9 – Neptune Drive Disposal Area
- Site 10 – Harpswell Cove Fuel Depot (transferred to DESC)
- Site 11 – Fire Training Area
- Site 12 – Explosive Ordnance Disposal (EOD) Training Area
- Site 13 – Defense Reutilization and Marketing Office (DRMO) Area
- Site 17 – Former Pesticide Shop
- Site 19 – Petroleum, Oil, and Lubricants 1 (POL1) Old Navy Fuel Farm
- Site 20 – POL2 Navy Exchange Service Station
- The Eastern Groundwater Plume

The seven inactive sites include:

- Site 5 – Orion Street Asbestos Disposal Area
- Site 6 – Sandy Road Rubble and Asbestos Disposal Site
- Site 8 – Perimeter Road Disposal Site
- Site 14 – Old Dump #3
- Site 15 – Merriconeag Extension Debris Site
- Site 16 – Swampy Road Debris Site
- Site 18 – West Runway Study Area

Exhibit 40: Known Environmental Sites



Source: Matrix Design Group

Specific concerns for each active and inactive site are addressed in the comprehensive environmental review document presented in **Appendix G**, and include: potential need for further sampling / analysis for additional contaminants, some remedies not protective for the long term if land use changes, requirements for institutional controls, and groundwater plume migration off-site and into surface waters.

EPA Records of Decision (RODs) for No Further Action (NFA) are in place for soil at Sites 4, 5, 6, 8, 11, and 13. The NFAs for Sites 4, 11, and 13 were granted because no direct contact or incidental ingestion pathways currently exist. If redevelopment occurs on these sites, additional investigation and remediation may be required. A Draft Consensus Statement providing NFA for Sites 14, 15, 16, and 18 was submitted to the EPA and the EPA responded to the Navy with comments in February 2001. A signed Final Consensus Statement has not been located.

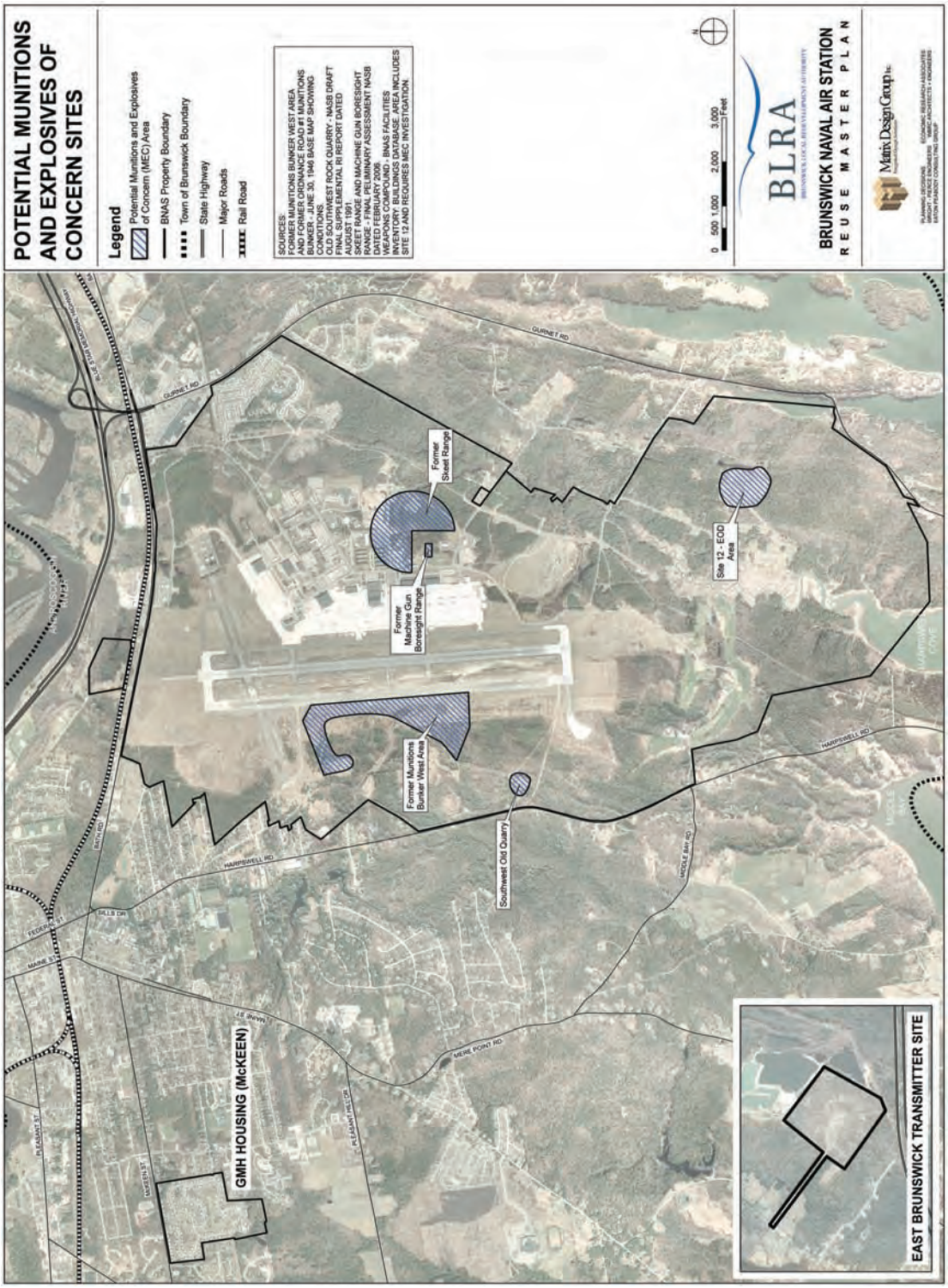
Military Munitions Response Sites

Five sites potentially containing Munitions and Explosives of Concern (MEC) have been identified for investigation under the MMRP as shown in **Exhibit 41: Potential Munitions and Explosives of Concern Sites Map**.

- UXO-1 – Former Munitions Bunker West Area
- UXO-2 – Machine Gun Boresight Range
- UXO-3 – Skeet Range
- Old Southwest Quarry Site
- Site 12 – EOD Area (This site is currently also under investigation in the IRP listed above)

A Preliminary Assessment (PA) has been conducted for the following identified MMRP sites: UXO-1, UXO-2, and UXO-3. An addendum to the PA is planned for the Old Quarry Site and Site 12 - EOD Area. The Navy is in the process of evaluating information obtained in the PA, and will be assessing which of the identified MMRP sites requires additional investigation. A summary of each of these sites is presented in **Appendix G**.

Exhibit 41: Potential Munitions and Explosives of Concern Sites Map



Source: Matrix Design Group

Potential Areas of Environmental Concern

The Navy has completed an extensive amount of investigation and remediation at BNAS. However, based on review of environmental information, historical uses of buildings, processes conducted at BNAS, and knowledge of other bases closed under BRAC, there are numerous data gaps related to environmental conditions at BNAS. Data gaps exist for the identified sites (i.e. IRP, MMRP, and Petroleum Sites), as well as for unknown or potential areas of concern. These data gaps are detailed in **Appendix G**, where the gaps are summarized by site wide concerns, and by land use areas presented in this Reuse Plan. A summary of the potential areas of environmental concern and data gaps is presented below.

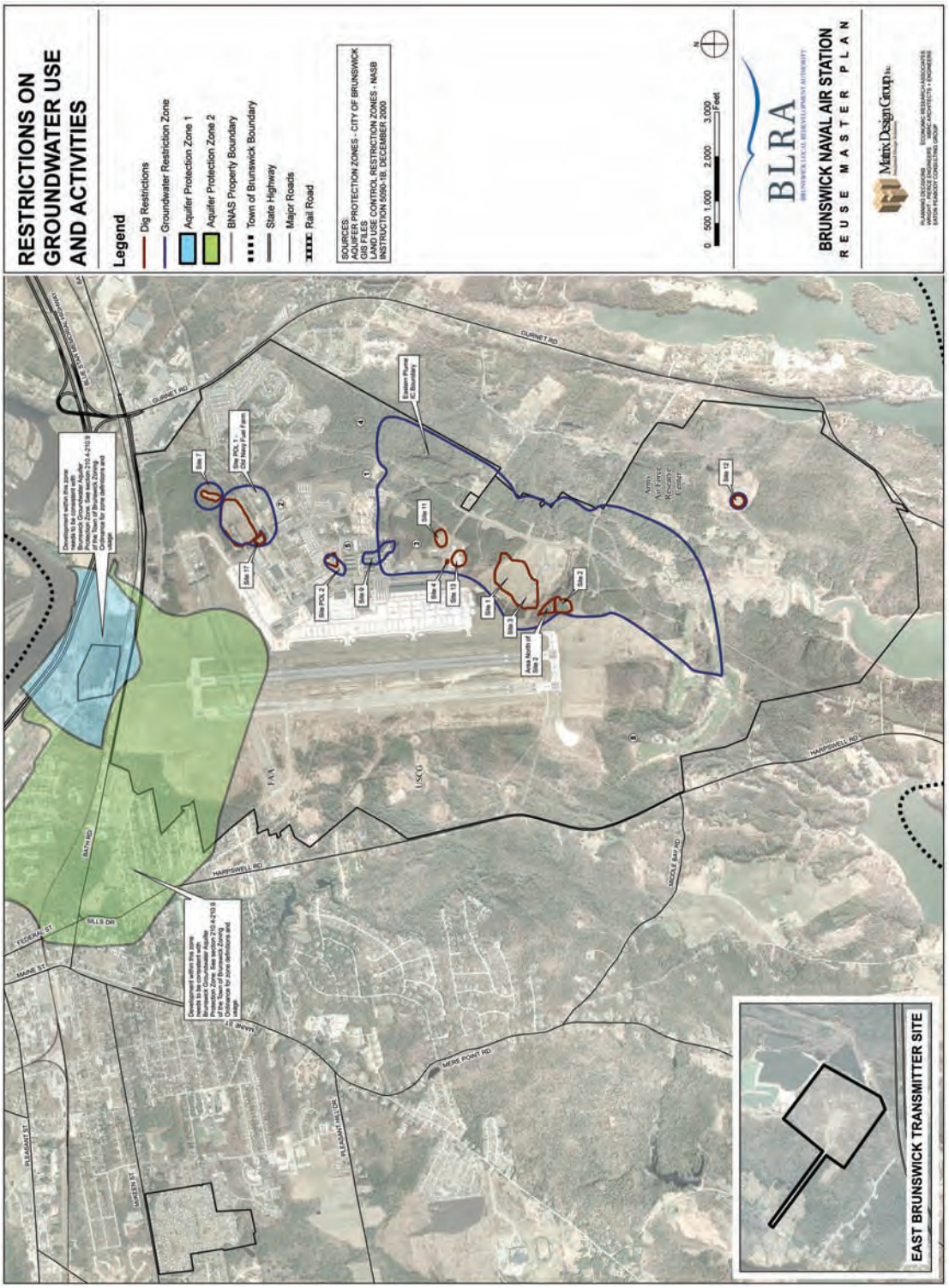
Existing Land Use Controls

The *Draft NAS Brunswick Instruction 5090.1C, Restriction on Excavation Activities and Groundwater Use* document outlines procedures to ensure proper review and coordination of proposed soil excavation and groundwater use. The document provides information on the location of hazardous waste and petroleum sites and enacts land use restrictions in the form of administrative controls on excavation and/or groundwater use activities at sites, as shown in **Exhibit 42: Restrictions on Groundwater Use and Activities** Map. Proposed land use changes during redevelopment may require changes to the LUCs in the event the contamination is not remediated. Where specific land use controls are not considered appropriate for the planned reuse, they are noted in **Appendix G**.

Base-wide Groundwater Model

One of the most significant data gaps is the lack of a base-wide groundwater model that evaluates existing IRP sites, their impact on the Eastern Plume, the nature and extent of groundwater contamination, and hydrologic interactions of surface water, alluvial groundwater, and bedrock groundwater. The EPA has imposed base-wide restrictions on groundwater use, and a model will help define areas appropriate for Land Use Controls.

Exhibit 42: Restrictions on Groundwater Use and Activities Map



Source: Matrix Design Group

Petroleum Hydrocarbon Sites

Twenty-four oil / water separators (OWS) either currently or historically existed at BNAS. Three discharge into the storm sewer system and the remainder discharge into the sanitary sewer system. Documentation regarding integrity testing of the oil / water separator containment systems has not yet been located. Currently, there are 138 active ASTs and 11 inactive ASTs that contain gasoline, diesel, #1 and #2 fuel oil, JP-8, hydraulic oil, waste oil, cooking grease, waste glycol, ethylene glycol, or lube oil. All ASTs are inspected annually in compliance with the BNAS' Spill Prevention, Control, and Countermeasures Plan. From interviews with base personnel and MEDEP, historical releases from ASTs are known to have occurred. There are also 17 active USTs, but the UST database indicates at one time there were 525 USTs on-site. Tanks have been removed and either replaced with an AST, or removed with no replacement due to building demo or conversion to natural gas. Specific locations of former tanks are not available in the database, only associated building numbers and street addresses. Limited to no investigation work was performed or documented during tank removals and/or replacements. Tables in the comprehensive environmental review document presented in **Appendix G** include lists of active ASTs, USTs, and OWSs.

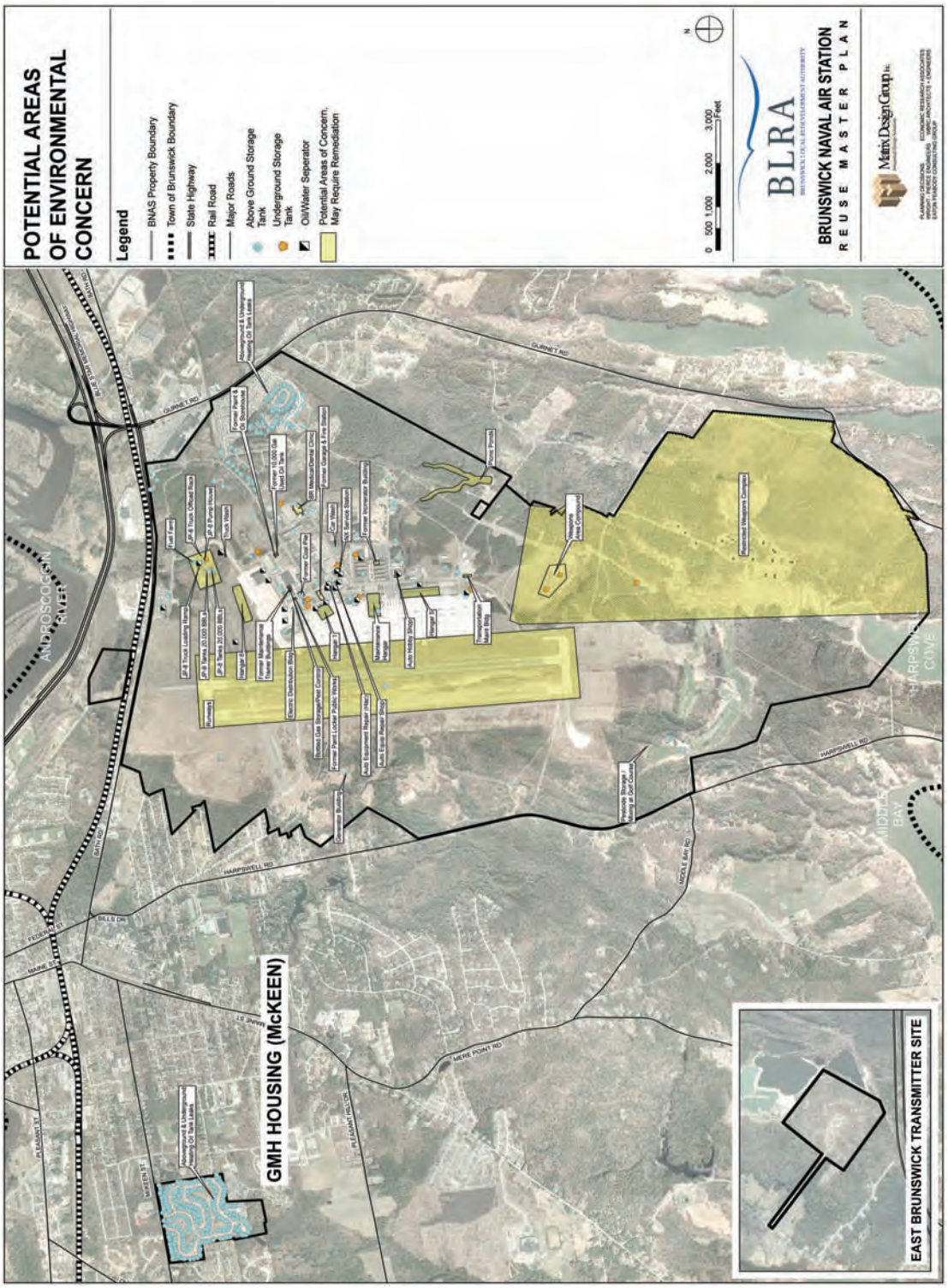
Potential Radiological Contamination

The historical presence of nuclear weapons at BNAS "can neither be confirmed nor denied," according to BNAS Public Affairs personnel. The EPA and MEDEP have requested that the Navy perform a radiological survey. However, as of the publication of this report, the Navy has not yet committed to perform the requested survey.

Light Industrial Operations

Additional potential environmental concerns at BNAS include releases from light industrial operations on the installation that have historically existed in support of BNAS' mission and are shown on **Exhibit 43: Potential Areas of Environmental Concern Map**. These concerns include potential environmental contamination from transformers, paint shops, auto repair shops, medical and dental facilities, maintenance shops, hazardous materials storage and transfer facilities, generator buildings, a gas station, and an incinerator. To date, the Navy has not investigated these areas, therefore potential impacts to redevelopment are unknown at this time.

Exhibit 43: Potential Areas of Environmental Concern Map



Source: Matrix Design Group

Underground Utilities

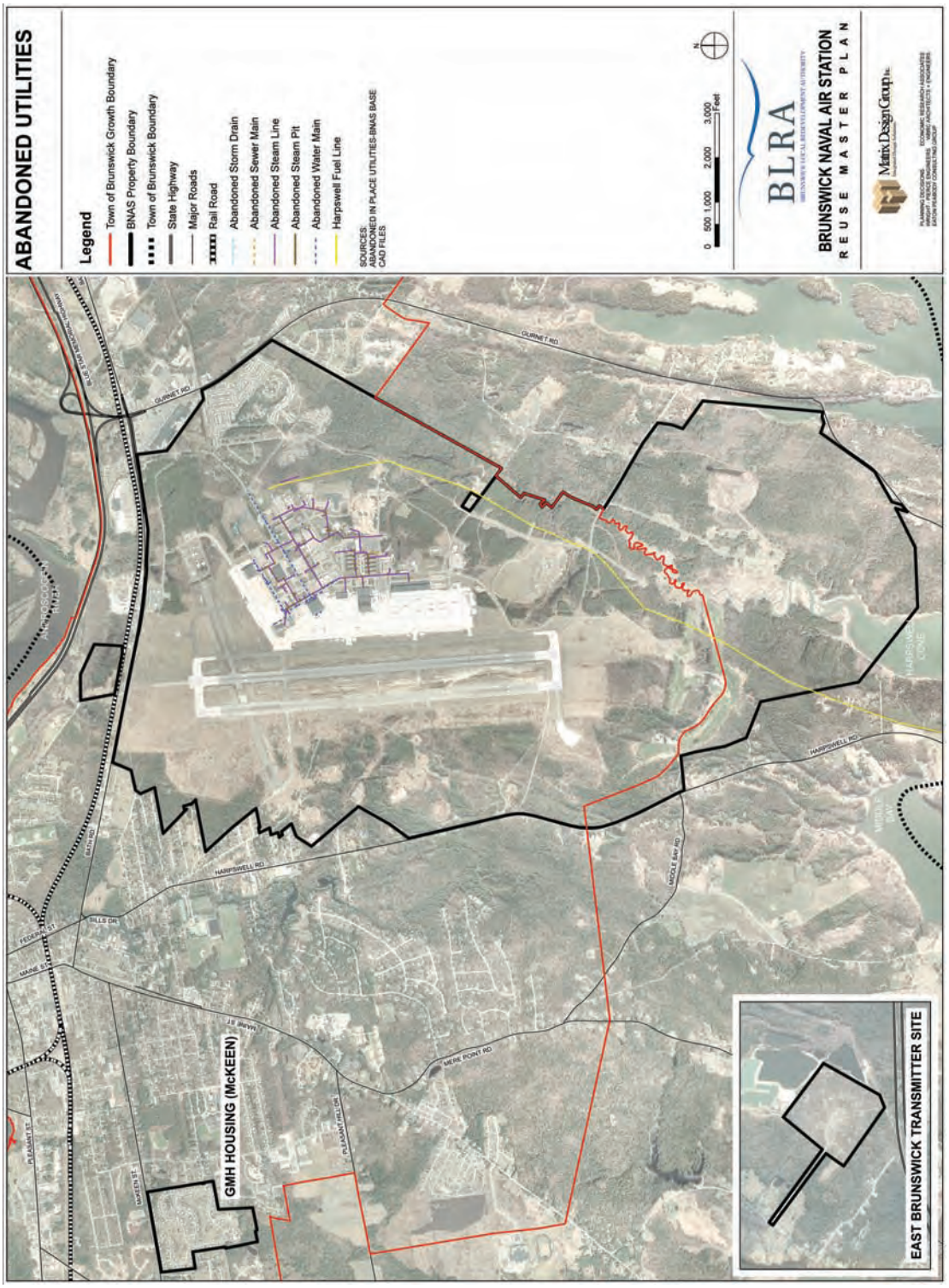
Throughout the base, several historic underground utilities have been abandoned in place. These abandoned utilities are shown on **Exhibit 44: Abandoned Utilities Map**. IRP Site 10 – Harpswell Fuel Line consists of two carbon steel pipelines of 8" and 12" diameters with welded joints, tar exterior coating, and an asbestos felt wrapping which run 12 miles from the US Naval Reserve in Harpswell to the Old Navy Fuel Farm on base. Three miles of pipeline exist on base, 0.5 miles exist in the Town of Brunswick, and 8.5 miles exist in the town of Harpswell. An Environmental Baseline Survey (EBS) was completed in 1997. According to the EBS, the pipeline has been inactive since 1991, at which time the two lines were drained, cleaned, and pressurized with nitrogen. Pressurization with nitrogen was reportedly maintained until August 1995, when the BNAS fuel farm was demolished and the pipeline valve stems were removed. The present integrity of the pipeline is unknown, and it appears that the Transient Quarters were constructed above a section of the fuel lines.

In addition to the fuel line, approximately 20,500 linear feet of up to 14" diameter asbestos-wrapped steam lines have been left in place in 2' x 2' concrete underground trenches throughout BNAS. The asbestos insulation around these pipes requires special handling procedures and off-site disposal if disturbed during redevelopment construction activities. Finally, due to the age of BNAS, many of the water supply lines are constructed of transite (an asbestos and concrete composite) pipe. If these pipes are not reused in the redevelopment plan or are disturbed during construction activities, they may require special handling procedures and offsite disposal as asbestos containing material (ACM).

Glycol Contamination and Methane Production

Prior to present RCRA regulations requiring the collection and proper disposal of hazardous materials, common practice at airports often involved the use of antifreeze compounds to de-ice planes directly on tarmacs prior to departure. The two most common deicers (ethylene glycol and propylene glycol) are known to biodegrade in anaerobic conditions and result in the production of methane. Methane is explosive at concentrations between 5 – 15%. Because methane is a gas, it can migrate through preferred pathways including utility corridors and collect in subsurface structures. This deicing practice may or may not have occurred at BNAS, but should be considered and the potential for methane be evaluated.

Exhibit 44: Abandoned Utilities Map



Source: Matrix Design Group

Asbestos and Lead-Based Paint

Due to the age of buildings at BNAS, asbestos and lead-based paint are likely present on-site. Comprehensive asbestos and lead-based paint surveys suitable for demolition purposes have not been performed on the majority of buildings. Several asbestos and lead-based paint surveys have been conducted at BNAS. This information should not be viewed as comprehensive and should be used with caution, because the surveys were only conducted on a representative number of buildings and did not always include walk through inspections of the units. Existing survey information is available in an inventory maintained by BNAS. Generally, the Navy does not pay for the abatement of asbestos and lead-based paint in buildings being transferred. Cost of abatement and proper disposal of these materials during redevelopment can be significant.

Pesticide and Herbicide Storage and Mixing Areas and Site-Wide Application

Historically, pesticides and herbicides have been stored, prepared, and applied throughout the base. IRP Site 17 is the location of former Building 95, where pesticides and herbicides were stored and mixed from 1955 to 1985. Soil samples collected from the area indicate DDE and DDT concentrations in excess of applicable state and federal standards. Several remedial actions have been conducted. In 1996, Building 95 was demolished and 1,260 cubic yards of contaminated soil were excavated and disposed at a permitted hazardous waste facility. In 1994, an additional 50 cubic yards of contaminated soil were excavated and removed. IRP Site 17 has a Long Term Monitoring Plan and is still under investigation. Pesticides are currently mixed and stored in Building 647 for the majority of the Main Station and Building 39 for the Golf Course. A site-wide assessment of potential pesticides and herbicides has not been conducted.

Building Drains, Drywells, and Combined Sewers with Potential Releases

BNAS does not have industrial operations generating an industrial wastewater stream. Small amounts of industrial-type wastes have been generated as off-specification waste chemicals and solvents. Historically, those wastes were disposed of in landfills, down drains, or transferred to the DRMO. BNAS discharges its sanitary wastes to Brunswick Wastewater Treatment Plant via Brunswick's partially combined storm and sanitary sewer system. Dumping waste chemicals down sanitary sewers contaminates sediment within the sewer and provides a pathway for potential release by sanitary sewer overflow during peak rainfall events. Sanitary sewer overflow can contribute to contamination at storm sewer discharge points. Storm sewers may transport environmental contaminants from their origin during rain events. Storm drainage from the central and southern runways, taxiways, and islands discharge to Mere Brook beaver marsh, while the outlying taxiways north of the operations area drain to the north into tributaries of the Androscoggin River. Storm drainage for the operations area discharges into the unnamed tributary bordering Site 9 that enters the northwestern branch of Picnic Area Pond. Storm sewer discharge points can be collection areas for contaminants and may require remedial investigation prior to redevelopment and property transfer.

Potential Suitability for Development

To provide an initial framework for the public visioning exercise, as well as provide the physical basis for the alternative master plan development process, an overall assessment of development suitability of the base was required. As part of this step, the natural resource, regulatory, and cultural factors identified during the existing conditions assessment were categorized as to the degree to which each factor would potentially impact the "suitability of development" of the land on which it is located. Three broad categories were created:

- Areas Least Suitable for Development
- Areas Moderately Suitable for Development
- Areas Most Suitable for Development

By understanding the potential impact on development each of these factors has, and by identifying the geographic areas covered by these factors as they are aggregated into one of the three categories above, a broad context for future land uses of BNAS property was determined. As a result of this effort, preliminary analysis indicates the following breakdown of physical suitability for potential development within the surplus property under consideration, as summarized below in **Exhibit 45: Development Suitability Table**. The paragraphs that follow discuss these three categories, the factors that contributed to each, and the geographic areas covered by each.

Exhibit 45: Development Suitability Table

Development Suitability	Planning Area									Total Acres	% of Total
	1	2	3	4	5	6	7	8	9		
Least Suitable	137	107	19	53	102	199	181	9	0	808	24%
Moderately Suitable	122	238	5	22	26	93	274	0	56	837	25%
Most Suitable	173	528	90	315	171	226	83	62	13	1,661	50%
Total Acres	**433**	**875**	**117**	**394**	**304**	**524**	**545**	**79**	**78**	**3,305**	**100%**

Source: Matrix Design Group

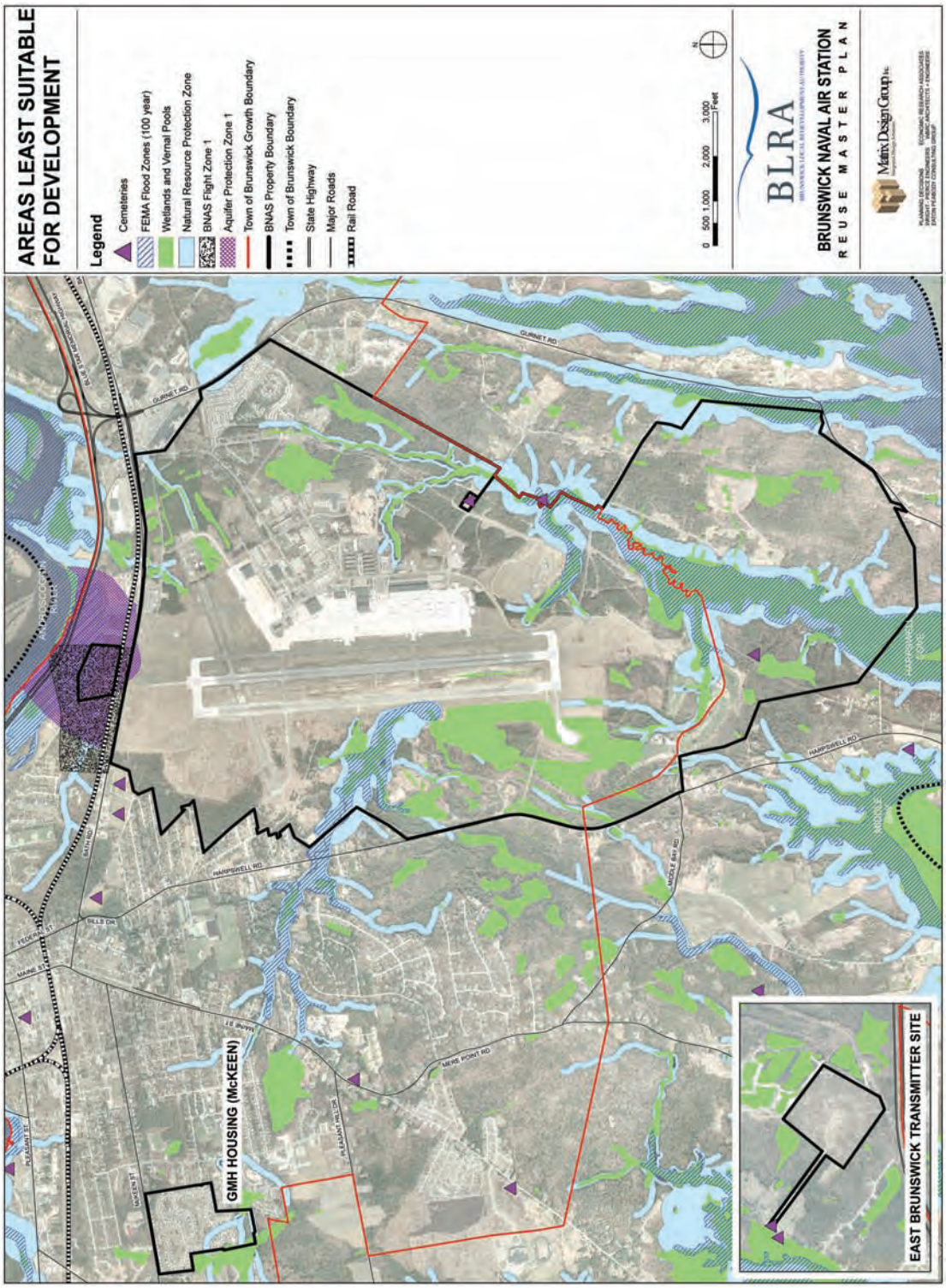
Areas Least Suitable for Development

The various natural resource, cultural, and regulatory factors described previously in this section that were identified as having attributes that severely restrict or prohibit future land uses or development are:

- FEMA Flood Zones
- Wetlands and Vernal Pools
- Natural Resource Protection Zone
- BNAS Flight Zone 1
- Aquifer Protection Zone 1
- Cemeteries

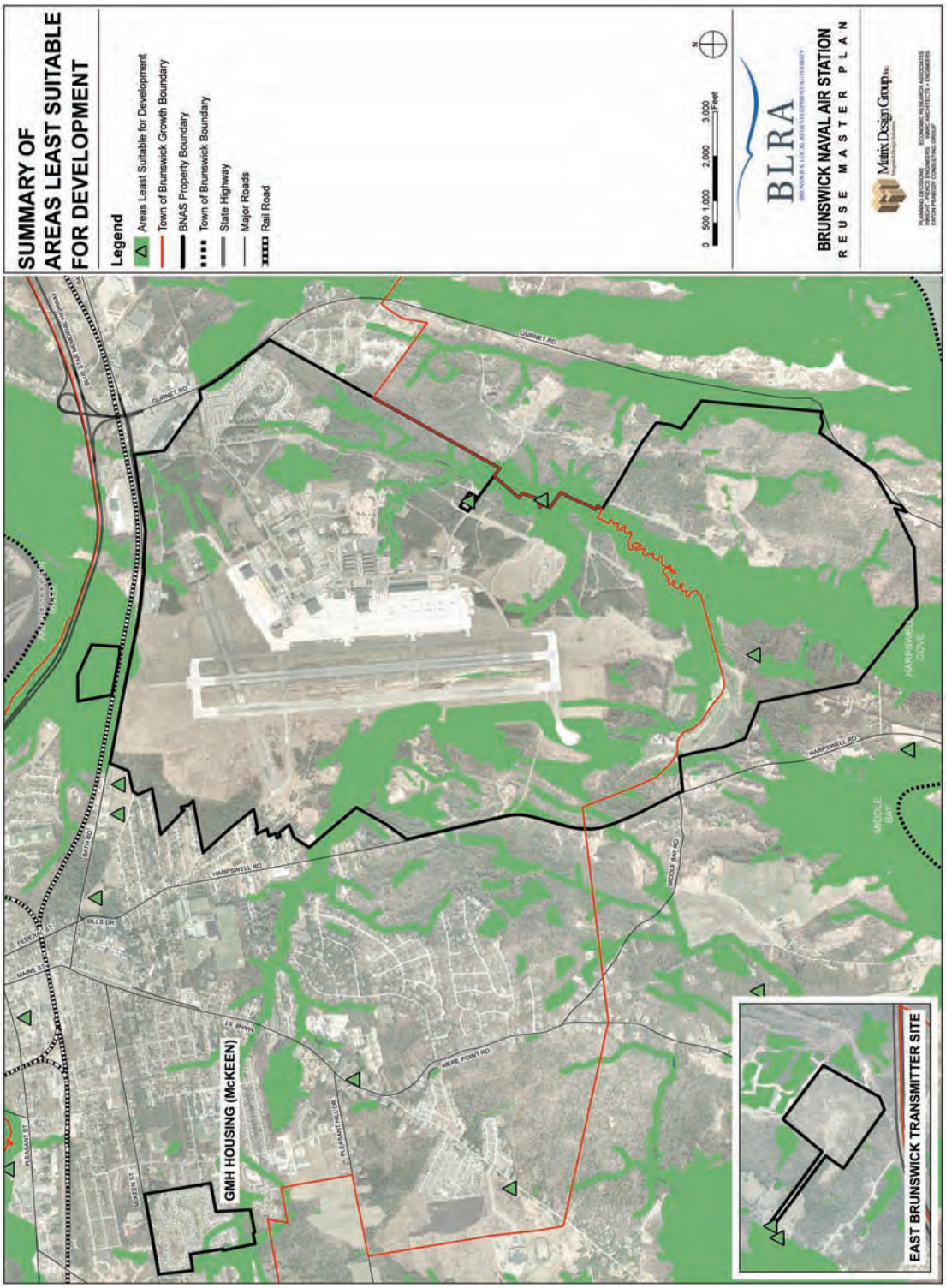
Due to the nature of these factors, land covered by one or more of these is considered to be generally undevelopable, or developable to a very limited degree. Depending upon the factor, development may be not permitted for legal, physical, or practical reasons, or permitted at very low densities, extremely restricted uses, or under special permit. **Exhibit 46: Areas Least Suitable for Development Map** shows the location or area covered by these six factors separately. **Exhibit 47: Summary of Areas Least Suitable for Development Map**, aggregates these factors into a single geographic coverage that represents the areas that should be considered as the least suitable for future development.

Exhibit 46: Areas Least Suitable for Development Map



Source: Matrix Design Group

Exhibit 47: Summary of Areas Least Suitable for Development Map



Source: Matrix Design Group

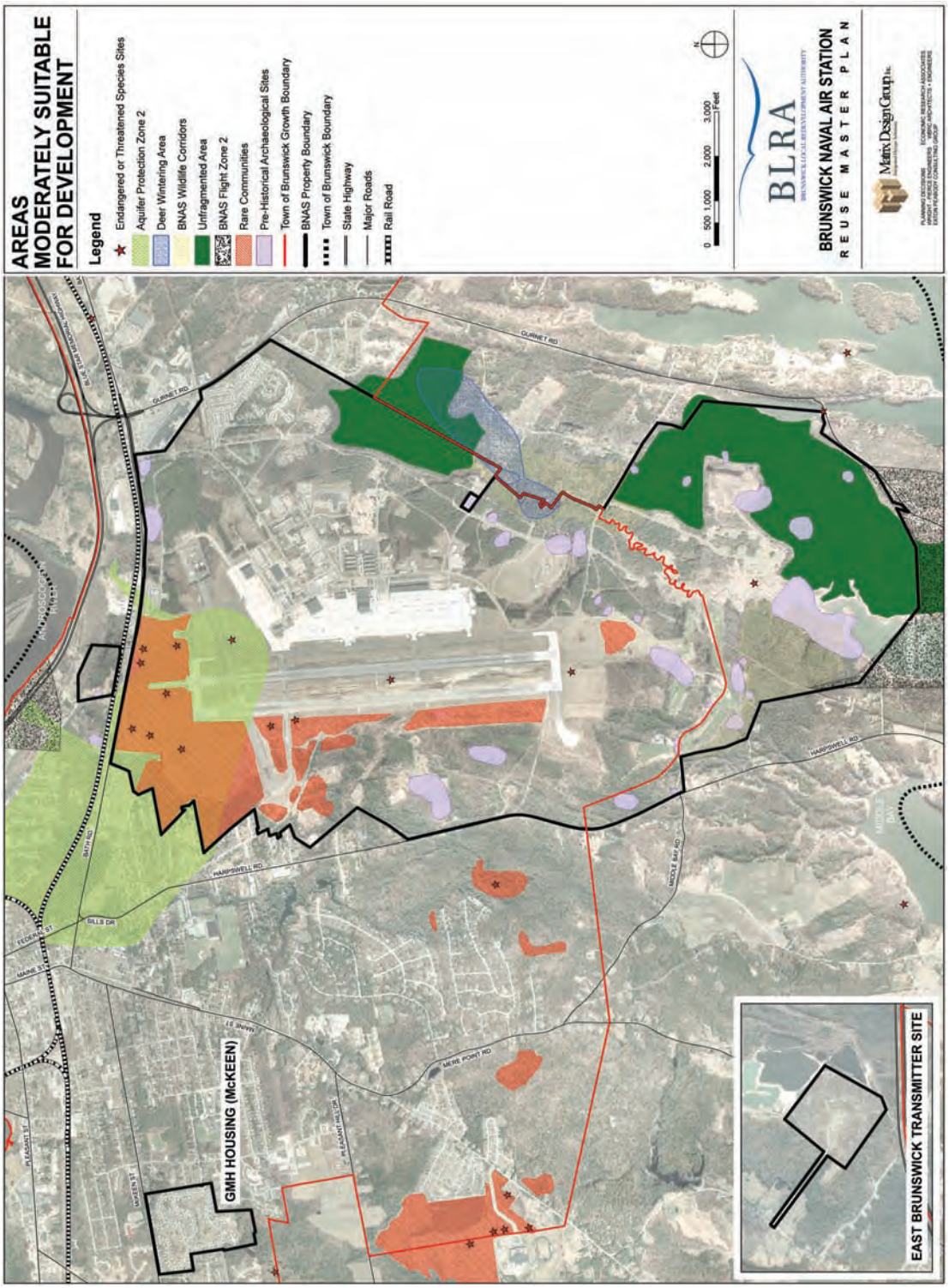
Areas Moderately Suitable for Development

The factors identified as having attributes that moderately restrict or limit future land uses or development include:

- State Endangered / Threatened Species Sites
- Aquifer Protection Zone 2
- Deer Wintering Areas
- Wildlife Corridors
- Unfragmented Areas
- BNAS Flight Zone 2
- Rare Communities
- Historical / Archaeological Sites

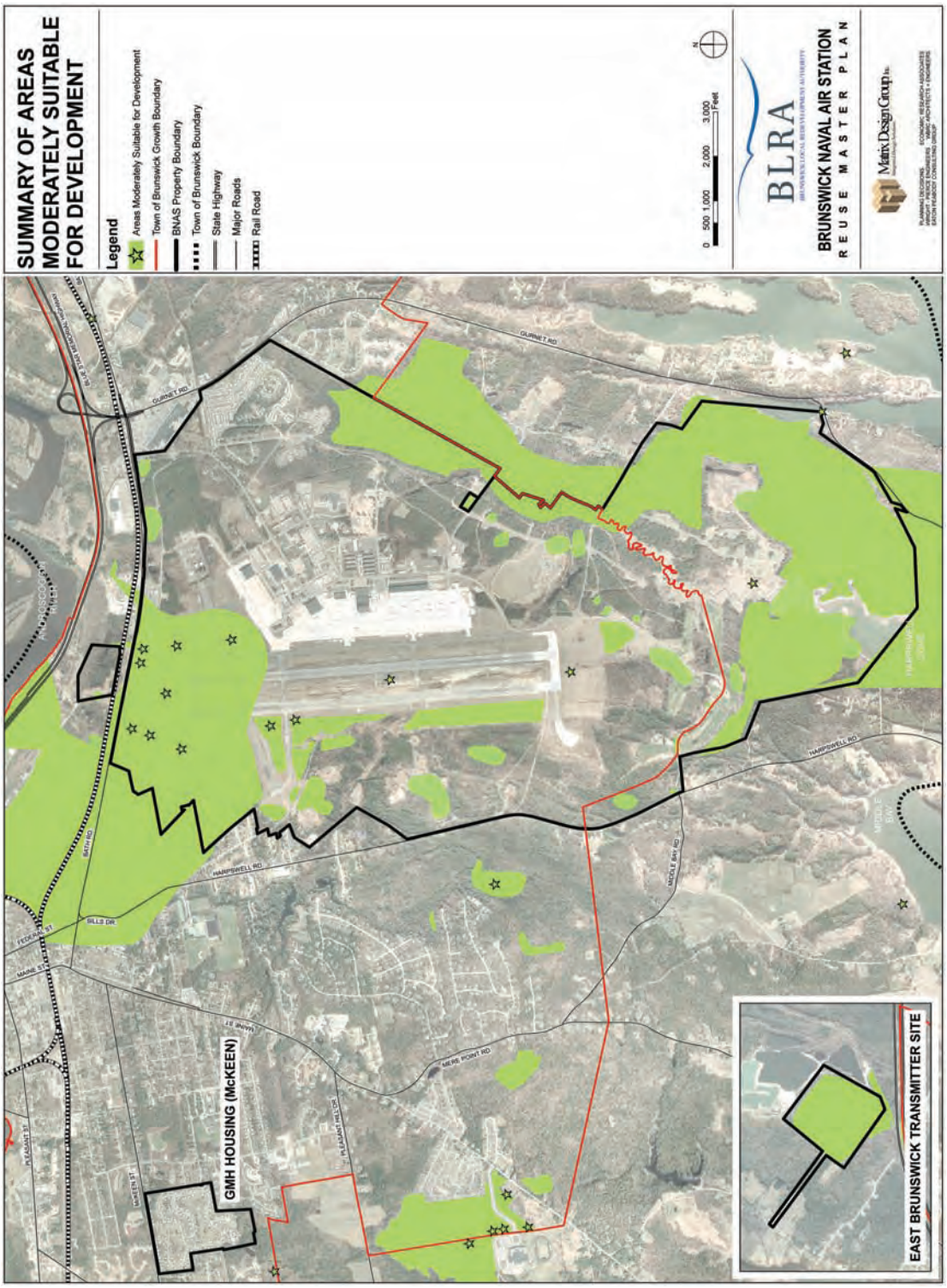
For the purpose of this study, land covered by one or more of these factors is considered to be developable in a limited manner, and typically only when certain land use, density, or other requirements are met. While these areas may be developable from a physical perspective, due to public policy or community goals and objectives, development is discouraged or constrained to some degree. **Exhibit 48: Areas Moderately Suitable for Development Map** shows the location or area covered by these eight factors separately. **Exhibit 49: Summary of Areas Moderately Suitable for Development Map** aggregates these factors into a single geographic coverage that represents the areas that should be considered as only moderately suitable for future development.

Exhibit 48: Areas Moderately Suitable for Development Map



Source: Matrix Design Group

Exhibit 49: Summary of Areas Moderately Suitable for Development Map



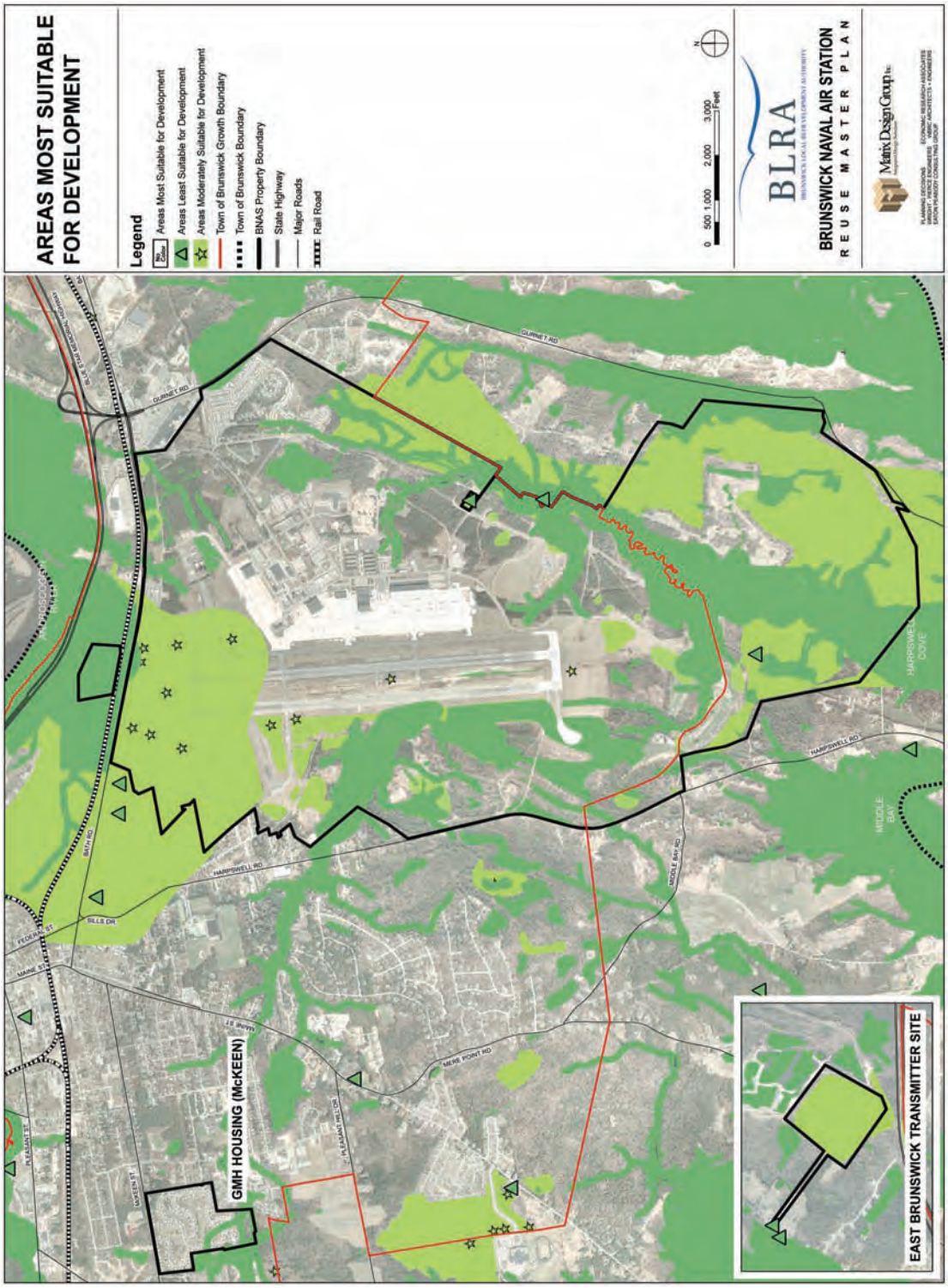
Source: Matrix Design Group

Areas Most Suitable for Development

Areas Most Suitable for Development are characterized as those areas where no factor is noted that qualifies under either the "Least Suitable" or "Moderately Suitable" categories above. Future development in these "Most Suitable" areas is certainly not a foregone conclusion; in fact, there may be environmental, market, and other reasons why some of this land will not be identified for future development. At this time, these areas simply represent the territory for which no major physical, regulatory, or other factors that specifically restrict or prohibit new development have been identified. **Exhibit 50: Areas Most Suitable for Development Map** identifies this land, which consists of those uncolored areas, or those areas not covered by the "Least Suitable" or "Moderately Suitable" category colors. These "Most Suitable" areas may still be restrained in their development potential to some degree by other issues, such as topography, zoning, or other local and/or state development regulations.

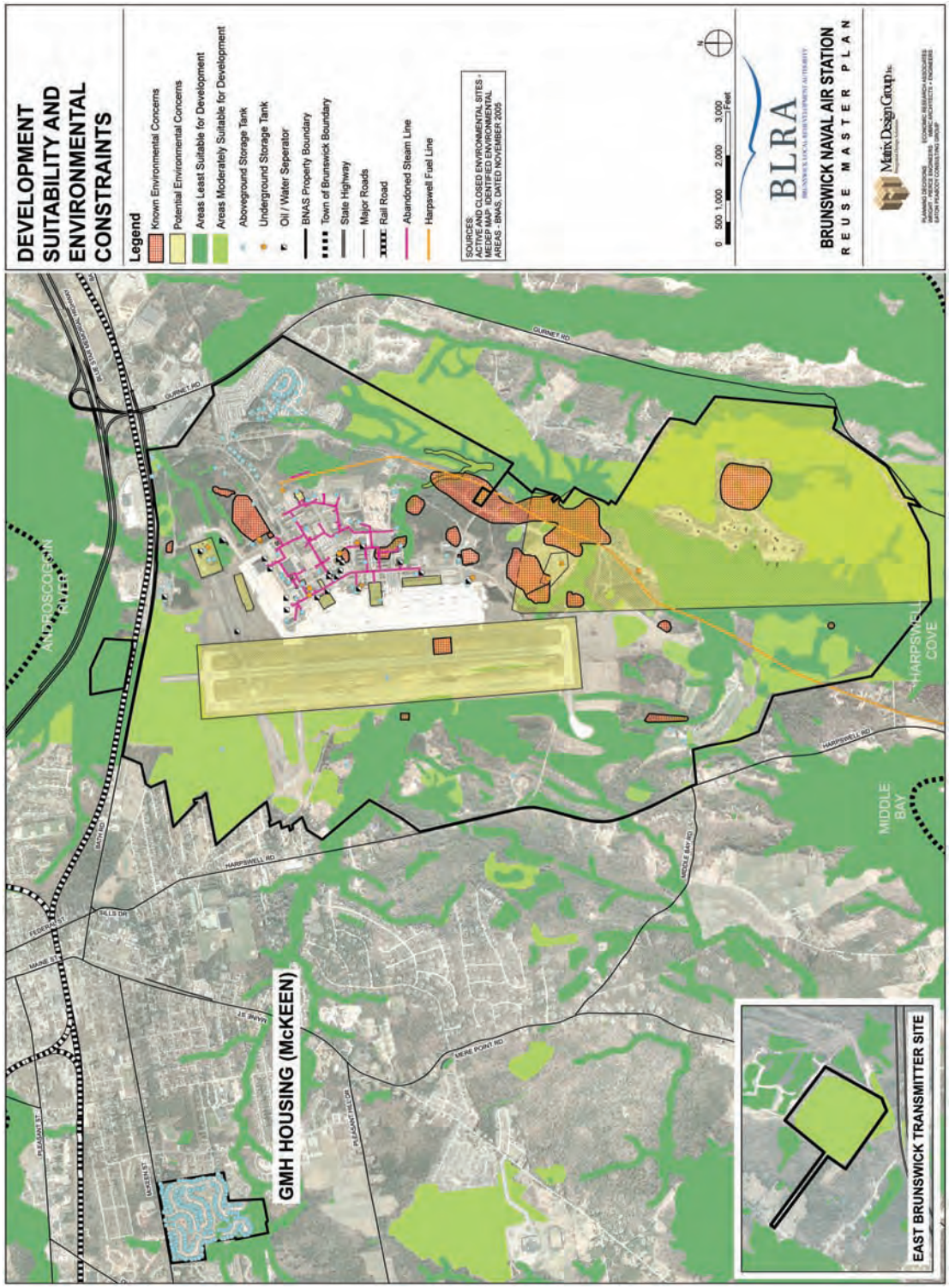
While the preliminary assessment of the property's overall physical development suitability has been determined, other constraints will need to be integrated into the overall analysis of where redevelopment could occur, to what extent it could occur, and at what cost. The most significant aspect of that more refined assessment is the potential environmental contamination of the site, including known areas of environmental concern, as well as those areas that need additional investigation, as shown on **Exhibit 43: Potential Areas of Environmental Concern Map**. The following map, **Exhibit 51: Development Suitability and Environmental Constraints Map**, illustrates this potential impact that existing and potential environmental constraints will have on the redevelopment of the property.

Exhibit 50: Areas Most Suitable for Development Map



Source: Matrix Design Group

Exhibit 51: Development Suitability and Environmental Constraints Map



Source: Matrix Design Group

Facilities Reuse Workshop

An assessment of significant buildings existing on the property was conducted as part of the Existing Conditions phase, and is described earlier in this section. Based on that information and an understanding of viable market opportunities for redevelopment, the BLRA staff and Matrix Planning Team members convened a half-day internal workshop that focused on potential future uses for 48 major buildings. Each facility was evaluated in terms of its adaptability for public / private-sector use in its existing capacity, or for other uses. Each building was ranked in terms of its potential requirements to adapt to meet the needs of the range of land uses anticipated for redevelopment as well as for land use preferences obtained from the Public Visioning process. Rankings were given for minimal, moderate, or significant adaptation needs; buildings considered not adaptable for specific uses were also noted. In addition, conclusions were reached related to the compatibility of potential uses for each building, based on the characteristics envisioned for the various planning areas established as part of the evaluation process. See **Appendix D** for facilities evaluation matrices detailing both airport and non-airport scenarios.

Airport Feasibility Study Conclusions / Recommendations

The Aviation Feasibility Study analyzed the potential for civilian aviation activity at Brunswick Naval Air Station after the US Navy is scheduled to leave in 2011, and concluded that civilian aviation activity at BNAS is feasible.

The Feasibility Study used a multi-phased screening process to identify and evaluate potential civilian aviation activities, the likelihood that they could occur at Brunswick Naval Air Station, the economic impact of those activities, as well as the potential regional benefits and environmental impacts of civil aviation activity. The primary objective of the Aviation Feasibility Study was to provide sufficient data for the Brunswick Local Redevelopment Authority to decide:

- Whether civilian aviation activity is potentially feasible at BNAS after the Navy leaves in 2011
- What portion of the Navy airfield should be used as a civilian airport, and which portion of the airfield should be transferred from the Navy to the BLRA through Public Benefit Conveyance
- If the financial and economic impact of operating a civilian airport, including potential employment, enhances its viability as well as regional benefits
- Whether environmental issues would impact the surrounding community or prevent civilian aviation activity at BNAS

It is important to note that if the BLRA decides to proceed with civilian aviation reuse, an airport master plan (AMP) will need to be prepared before the airfield is transferred by the Navy. The AMP would be partially funded by FAA and Maine DOT and would address those four issues, as well as others, in greater detail. This Aviation Feasibility Study is one of two planning studies being conducted by the BLRA, the other being the Master Reuse Plan. In making their decision about whether to proceed with aviation reuse and request a PBC for the airfield, the BRLA will consider not only the information presented in this aviation study but also the recommendations presented in the Master Reuse Plan that is being prepared separately, in addition to considering other sources of information, including extensive public input.

The Aviation Feasibility Study does not draw any conclusions or make any recommendations concerning the overall highest and best use of the airfield compared to possible non-aviation uses; its sole focus is the potential viability of civilian aviation reuse at BNAS. The Aviation Feasibility Study process can also be described as a filter, starting with large concepts and filtering the options to identify the most likely aviation scenarios, as described below.

Based on this analysis, it was concluded that a number of civilian aviation activities could potentially occur at BNAS, and that incentives provided by the State of Maine such as the Pine Tree and Military Redevelopment Zones, as well as the North Star Alliance among others, would make BNAS even more attractive to prospective tenants.

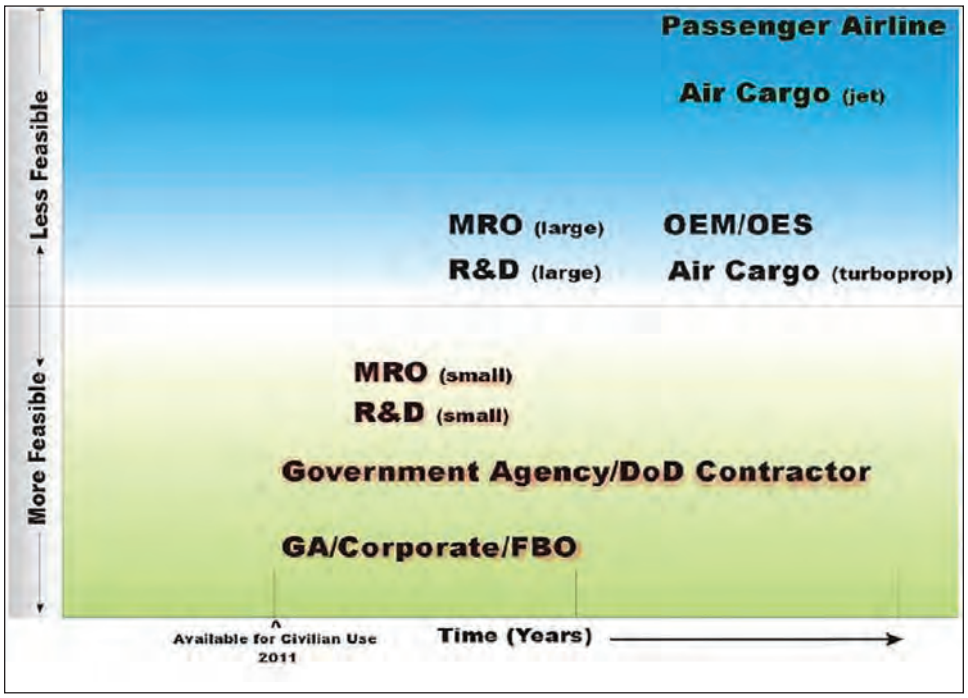
The likeliest civilian aviation activities that would occur at BNAS were identified as:

- Fixed Base Operator (FBO) - General and Corporate Aviation
  General and corporate aviation activities could include flight training, charter and air taxi service, corporate headquarters/flight department, fly-in communities, etc. FBO companies located in Maine have already expressed an interest in establishing an operation at Brunswick if it becomes a public-use airport.
- Aircraft Manufacturing and Maintenance, Repair and Overhaul (MRO)
  Both general aviation and air carrier aircraft are increasingly made with composite materials (such as Very Light Jets – VLJ), and could be manufactured and/or maintained at Brunswick.
- Government Agencies
  Agencies such as the Department of Homeland Security, NOAA, FAA, Department of Interior, etc., operate and maintain large fleets of aircraft. Department of Defense (DoD) contractors range from small local firms to international corporations, and large contractors such as General Dynamics and Pratt & Whitney have existing operations in Maine. They, as well as other large companies such as General Electric, Boeing, Lockheed Martin, etc., manufacture and maintain aircraft and engines for civilian and military agencies, and their business has grown significantly in the last six years.

- Aerospace Research and Development (R&D)
  Both small firms and large defense contractors conduct advanced R&D. The US Government is one of the largest sponsors of aeronautical research and development in the world, and has been rapidly increasing its investment in new technologies such as unmanned aerial vehicles (UAV), hypersonic flight, etc. BNAS has the facilities to accommodate that type of R&D activity, and local firms engaged in advanced R&D have expressed an interest in locating at BNAS if it becomes a public-use airport.

Exhibit 52 shows the relationship between time and the feasibility of different civilian uses for the BNAS airport.

Exhibit 52: Civilian Aviation Activities



Source: Edwards and Kelcey

The analysis concluded that scheduled passenger and cargo airline service would be much less likely to occur at BNAS, for a number of reasons:

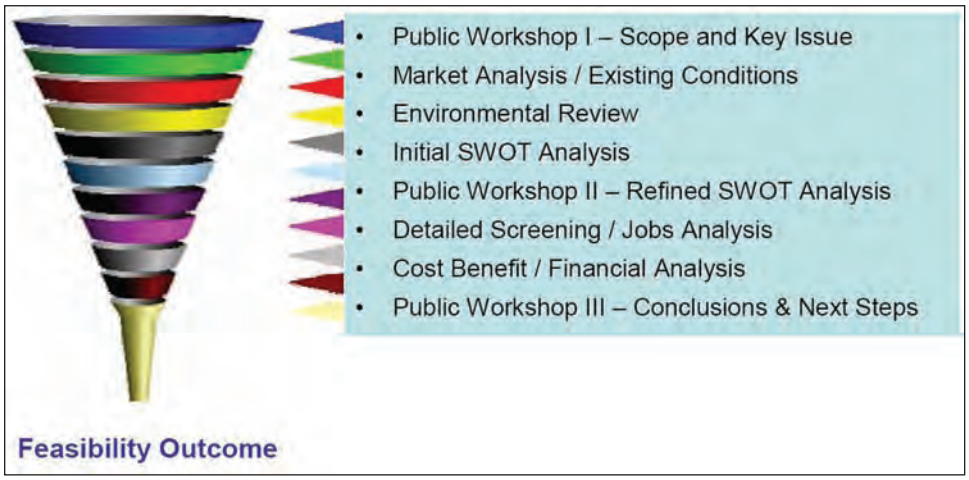
- The passenger market in the Midcoast Region is not large enough, by itself, to support service by a major airline. Discussions with both airline and trade industry representatives indicated that Brunswick is too close to Portland Jetport to support airline service at both airports. Airlines have made large investments at Portland Jetport, and because Portland does not have delays there are few incentives for airlines to provide service to BNAS as well.

- While BNAS has excellent airfield facilities, the terminal area was not designed for airline service. Additional terminal area facilities would need to be constructed, and such improvements would cost millions of dollars, only a portion of which would be eligible for federal and state grants.
- Several airports in the region, including Augusta State, Knox-County Rockland, and Hancock County-Bar Harbor have commuter airline service and are designated by US DOT as Essential Air Service (EAS) airports. As a result, airline service is subsidized by the federal government, and airport managers have indicated that if the subsidies were discontinued they would likely lose airline service. Under current DOT criteria, Brunswick is too close to Portland Jetport to qualify for EAS designation or DOT subsidies.
- Air cargo service at both Portland Jetport and Bangor Airport was examined. Most of the cargo generated at LL Bean is trucked to Boston and New York airports for air shipment, as is the seafood caught off the Maine coast. Air cargo companies such as FedEx, UPS, and DHL are primarily freight forwarders that decide how to ship packages. Those companies have established air hubs and mini-hub facilities at airports outside of Maine. As a result, although Brunswick offers excellent facilities for air cargo companies, current market trends indicate that freight forwarders will continue to truck large volumes of cargo generated in Maine to larger regional airports out of state. It is possible that Brunswick could be served by smaller cargo feeder carriers using single and multi-engine turboprop airplanes, as seen at Auburn-Lewiston Airport.

Study Process

The Aviation Feasibility Study used a screening process based on the SWOT analysis. The screening process involved a series of iterations examining a broad cross-section of aviation uses, and narrowing the potential aviation scenarios based on market trends and regional factors. An extensive public outreach program was also a key component of the study process, which included three public information meetings and workshops. **Exhibit 53**, shown below, reflects the study process followed.

Exhibit 53: Aviation Feasibility Study Process



Source: Edwards and Kelcey

The SWOT analysis was used to evaluate each alternative, and served as the primary basis for determining which of the aviation scenarios were considered to be the most feasible. Based on that analysis, a public-use airport was determined to be financially feasible at BNAS. Certain sectors of the civilian aviation market have been and are projected to continue growing very rapidly beyond 2011, when the US Navy is scheduled to leave BNAS. As a result, there are opportunities to attract those businesses to BNAS as future tenants.

BNAS as a Civilian Airport

Strengths

- The BNAS airfield facilities are rated in excellent to good condition and the Navy has committed to maintaining them in that condition until they are turned over to a civilian authority.
- The airfield could be obtained through PBC at little or no cost to a public authority.

- The composite industry cluster that is growing in Maine, particularly in the Midcoast Region, would be attractive to aircraft firms that manufacture and repair composite aircraft and parts.
- State incentives such as Pine Tree Zone, Military Redevelopment Zones, as well as the North Star Alliance, among others, will increase the attractiveness to locate at Brunswick.

Weaknesses

- It is possible that a civilian airport would require subsidies for a period of 5 to 10 years.
- Based on the current Navy redeployment schedule, the airfield will not be available for civilian use until 2011.
- Current military security requirements increase the difficulty to market the base to potential civilian tenants.

Opportunities

- Many sectors of the aviation industry are projected to continue to grow beyond 2015.
- BLRA has already received expressions of interest from aviation companies interested in locating on the base if it becomes a public-use airport.
- There will be a period of four years while the Navy will maintain and operate the base during which an on-going marketing and research campaign can determine if there is adequate demand from civilian aviation companies to operate a viable civilian airport.

Threats

- 24 former military airfields have been converted to civilian use since the early 1990s, many of which are targeting the same large civilian tenants that Brunswick would market.
- Of the 3,400 public-use airports in FAA's National Plan of Integrated Airport Systems (NPIAS), approximately 500 are former military airports, many of which are also marketing similar tenants.
- Rising fuel costs and other economic factors could decrease demand for aviation services and impact the anticipated growth rate of certain industry sectors.
- A number of states, particularly in the southern US, are offering large subsidies to aircraft manufacturing and repair firms, as well as defense contractors and R&D companies, to locate their facilities in their particular state. In addition, some states offer lower energy and labor costs, as well as lower business and personal income taxes, than Maine.

Economic Impact of a Civilian Airport

The Aviation Feasibility Study analyzed the potential economic impact of civilian aviation activity on the community, the Midcoast Region, and the state. In general, aviation-related businesses hire highly skilled and educated employees, pay higher salaries than non-aviation commercial and industrial sectors, and offer better benefits. Each aviation industry sector was examined in terms of potential employment, and a range of employment levels was identified based in part on actual companies located at former military bases around the country. **Exhibit 54** shows potential civilian employment at BNAS.

Exhibit 54: Potential Brunswick Airport Civilian Employment

	Low	High
Homeland Securtiy / Coast Guard	40	400
MRO / Manufacturer / DOD Contractor	200	2,500
Reasearch & Development / Space	20	200
VLJ / Composite Manufacturer	20	100
Fixed Base Operator (FBO)	5	50
Total Airfield Employment	**285**	**3,150**
Annual Payroll ($ Million)	**$26.7**	**$294.8**

Source: Edwards and Kelcey

Annual payroll was calculated based on an average salary of $45,000 per employee, which is considered conservative compared to some aviation companies that pay as much as $75,000 per employee. In addition, the secondary benefits to the community could also be significant. In **Exhibit 55**, the calculations were made based on the FAA's *Estimating the Regional Economic Significance of Airports*.

Exhibit 55: Potential Brunswick Airport Regional Economic Benefits

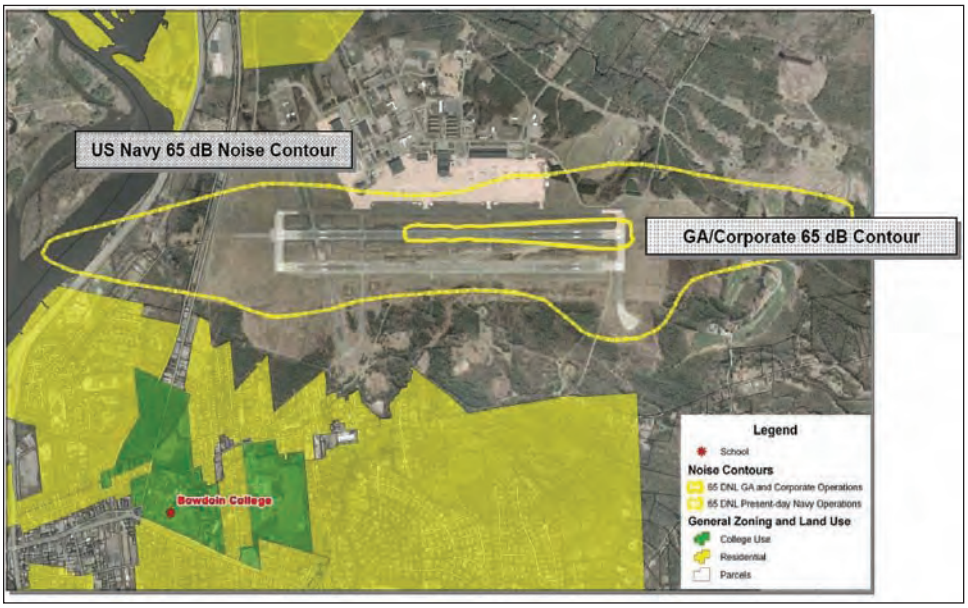
	Low	High
Potential Annual Payroll	$26.7	$294.8
Indirect Benefit (Visitor Spending)	$4.5	$13.3
Induced Benefit (Multiplier x .06)	$15.8	$176.9
Total Economic Benefit	**$47**	**$485**

Source: Edwards and Kelcey. All figures are in Dollars (Million)

Environmental Issues

The Aviation Feasibility Study examined three specific environmental issues: aircraft noise; stormwater runoff; and aircraft emissions. The Navy prepared a noise study in 1985 that included field measurements of military aircraft operations. The types of military aircraft operated in 1985 (such as P-3 Orions and C-130s, etc.), as well as the level of activity (annual operations) are very similar to what occurred at BNAS in 2006. For comparative purposes, the 65 dB noise contour from a very active general and corporate aviation airport (Beverly, MA) that has 50% more takeoffs and landings than occurred at Brunswick was overlaid on **Exhibit 56: Noise Impact Map**.

Exhibit 56: Noise Impact Map



Source: Edwards and Kelcey

The aircraft at Beverly Airport were single and multi-engine piston and turbine powered general aviation airplanes, including a large number of corporate jet aircraft. Based on this market analysis it is not anticipated that a civilian airport at Brunswick would generate 85,000 takeoffs and landings per year, however, forecasts of civilian aircraft operations would be examined in more detail in an airport master plan. For comparative purposes, the Maine Aviation Systems Plan Update estimated in 2006 that Auburn-Lewiston, Augusta, and Wiscasset Airports each had less than 40,000 operations per year.

65 decibels is a noise level that is used by a number of federal and state agencies, including FAA, Housing and Urban Development (HUD), EPA, etc., as a threshold for land use compatibility. The existing land uses in the vicinity of BNAS are primarily to the west

of the base, and outside of both the Navy and general aviation/corporate 65 dB noise contour. If the base is used as a civilian airport, it is recommended that the Town of Brunswick use land use controls, including zoning, to prevent noise sensitive land uses being developed closer to the airfield. In addition, it will be important to control the construction of towers, tall buildings, and growing vegetation close to the runways in order to comply with FAA's airspace criteria.

BNAS is located over the Mere Brook watershed. Mere Brook is classified by Maine DEP as an urban impaired stream and was placed on the Maine's 303(d) list for impairment to aquatic life because of industrial (military) and urban non-point source (NPS) pollution. Many waterbodies listed on the 303(d) list require a total maximum daily load (TMDL). A TMDL is a legal requirement under the Clean Water Act to designate sources of impairment, identify instream problems, and describe what is required to be done for a waterbody to meet water quality standards. A TMDL for Mere Brook is scheduled for 2008, therefore participation in the implementation of the TMDL (if developed) will likely be required as part of conversion to a civilian airport.

Maine DEP, Bureau of Land & Water Quality, and Stormwater Management Chapter 500 standards apply to Mere Brook. In terms of stormwater runoff, the Navy currently has a Site Law Permit from Maine DEP. Redevelopment resulting in alterations to any existing impervious surface (building, parking lot, runway, etc.) would require that the stormwater management systems be reconstructed to comply with the new general standards of Chapter 500 to an extent practicable as determined by Maine DEP. Any redevelopment of the Naval Air Station would also require the airport sponsor or developer to comply with the Urban Impaired Stream Standard of Chapter 500. To comply with this standard, the sponsor/developer would need to mitigate any adverse water quality impacts through an on-site or off-site project (for example by turning a parking lot or the outboard runway back into a meadow), or pay a compensation fee.

BNAS currently complies with federal and state stormwater regulations, and the existing aircraft deicing facilities used by the Navy exceeds current US EPA standards. Civilian aircraft operators could use the Navy's deicing facilities, and if no changes were made to the existing deicing storage, dispensing, or collection facilities, no changes to the Storm Water Pollution Prevention Plan (SWPPP) or state Site Permit would be required. US EPA is in the process of updating its glycol deicing management regulations, which may impact future civilian aircraft deicing activities at BNAS. If the BLRA decides to proceed with the civilian airport option, the Navy will need to include a review of aircraft noise and stormwater runoff in its NEPA Environmental Impact Statement (EIS).

Regarding aircraft emissions, there is rapidly growing momentum in the US, and particularly in Europe, to significantly decrease emissions and enhance the environmental compatibility of commercial aviation. At many airports in the US, ground vehicles have converted to natural gas and other alternative fuels.

The European Union, under its Joint Technology Initiative, has adopted very aggressive emission reduction targets over the next six years (shown below). A consortium of European aircraft manufacturers and government agencies have committed almost $2.3 billion towards the research and development to achieve these goals.

European Clean Sky Goals – 2013

- 80% cut in NOx emissions
- 50% cut in perceived aircraft noise
- 50% cut in CO2 emissions per passenger/mile
- A green design, manufacturing, maintenance and disposal product life cycle

The EU is proposing that the International Civil Aviation Organization (ICAO), of which the US is a member, adopt these goals as international standards. The British government is also adopting a plan to include commercial aircraft in their emissions trading scheme. In addition, a new organization formed by Richard Branson and former Vice President Al Gore, Virgin Earth, is offering a $10 million prize to any individual or company that can develop practical technology that will reduce carbon dioxide in the atmosphere by 100 million tons per year. Branson's airline, Virgin Atlantic, is adopting numerous emission reduction operating procedures, such as being towed to the runway versus using aircraft engines, etc. Simultaneously, aircraft engine manufacturers are actively testing alternative fuels, and the US Air Force has successfully tested alternative fuels in its aircraft and is working to make greater use of these fuels throughout its fleet.

In addition to enhancing the environmental compatibility of aircraft, these new green technologies are also presenting new opportunities for private industry and government agencies, and BNAS could serve as a location for some of these new R&D and production technologies, which are projected to increase significantly over the next decade.

Financial Viability

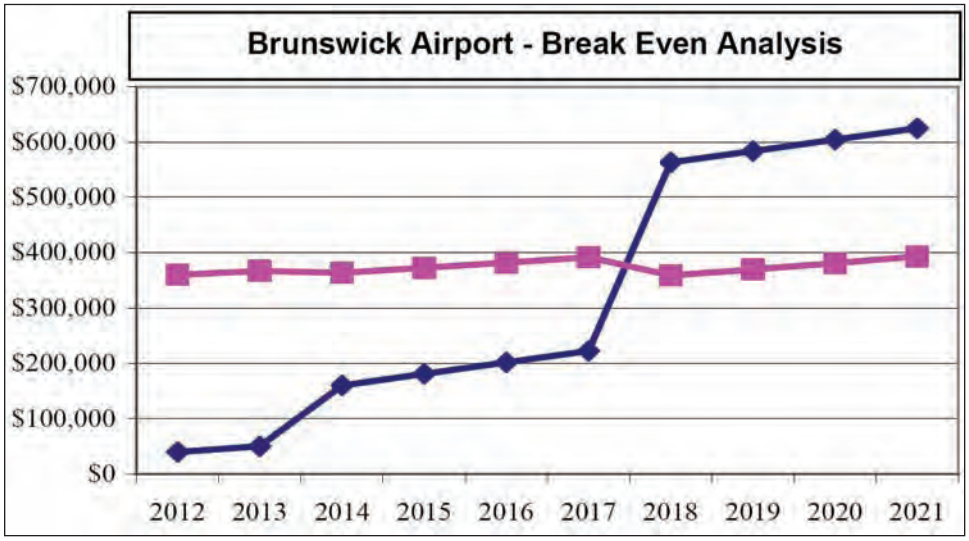
A key question concerning future civil aviation activity at BNAS is: would an airport be financially self supporting? Future airfield operating and maintenance (O&M) costs were analyzed, as well as potential revenues that could be generated by civilian tenants. The financial structure of existing airports in the region was also examined, as well as airport industry lease rates, charges and fees. The analysis considered the amount and type of space available in the airfield buildings at BNAS, and revenue projections were developed based on conservative estimates of industry rates and charges.

A key factor in terms of future operating and maintenance (O&M) costs is that the Navy has committed to maintaining the airfield in its current excellent to very good condition until it is turned over to another entity. As a result, the pavement should not need reconstruction for a period of 15 – 20 years after it becomes a civilian airport, and operating and maintenance costs will be relatively low.

Annual O&M costs for a fully functioning civilian airport was estimated to be approximately $520,000 (in 2006 dollars), which would include both airport personnel and equipment. Both FAA and Maine DOT offer grants for eligible airport capital improvement projects, but in general do not support O&M costs. Those costs would be offset by revenue generated by the airports tenants and users.

Using conservative lease rates, Building 250/Hangar 4 could generate an estimated $800,000 annually in revenue, which would more than cover annual O&M costs. Between all of the airfield buildings, including Hangars 4, 5 and 6 and Buildings 4 and 200, there is almost 500,000 S.F. of hangar, office, and shop space that would be available for lease to civilian tenants, which could generate as much as $1.5 million in revenue annually. Aircraft parking, tiedown, landing, and fuel flowage fees could generate an additional $300,000 annually, so the total potential revenue could equal almost $2 million annually. **Exhibit 57** shows the break-even analysis.

Exhibit 57: Airport Break-Even Analysis



Source: Edwards and Kelcey. Purple line represents costs over time; blue line represents revenue.

As with any start-up business, it is possible that a civilian airport could have an operating deficit for as much as five to ten years (as shown in the Break Even chart), which represents the worst-case scenario in terms of financial viability. Key factors in both the size and time frame of an operating deficit would be the ability to control O&M costs,

attract civilian tenants, and charge industry-standard lease rates and fees. The fact that the Navy will maintain and operate the base until 2011 would provide an opportunity for the BLRA to market the base and confirm if the demand for access to a civilian airport would in fact cover its operating costs. There are a number of potential sources of funding to support an operating deficit, including revenue from non-aviation commercial development on the base, general fund appropriation from the State of Maine, tax incremental financing (TIF), state income tax increment financing, as well as other sources.

Impact of a Civilian Brunswick Airport on Other Airports

If the BLRA decides to operate a civilian airport at BNAS, what impact would it have on the existing airports in the region? That question was analyzed in several ways:

- Individual airport master plans, the Maine State Aviation Systems Plan Update (MASPU), FAA's National Plan of Integrated Airport Systems (NPIAS), and FAA's New England Regional Airport System Plan (NERASP) were analyzed. Each plan projected that aviation activity in the region will continue to grow throughout the next decade. Based on the types of aviation services projected at each airport, BNAS could serve several niche markets that would not compete directly with the region's other airports, such as major aircraft manufacturing, maintenance, repair and overhaul (MRO), defense contracting, and aerospace research and development (R&D), etc.
- The MASPU recommended that Wiscasset Airport be upgraded to a Level I facility, and its runway be extended to 5,000 feet and a precision instrument approach be published. If BNAS were operated as a public-use airport, Maine DOT may reexamine those recommendations and determine whether BNAS adequately fills that role.
- Discussions were also held by Edwards and Kelcey with airport managers in the region. The managers acknowledged that a civilian airport at BNAS could draw some of their general aviation and corporate traffic, but that BNAS would not significantly impact the level of activity at their airport. Airport managers that had scheduled airline service did not anticipate that the airlines would move to Brunswick, which is consistent with other results in this study.
- Based on aircraft registration data maintained by Maine DOT, an analysis was prepared to assess approximately how many general aviation aircraft could be attracted to BNAS if it were a civilian airport. The BNAS catchment area was defined as the radius connecting the mid- points between BNAS and Portland Jetport, Auburn-Lewiston Airport, Augusta State Airport, and Knox County-Rockland Airport. Wiscasset Airport lies between BNAS and Rockland and was included in its catchment area.

- For the purposes of this analysis, it was assumed that there would be no access restrictions at BNAS as a civilian airport, that the airport operating rates and charges (such as landing, parking, and tiedown fees, etc.) would be equivalent to other airports, and that there would be a full service FBO in place at BNAS. Based on those assumptions, a Brunswick Airport could potentially attract a large share of the airplanes whose owners live within its catchment area.

There are three key factors in terms of attracting General Aviation traffic to an airport:

- Facilities - Brunswick would offer larger facilities and more capacity than the other airports in the region, and the 8,000 foot runway would be very attractive to high-performance general aviation and corporate airplanes in the area (and beyond). Maintaining the instrument landing system (ILS) on Runway 1R will be important for all-weather access for those airplanes.
- Services - a good FBO is essential because, a) they provide quality service (fuel, maintenance, flight training, supplies, etc.), and almost as importantly, b) can effectively market the airport and bring in new business quickly. A good FBO would also attract airplanes from outside the catchment area, in which case Brunswick would likely attract more based aircraft.
- Cost and convenience - are both very important factors for G.A. airplane owners. If tiedown and hangar lease rates, fuel prices, landing and parking fees are competitive with other airports in the region, Brunswick would be a very attractive airport. Since pilots typically lease their hangars and tiedowns, they can move to other airports very easily. It is also likely that Brunswick would attract new airplanes not currently registered in the state, such as new corporate jets and turboprops, particularly given the recent change in state tax law.

In terms of identifying the potential impact on surrounding airports, 73 based airplanes at Brunswick would indicate a 'worst-case' scenario for the other airports, but even then the region's other airports would still have more than 75% of their existing based airplanes left, which is consistent with what airport managers indicated. FBOs located at some regional airports have already expressed interest in establishing an operation at Brunswick if it becomes a public-use airport, and maintain their existing FBO as well. In other words, they anticipate there would be sufficient traffic to support both operations. **Exhibit 58** shows the projected based aircraft growth rate.

Exhibit 58: Based Aircraft Projected Growth Rate

Year	Based A/C - Brunswick Airport	Growth Rate *
2011	73	5.0% (2006-2011)
2021	80	9.5% (2011-2021)

*** Source: Maine Aviation Systems Plan Update, Chapter 4, Table 4-7**

Source: Edwards and Kelcey

- The projected growth rate of based aircraft presented in the Maine Aviation Systems Plan Update was applied to BNAS to identify potential growth (table above). That growth rate would be analyzed in more detail in an airport master plan.
- Experience at former military and joint-use bases, such as Pease and Westover Air Reserve Base in Chicopee, MA, for example, indicate that using a base as a civilian airport develops niche markets, and is not a zero-sum proposition – its growth doesn't come at the expense of the airports around it.

What Are the Next Steps?

Based on the conclusions and recommendations presented in the Aviation Feasibility Study and the Master Reuse Plan, as well as input from the public, the BLRA will decide whether to proceed with a civilian airport option. If the MRRA decides to operate a civilian airport at BNAS, then what are the next steps?

The first step would be to undertake a more detailed and extensive marketing program of potential aviation tenants. The initial focus should be on a wide range of aviation firms presently operating in Maine. Secondly, FAA has indicated that an airport master plan will need to be prepared, and both FAA and Maine DOT would provide financial support for the plan. Several key products would result from an airport master plan: an approved Airport Layout Plan (ALP); an Airport Capital Improvement Program (ACIP); and an environmental assessment (EA). A number of other products, such as a detailed financial and business plan, would also be developed as well. Airport marketing studies, however, are not eligible for FAA grants.

Airport marketing plans are not eligible for FAA funding, and need to be undertaken separately. In addition, both Maine DOT and FAA will need to include Brunswick in their respective system plans in order for the airport to be eligible for capital improvement grants. That would typically occur after the airport master plan was completed.

One of the key elements of the airport master plans would be the precise determination of the area of the airfield to be requested transferred via PBC. FAA has noted that the area identified for a public-use airport should include not only the facilities necessary for anticipated aviation activity, but also any facilities and/or property that could generate revenue to support the airport financially.

At some former military bases, the golf course was transferred as part of the PBC for the airfield, and the revenue generated by the course was used to support the airport until it was financially self sufficient. The analysis in the Aviation Feasibility Study indicated that a civilian airport could operate efficiently with a single runway (the inboard runway – 1R-19L). Such a facility would encompass approximately 600 acres.

The BLRA could also request both parallel runways through PBC, which encompasses approximately 800 acres, and use the additional property for non-aviation purposes, if it so chose. A civilian airport could operate with a single runway, and some of the airfield facilities such as Hangar 6 and the associated ramp and/or possibly the outboard runway, could be used for non-aviation purposes. A number of additional steps will also be required before the airfield would be transferred from the Navy to a public agency.

Any changes in the Navy's deployment schedule could impact the timing of the transfer of the airfield property, either moving the transfer point closer or farther out (beyond 2011), which could impact the civilian reuse schedule. One final consideration is that if the BLRA decides to proceed with a civilian airport option, the Authority can market the base and complete all but the very last step, outlined above, but will not be legally committed to operating a civilian airport until the Navy transfers the property and the Authority signs the deed.

Section 5: Reuse Alternatives and Plan Selection

Based on the results of the physical inventory and analysis of existing conditions, market and economic studies, the Airport Feasibility Study, and from input received as a result of the public engagement process, a series of redevelopment concepts were prepared. Although conceptual in nature, these plans illustrated the various broad land use categories that emerged from previous planning activities, public visioning workshops and meetings, from consideration of smart growth planning principles, potential regional transportation improvements, and from other information obtained as part of the overall planning study.

Reuse Concepts

Four initial reuse concepts were presented to the public and town representatives at the two *BRAC to the Future* meetings in August 2007. The concepts were designed to provide a variety of development strategies, density considerations, and land use and transportation configurations for redevelopment of the 3,200-acre property. Two airport scenarios and two non-airport scenarios were ultimately prepared for consideration.

Note: Matrix Design Group is the source of all exhibits in this Section.

Airport Concept A-1

The first airport concept, Airport Concept A-1, included these key themes and elements:

- Primary entries from (1) a new US 1 interchange / Bath Road "flyover" and (2) from Bath Road
- The existing airport and aviation facilities to support General Aviation uses
- A concentrated area for Business and Technology Industries near the airport
- A central transportation spine that separated Aviation and Business and Technology Industries uses from community-serving mixed uses
- Campus-oriented business and office parks
- Renewable Energy Park
- Mixed-Use district in the southwest portion of the property
- The existing 9-hole Mere Brook Golf Course
- A direct east-west collector from Gurnet Road to Harpswell Road

Exhibit 59: Airport Concept A-1 Land Use Table and Map illustrates the physical arrangement of the various land use and transportation elements of this plan, along with a breakdown of the conceptual land use program by acre:

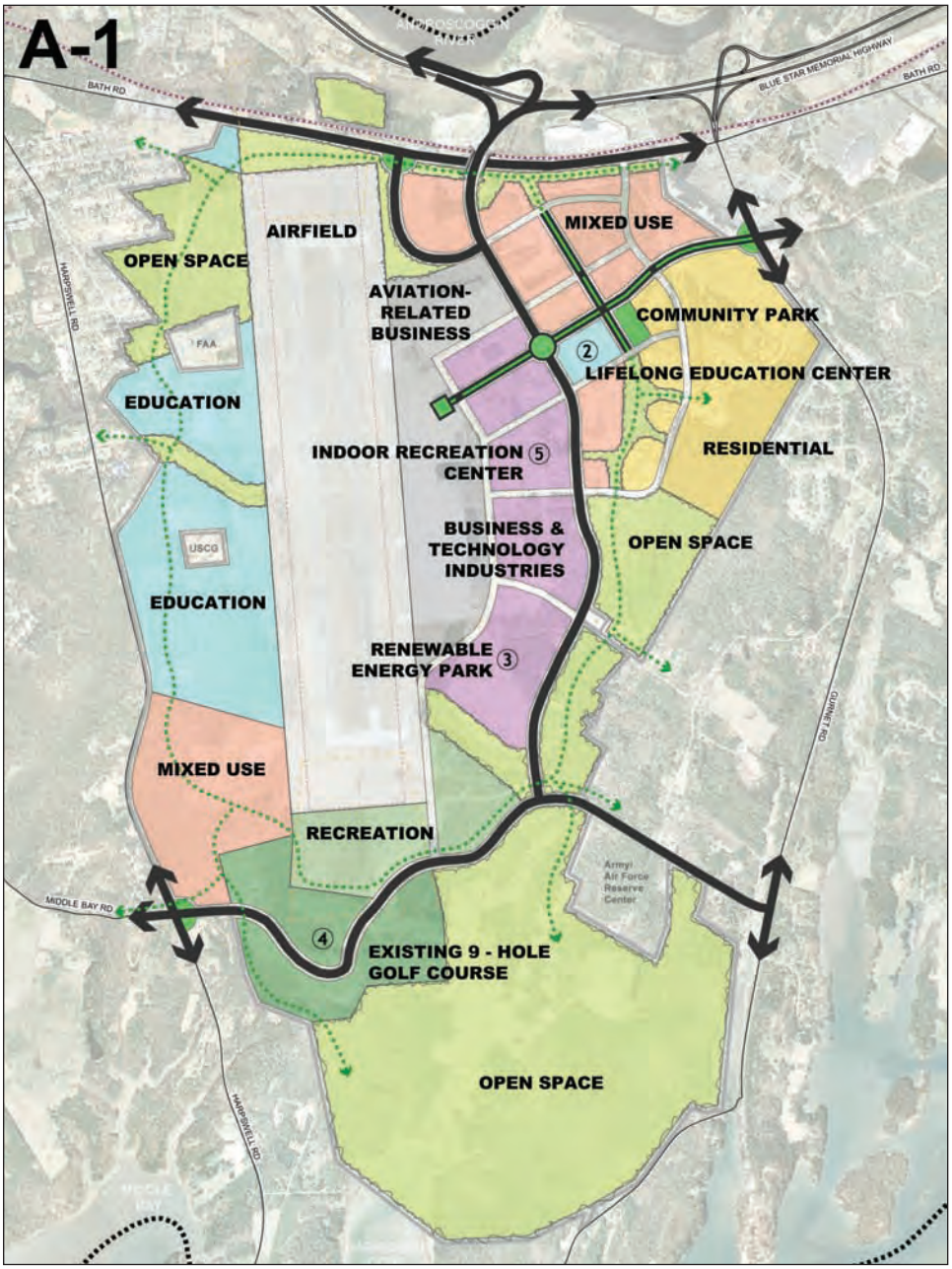
Airport Concept A1 - Potential Land Use Program

	Land Use Programs	Total Surplus Acres	% of Total Surplus Acres	Acres Not Suitable for Development	Net Acres Remaining [1]	% of Total Net Acres Remaining
Land Development	Airport Operations	505	16%	45	460	16%
	Aviation-Related Business	185	6%	0	185	6%
	Mixed Use	345	11%	85	260	9%
	Business and Technology Industries	230	7%	10	220	7%
	Education	280	9%	95	185	6%
	Residential	260	8%	30	230	8%
	Subtotal	1,805	56%	265	1,540	52%
Open Space	Park	10	< 1%	-	10	< 1%
	Golf Course	155	5%	-	155	5%
	Outdoor Recreation / Athletic Fields	110	3%	-	110	4%
	Natural Areas	1,145	36%	-	1,145	39%
	Subtotal	1,420	44%	-	1,420	48%
	Grand Total	3,225	100%	265	2,960	100%

[1] "Net Acres Remaining" includes transportation rights-of-way

Note: Percentages may not total due to rounding

Exhibit 59: Airport Concept A-1 Land Use Table and Map



Airport Concept A-2

Airport Concept Plan A-2 included these key themes and elements:

- Primary entry from Bath Road, but no new interchange with US 1
- Hotel and conference center (adaptive reuse of existing transient lodging facility)
- New 18-hole golf course along eastern edge
- Renewable Energy Park
- Recreation complex and public gardens
- Indirect east-west collector from Gurnet Road to Harpswell Road

Exhibit 60: Airport Concept A-2 Land Use Table and Map illustrates the physical arrangement of the various land use and transportation elements of this plan, along with a breakdown of the conceptual land use program by acre:

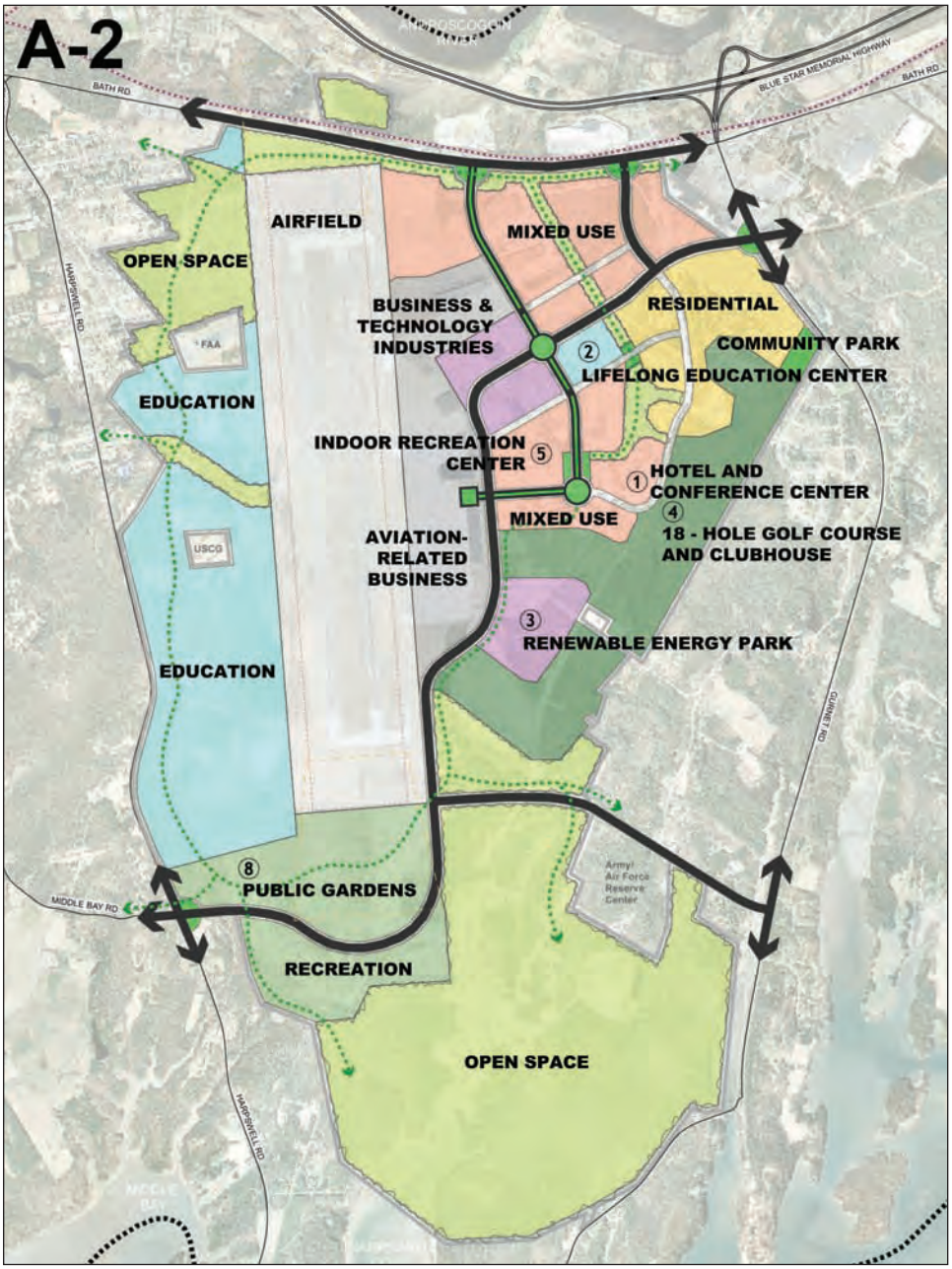
Airport Concept A2 - Potential Land Use Program

	Land Use Programs	Total Surplus Acres	% of Total Surplus Acres	Acres Not Suitable for Development	Net Acres Remaining [1]	% of Total Net Acres Remaining
Land Development	Airport Operations	505	16%	45	460	15%
	Aviation-Related Business	185	6%	0	185	6%
	Mixed Use	295	9%	35	260	9%
	Business and Technology Industries	105	3%	0	105	4%
	Education	405	13%	160	245	8%
	Residential	180	6%	15	165	6%
	Subtotal	1,675	52%	255	1,420	48%
Open Space	Park	15	< 1%	-	15	1%
	Golf Course	245	8%	-	245	8%
	Outdoor Recreation / Athletic Fields	230	7%	-	230	8%
	Natural Areas	1,055	33%	-	1,055	36%
	Subtotal	1,500	48%	-	1,550	52%
Grand Total		3,225	100%	255	2,970	100%

[1] "Net Acres Remaining" includes transportation rights-of-way

Note: Percentages may not total due to rounding

Exhibit 60: Airport Concept A-2 Land Use Table and Map



Non-Airport Concept N-1

The first non-airport concept plan map, identified as Non-Airport Concept N-1, included these key themes and elements:

- New US 1 interchange / bridge over Bath Road
- West-central transportation spine separates business and community-oriented uses from education and open space
- Primary east-west travel route helps connect community
- Rail-oriented Business and Technology Industries along Bath Road entry
- Expanded 18-hole golf course
- 2nd home / retirement development near golf course and Education
- Indirect east–west collector from Gurnet Road to Harpswell Road

Exhibit 61: Non-Airport Concept N-1 Land Use Table and Map illustrates the physical arrangement of the various land use and transportation elements of this plan, along with a breakdown of the conceptual land use program by acre:

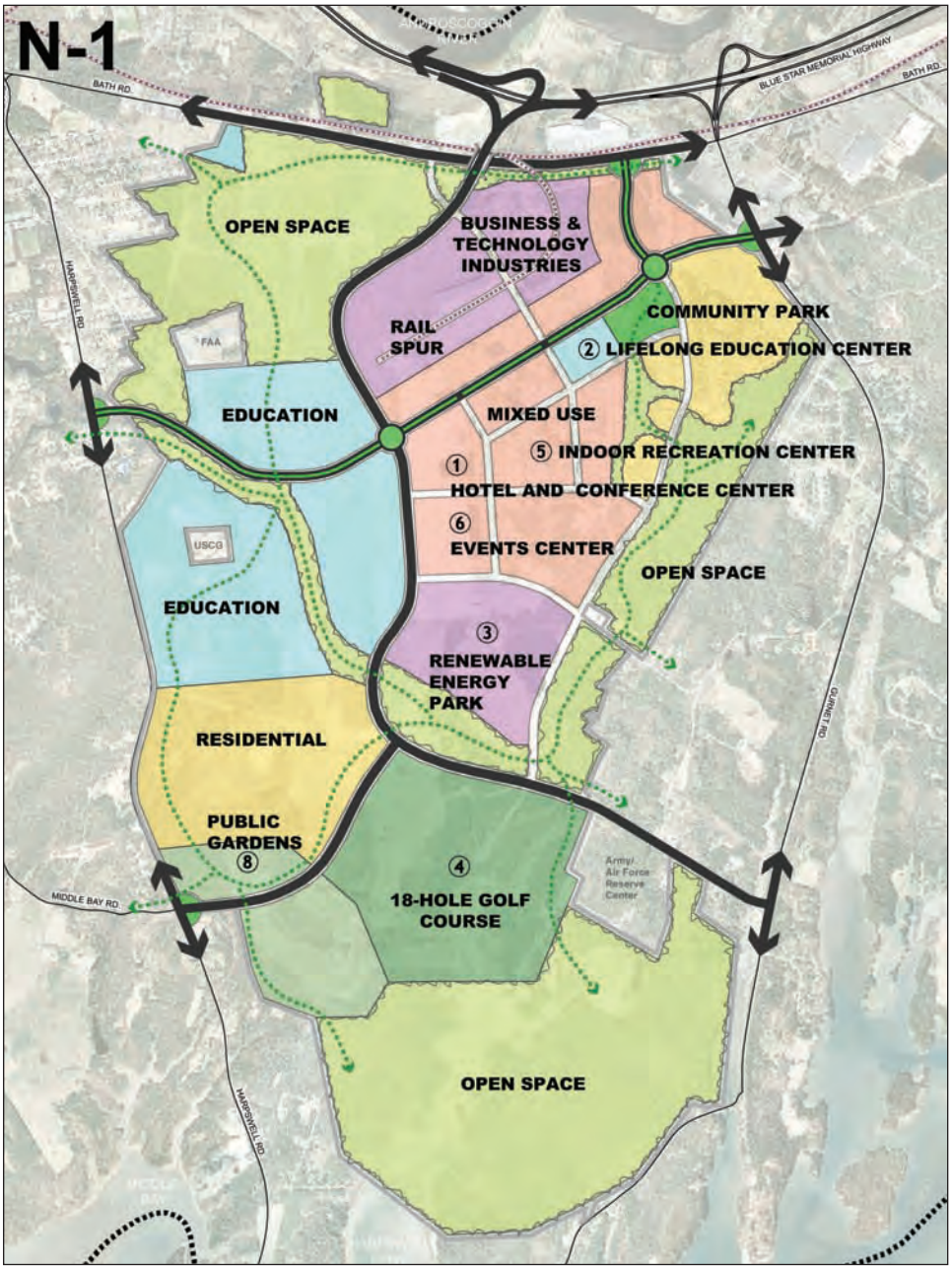
Non-Airport Concept N1 - Potential Land Use Program

	Land Use Programs	Total Surplus Acres	% of Total Surplus Acres	Acres Not Suitable for Development	Net Acres Remaining [1]	% of Total Net Acres Remaining
Land Development	Airport Operations	-	-	-	-	-
	Aviation-Related Business	-	-	-	-	-
	Mixed Use	375	12%	25	350	12%
	Business and Technology Industries	300	9%	20	280	9%
	Education	420	13%	105	315	11%
	Residential	400	12%	95	305	10%
	Subtotal	1,495	46%	245	1,250	42%
Open Space	Park	25	1%	-	25	1%
	Golf Course	295	9%	-	295	10%
	Outdoor Recreation / Athletic Fields	115	4%	-	115	4%
	Natural Areas	1,295	40%	-	1,295	43%
	Subtotal	1,730	54%	-	1,730	58%
Grand Total		3,225	100%	245	2,980	100%

[1] "Net Acres Remaining" includes transportation rights-of-way

Note: Percentages may not total due to rounding

Exhibit 61: Non-Airport Concept N-1 Land Use Table and Map



Non-Airport Concept N-2

Non-Airport Concept N-2 included the following key themes and elements:

- No US Route 1 interchange
- Central transportation loop separates higher-density Mixed Use and Business and Technology uses from surrounding lower-density uses
- Expanded 18-hole golf course
- Promotes strong mix of uses (hotel, conference, golf and education)
- Indirect east–west collector from Gurnet Road to Harpswell Road

Exhibit 62: Non-Airport Concept N-2 Land Use Table and Map illustrates the physical arrangement of the various land use and transportation elements of this plan, along with a breakdown of the conceptual land use program by acre:

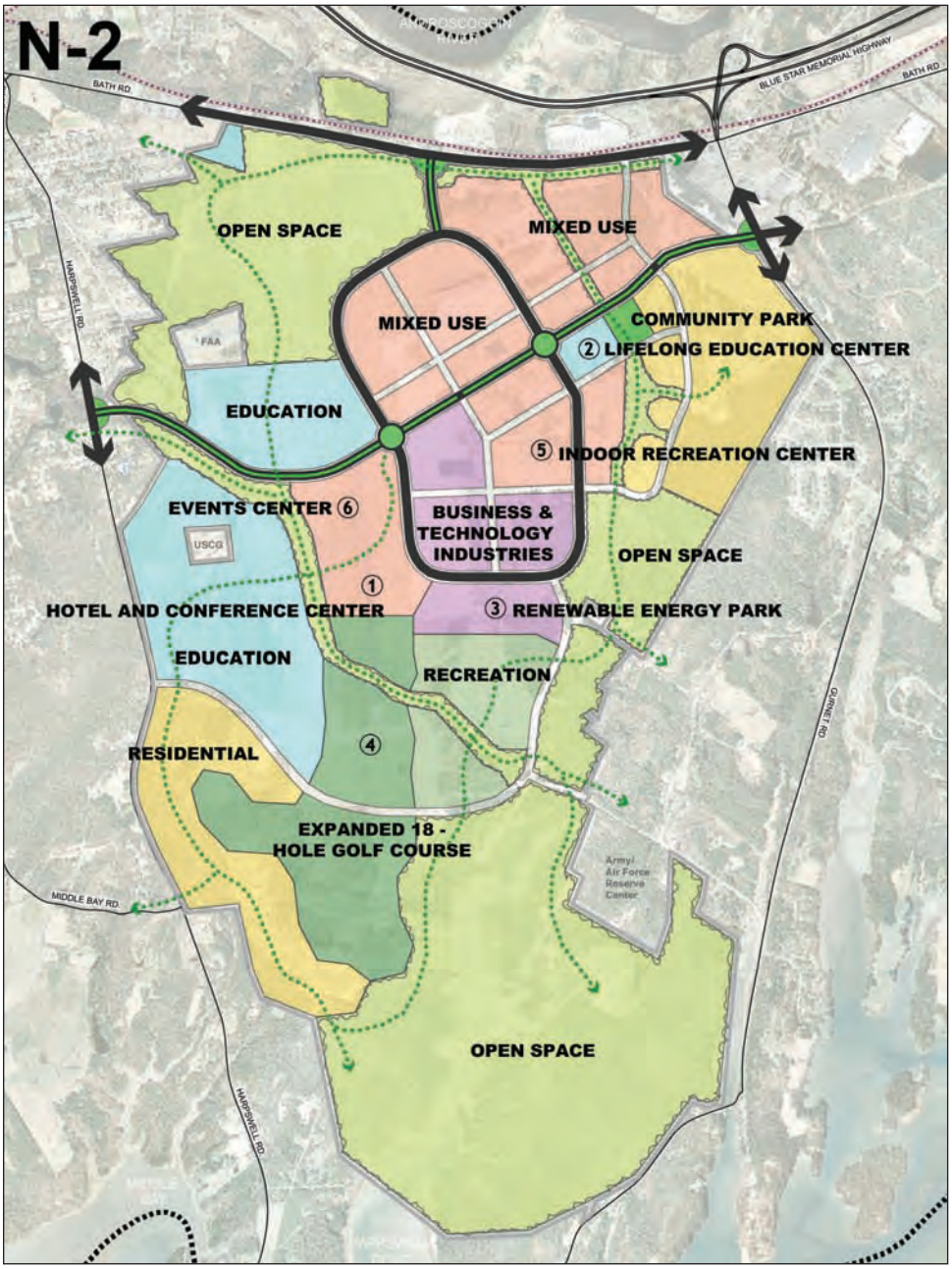
Non-Airport Concept N2 - Potential Land Use Program

	Land Use Programs	Total Surplus Acres	% of Total Surplus Acres	Acres Not Suitable for Development	Net Acres Remaining [1]	% of Total Net Acres Remaining
Land Development	Airport Operations	-	-	-	-	-
	Aviation-Related Business	-	-	-	-	-
	Mixed Use	490	15%	30	460	15%
	Business and Technology Industries	170	5%	10	160	5%
	Education	360	11%	120	240	8%
	Residential	445	14%	95	350	12%
	Subtotal	1,465	45%	255	1,210	41%
Open Space	Park	10	< 1%	-	10	< 1%
	Golf Course	230	7%	-	230	8%
	Outdoor Recreation / Athletic Fields	110	3%	-	110	4%
	Natural Areas	1,410	44%	-	1,410	47%
	Subtotal	1,760	55%	-	1,760	59%
Grand Total		3,225	100%	255	2,970	100%

[1] "Net Acres Remaining" includes transportation rights-of-way

Note: Percentages may not total due to rounding

Exhibit 62: Non-Airport Concept N-2 Map and Land Use Table



Planning Themes Common to All Concept Plans

Despite the differences in land use and transportation configurations among the four concept plans discussed above, various planning- and design-related themes are common, including:

Gateways and Entry Features:

- US Route 1, Bath Road, Gurnet and Harpswell Roads
- Natural Open Space and/or Parkways
- Architectural Theme and Character
- Monuments, Sculpture, Landscaping and Lighting
- Distinctive, Visually Attractive, Memorable
- Symbolic Extension of the "Mall" Found in Downtown Brunswick
- Promote "Sense of Place"

Mix of Land Use Types and Densities

- Aviation-Related Business and Industrial
- Business and Technology
- Mixed-Use Districts
- Professional Offices / Services
- Neighborhood / Niche Retail
- Range of Housing (Attached/Detached and Multi-Family)
- Civic and Cultural Facilities
- Special Uses
- Educational Campus and/or Facilities
- Parks, Recreation and Open Space
- Formal / Informal - Active / Passive - Natural Areas

Pedestrian-Friendly Transportation Solutions

- Landscaped Medians / Pedestrian Safety Zones
- Safe and Convenient Transit Stops
- Pedestrian Overpass / Underpass Potential
- Streetscaping, Furniture and Pedestrian Amenities
- Walkable Neighborhoods
- Separated Bicycle Lanes, Trails, and Pathways
- Direct Connections with Future Links to Midcoast Hospital

Recognize Existing Infrastructure and Resources

- Off-Base and On-Base Vehicular Circulation Patterns
- Adjacent Land Use Considerations
- Major Buildings and Facilities
- Existing Utility Systems
- Natural Systems and Drainage Patterns
- Environmental Conditions

Preserve Open Space and the Environment

- Harpswell Cove Estuary
- Mere Brook and Other Waterways
- Pitch Pine and Sand Plain Grassland Communities
- Aquifer Recharge Areas
- Unfragmented Forests
- Deer Wintering Areas
- Other Identified Sensitive Areas

Plan Alternatives

After review and consideration of the four concepts and their characteristics, the BLRA Board of Directors voted unanimously on August 15, 2007 to include an aviation component in the Reuse Master Plan. The decision was based on the recommendations of the Aviation Feasibility Study, as well as strong public support for the continued use of the existing aviation assets. Consequently, the two non-airport concept plans discussed above were eliminated for further consideration.

Following this decision, the planning team proceeded to refine the two airport concepts. With adjustments made to the transportation framework in response to community feedback from the *BRAC to the Future* public meeting, modifications were also made regarding land use districts, with the primary change being the introduction of a "Professional Office" land use category that was distinct from the Mixed Use category. The result was the transformation of the two airport concept maps into Plan Alternative A and Plan Alternative B. These two alternative plans were presented for public comment at the *BRAC to the Future II* meeting in September 2007.

Plan Alternatives A and B both capitalize on the extensive airport facilities that currently exist on the base. The following paragraphs describe and illustrate these two Plan Alternatives:

Plan Alternative A

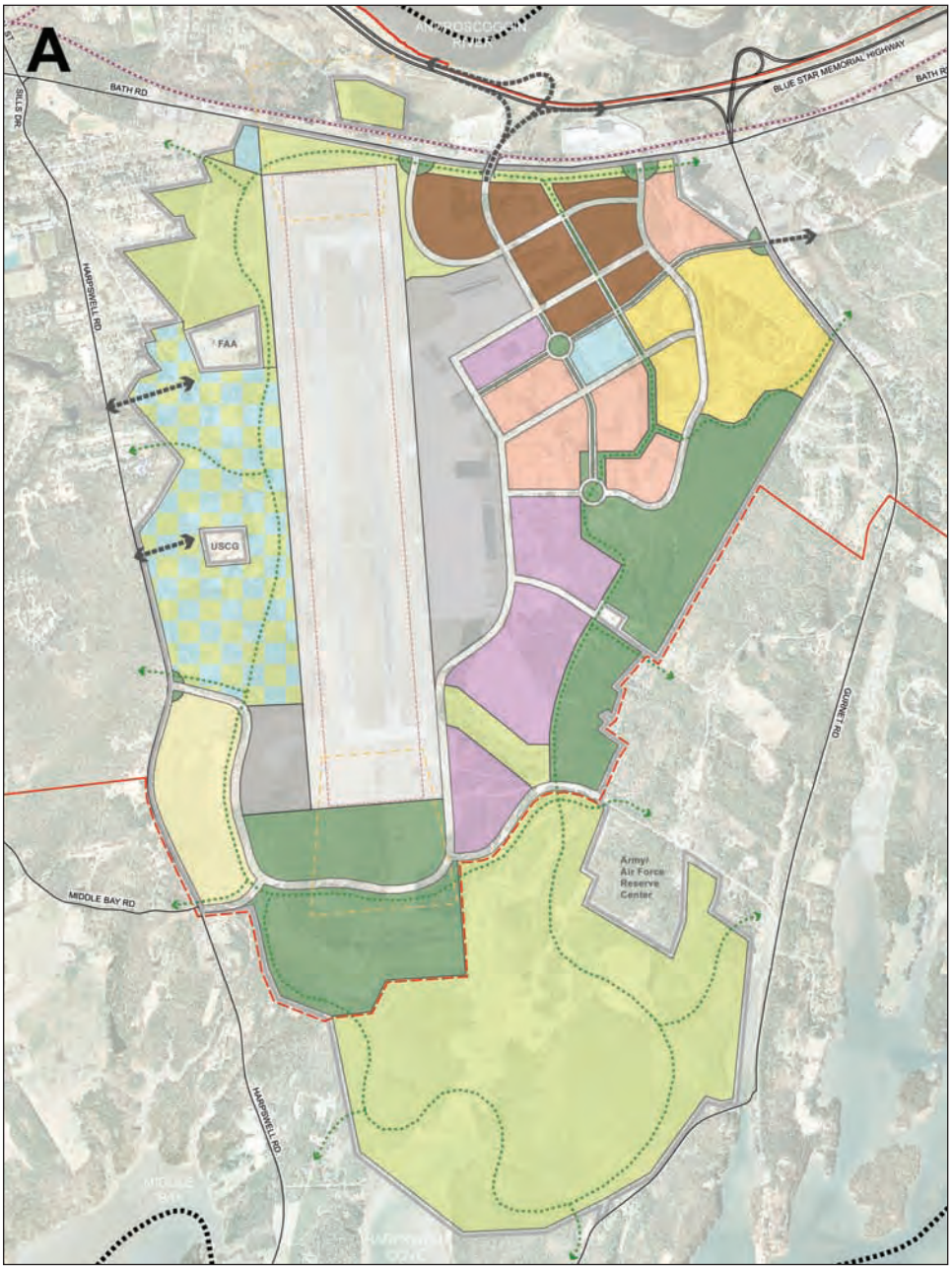
Plan Alternative A maximizes vehicular access to the property with both its proposed interchange at US 1 and additional entry points along Bath, Harpswell, and Gurnet Roads. The plan includes a Professional Office district at the Bath Road gateway, as well as a Mixed Use district adjacent to the Cook's Corner retail area. South of the Professional Office district, in the heart of the redevelopment, a mix of districts are planned, including Business and Technology Industries, Mixed Use, Education, and Residential uses. These districts are oriented to north-south greenbelts and parkways that lead to the area around the Transient Visitors Quarters, which is envisioned as a hotel and conference center. A new golf course is planned in the undeveloped area and adjacent to the hotel. Aviation-Related Business uses remain focused along the east side of the airfield, with additional Business and Technology Industry districts located adjacent to the Aviation-Related Business district. South of the runway, a large Recreation and Open Space district is proposed where the existing golf course is presently located. Adjacent to the southwest corner of the runway is a small Aviation-Related Business district. A low-density Residential district is near the intersection of Harpswell Road and Middle Bay Road. Education and Natural Areas occupy the remaining areas west of the airfield.

Exhibit 63: Plan Alternative "A" Land Use Table and Map illustrates the land use and transportation framework for Plan Alternative A, along with a breakdown of the conceptual land use program by acre:

Alternative A - Proposed Land Use Program

	LAND USE DISTRICTS	SURPLUS ACRES	PERCENT OF TOTAL
Land Development	Airport Operations	500	16%
	Aviation-Related Business	225	7%
	Professional Office	150	5%
	Community Mixed Use	145	4%
	Business and Technology Industries	195	6%
	Education	200	6%
	Residential (Moderate Density)	225	7%
	Residential (Low Density)	95	3%
	SUBTOTAL	1,735	54%
Open Space	Recreation / Open Space	470	15%
	Natural Areas	1,020	32%
	SUBTOTAL	1,490	46%
	GRAND TOTAL	3,225	100%

Exhibit 63: Plan Alternative "A" Land Use Table and Map



Plan Alternative B

Plan Alternative B also features Mixed Use and Business and Technology Industries districts along Bath Road. South of these districts, in the heart of the redevelopment, are additional Mixed Use and Business and Technology Industries districts, along with an Education district and expanded Residential districts adjacent to the existing housing. Natural Areas are retained along the eastern edge of the base, connecting to Harpswell Cove. As with Plan Alternative A, an Aviation-Related Business district and additional Business and Technology Industries districts form the eastern boundary to the airfield. South of the runway, a Recreation and Open Space district is proposed that includes the existing golf course. The remaining areas west of the runway are designated for Education and Natural Area uses.

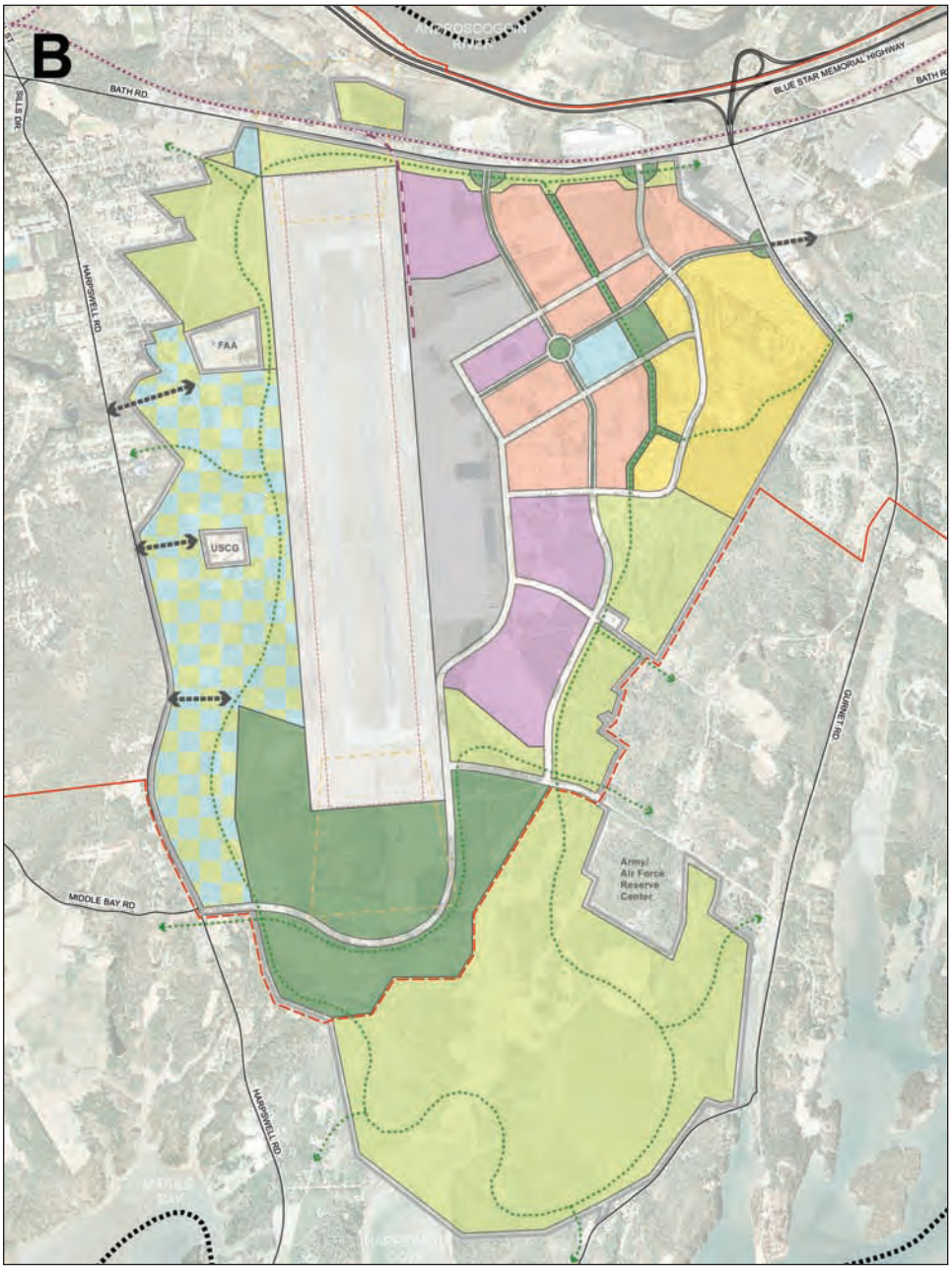
Exhibit 64: Plan Alternative "B" Land Use Table and Map illustrates the land use and transportation framework for Plan Alternative B, along with a breakdown of the conceptual land use program by acre:

Alternative B - Proposed Land Use Program

	LAND USE DISTRICTS	SURPLUS ACRES	PERCENT OF TOTAL
Land Development	Airport Operations	500	16%
	Aviation-Related Business	185	6%
	Professional Office	0	0%
	Community Mixed Use	240	7%
	Business and Technology Industries	205	6%
	Education	200	6%
	Residential (Moderate Density)	280	9%
	Residential (Low Density)	0	0%
	SUBTOTAL	1,610	50%
Open Space	Recreation / Open Space	375	12%
	Natural Areas	1,240	39%
	SUBTOTAL	1,615	50%
	GRAND TOTAL	3,225	100%

Notes: Percentages may not total due to rounding

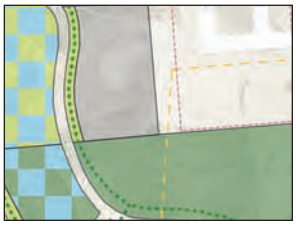
Exhibit 64: Plan Alternative "B" Land Use Table and Map



Plan Selection

Based on public feedback as well as other market, economic, and physical factors, the BLRA Board of Directors voted on September 19, 2007 to adopt Plan Alternative A as the basis for the Reuse Master Plan. During September and October the planning team, in consultation with the BLRA staff and Board of Directors, continued to refine the preferred plan that resulted in the Reuse Master Plan map presented in **Section 6**.

Section 6: The BNAS Reuse Master Plan



This section of the BNAS Reuse Master Plan report describes and illustrates the specific land use, transportation, and open space elements that define the Plan, and that will establish the property as a unique asset within the greater Brunswick community and Midcoast Maine region.

Plan Vision and Intent

The Reuse Master Plan for the Brunswick Naval Air Station represents a unique opportunity to establish not only a vibrant live, work, play and educate environment, but also centers of excellence for technology innovation, environmental sustainability, and "green" community development. From an economic development perspective, the plan provides a framework within which a variety of corporate, business, academic, recreational, and community opportunities can flourish. From a community development perspective, the plan promotes a strong sense of place based on smart growth principles that will serve as a model for future sustainable development throughout the region.

Land Use and Transportation Framework

The structure and relationship between future land uses and the transportation system proposed for redevelopment of the base is described in this section. This includes a description of the proposed land use program; a description and a diagrammatic illustration of each of the land use districts; a summary of transportation and open space elements; and a discussion of how environmental conditions influenced the Reuse Master Plan.

Land Use Program

The land use program shown below provides a summary of proposed land use districts, with corresponding areas allocated for each land use type. As indicated on the exhibit, only 51% of the total base property has been allocated for development (approximately 1,630 acres); and, 49% (approximately 1,570 acres) of the base has been dedicated to a variety of active and passive areas for recreation, open space, and natural areas. This figure does not include parks, open space, and natural drainage or buffer areas that would be incorporated as part of the 1,630 acres planned for development. **Exhibit 66: Land Use Program Table** is color-coded to correspond with the land use districts shown on **Exhibit 65: Reuse Master Plan Map**.

Note: Matrix Design Group is the source of all exhibits in this Section.

Exhibit 65: Reuse Master Plan Map

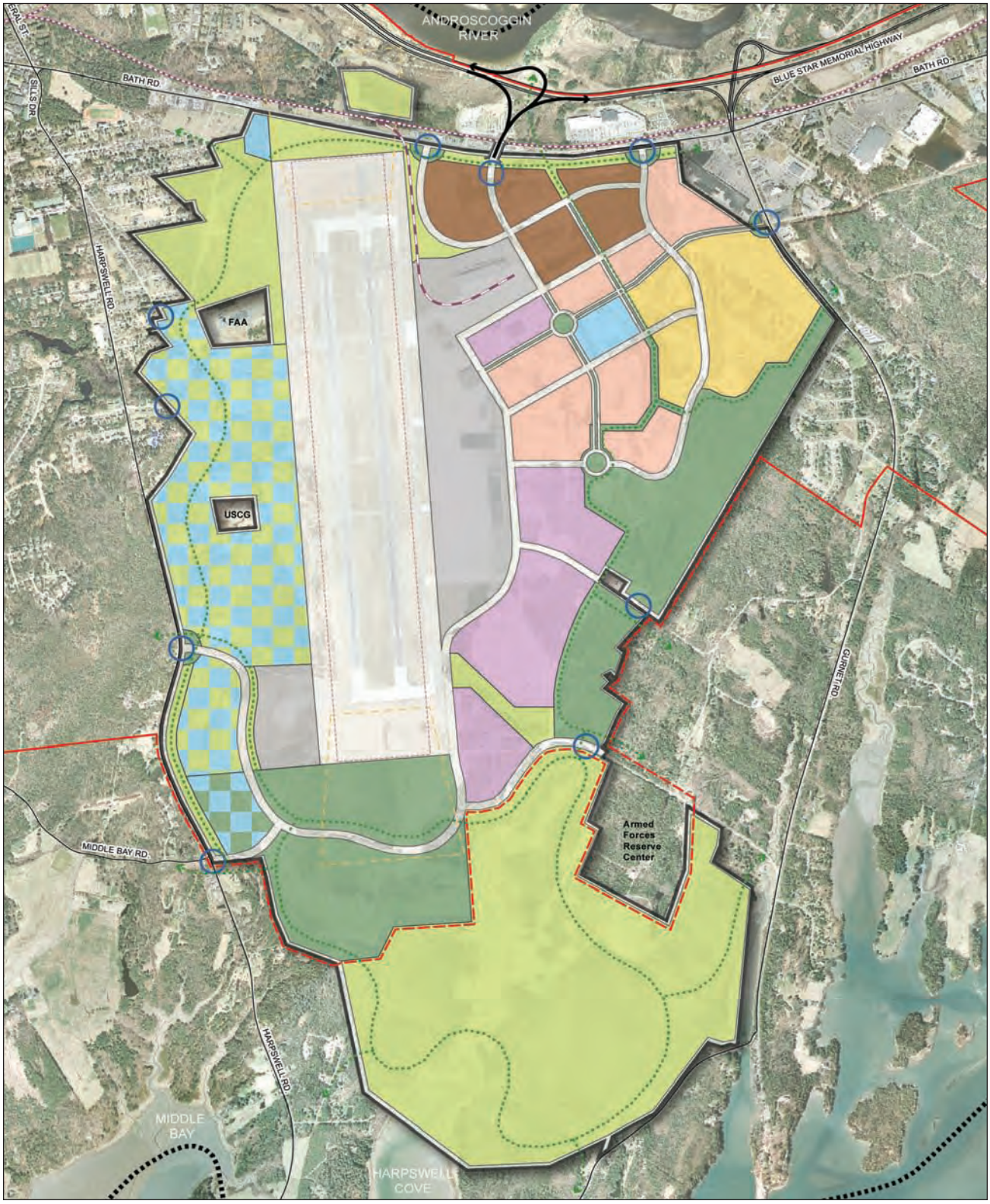


Exhibit 66: Land Use Program

Proposed Land Use Program

	LAND USE DISTRICTS	SURPLUS ACRES	PERCENT OF TOTAL
Land Development	Airport Operations	500	16%
	Aviation-Related Business	230	7%
	Professional Office	120	4%
	Community Mixed Use	175	5%
	Business and Technology Industries	190	6%
	Education	200	6%
	Residential	215	7%
	SUBTOTAL	1,630	51%
Open Space	Recreation / Open Space	510	16%
	Natural Areas	1,060	33%
	SUBTOTAL	1,570	49%
	GRAND TOTAL	3,200	100%

Notes:

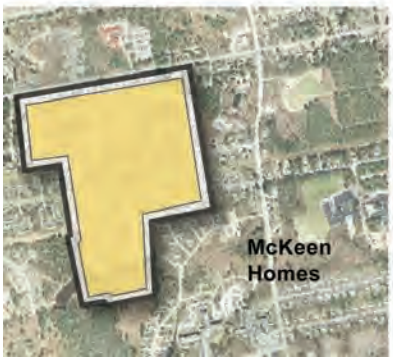
1. Checkered blue-light green area totals 320 acres, of which an undefined 175 acres have been assigned in the table above to Education and 145 acres to Natural Areas.
2. Checkered blue-dark green area totals 30 acres, all of which has been assigned in the table above to Recreation / Open Space; however, Education would be an allowed use, if needed.
3. Checkered light green-dark green (East Brunswick Transmitter Site) area totals 70 acres, of which an undefined 35 acres have been assigned in the table above to Recreation / Open Space and 35 acres to Natural Areas.
4. The Runway Object Free Area provides a 500-foot buffer to the east and west of the two runways. The Airport Operations land use district extends an additional 500 feet beyond the Runway Object Free Area, resulting in a 1,000-foot buffer parallel to the runways.

Legend

- B N A S Surplus Property
- Town of Brunswick
- State Highway
- Major Road
- Railroad
- Runway Protection Zone
- Runway Object Free Area
- Existing Town Growth Boundary
- Potential Town Growth Boundary
- Potential Pedestrian / Bike Trail
- Potential New Interchange
- Potential Railroad Spur
- Access Points

N

0 500 1,000 2,000 3,000 Feet



BLRA
BRUNSWICK LOCAL REDEVELOPMENT AUTHORITY

BRUNSWICK NAVAL AIR STATION
REUSE MASTER PLAN

Matrix Design Group Inc.
Integrated Design Solutions

PLANNING DECISIONS ECONOMIC RESEARCH ASSOCIATES
WRIGHT - PIERCE ENGINEERS WBRC ARCHITECTS + ENGINEERS

Land Use Districts

Based on the inventory and assessment of local, regional, and state market conditions, and influenced by the availability of existing on-base infrastructure and facility assets, the land use program described above is illustrated by the exhibits that follow.

Airport Operations District

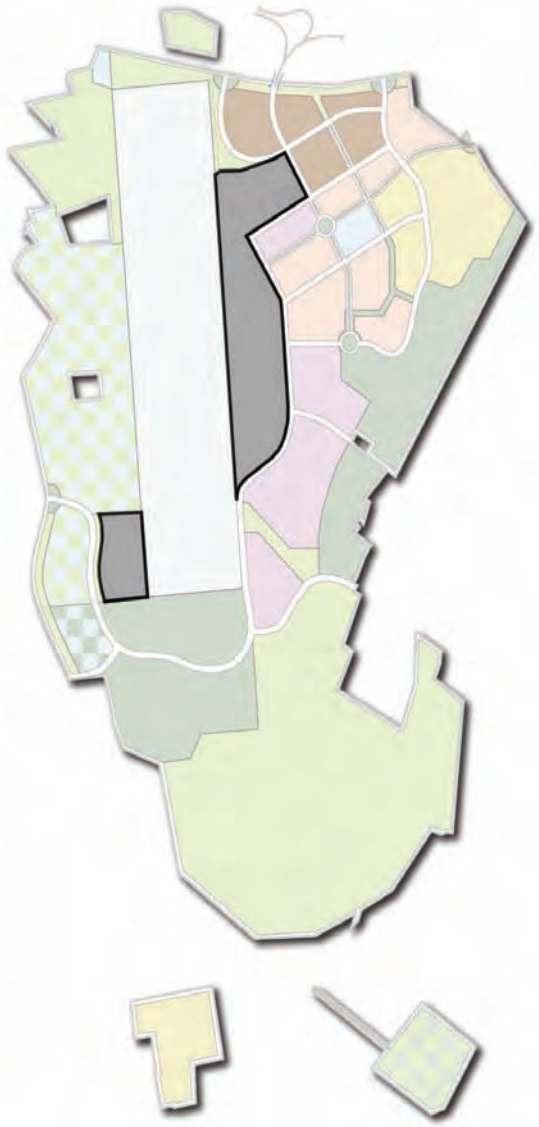
The 500-acre Airport Operations district, shown in light gray on the plan, contains the two existing 8,000-foot long runways, taxiways and adjacent buffer zones surrounding the active airfield. **Exhibit 67: Airport Operations District Location Map** shows the location of this land use district.

Exhibit 67: Airport Operations District Location Map

Aviation-Related Business District

The intent of the 230-acre Aviation-Related Business district, identified in dark gray on the plan, is to provide an area dedicated primarily to aviation-related business, industry, transportation and distribution, technology employment and other uses that rely on, or directly benefit from, proximity to airport facilities and operations. Such uses could include general and corporate aviation, aircraft maintenance / repair / overhaul, aviation-related manufacturing, and government and aerospace research and development. **Exhibit 68: Aviation-Related Business District Location Map** shows the locations of this land use district.

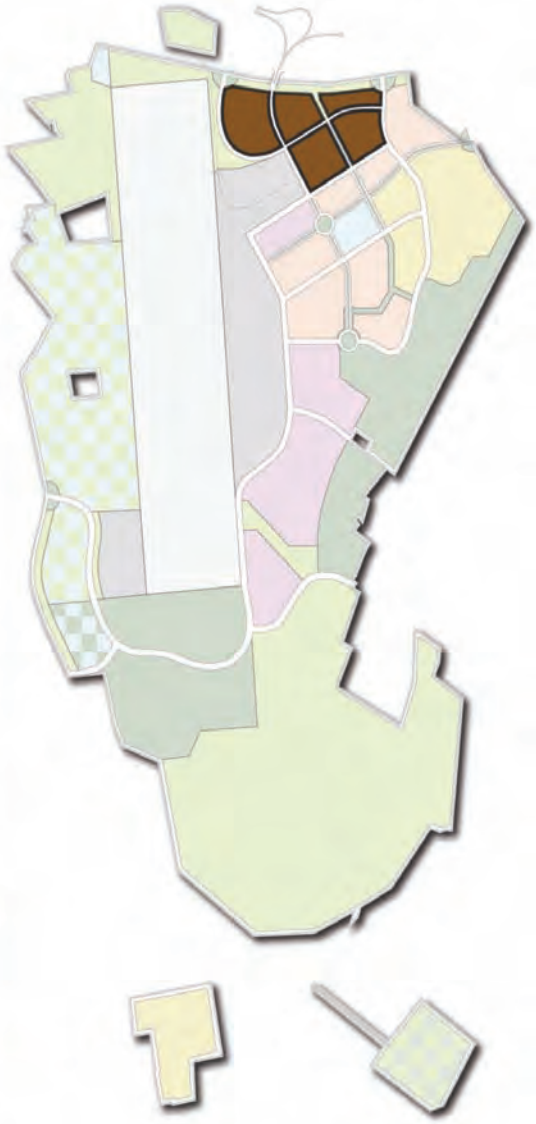
Exhibit 68: Aviation-Related Business District Location Map



Professional Office District

The intent of the 120-acre Professional Office district, identified in brown on the plan, is to provide an employment center serving corporate and professional office needs of the area. Although some retail and community support uses such as hotels, food service, and day care could be integrated into this district, primary uses would be administrative, corporate, or professional offices such as law, medical, insurance, architectural, engineering, finance, real estate, and similar office uses. Uses can be accommodated within this zone in stand alone buildings, in a campus setting, or in a more compact office complex. **Exhibit 69: Professional Office District Location Map** shows the locations of this land use district.

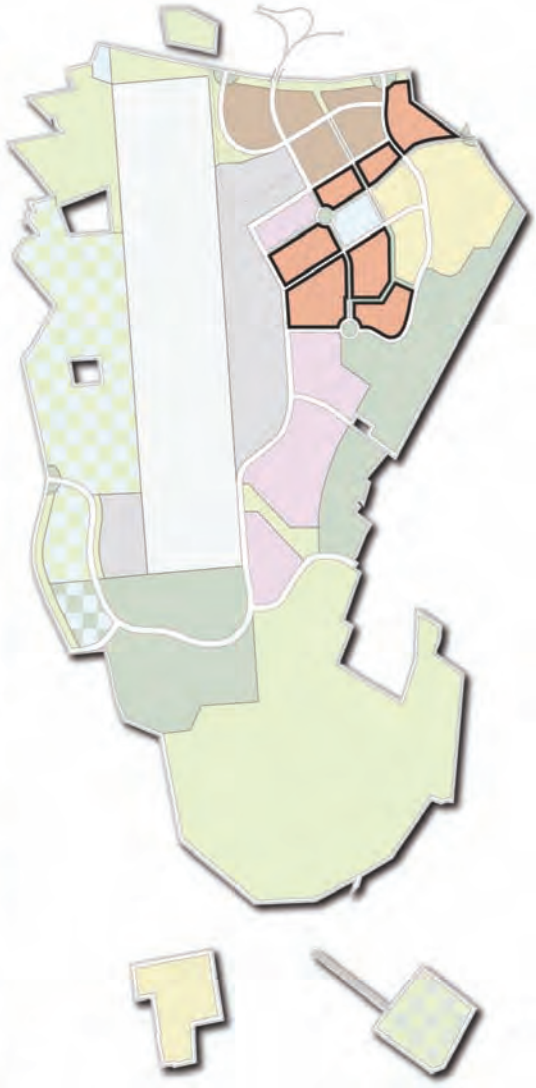
Exhibit 69: Professional Office District Location Map



Community Mixed Use District

The intent of the 175-acre Community Mixed Use district, shown in light orange on the plan, is to provide a compact pedestrian-oriented mix of uses that will provide a variety of live, work, play and educate opportunities. Typical uses could include neighborhood-scale retail, professional offices, business and support services, restaurants, hotels and conference centers, health and fitness centers, day care centers, civic and cultural uses (such as churches, libraries, and museums), parks and government buildings. Also included would be a variety of higher-density attached housing types, such as town homes, condominiums and apartments (including affordable rental and home ownership, and assisted/independent care senior housing). **Exhibit 70: Community Mixed Use District Location Map** shows the locations of this land use district.

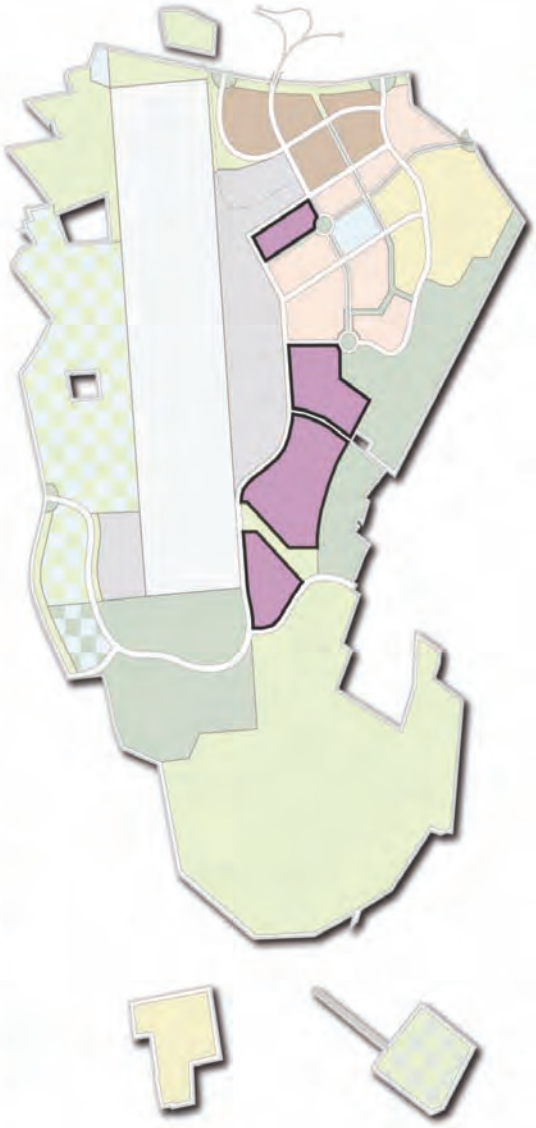
Exhibit 70: Community Mixed Use District Location Map



Business and Technology Industries District

The intent of the 190-acre Business and Technology Industries district, shown in purple on the plan, is to provide a high-tech employment center that would serve large-scale technology uses, such as technology-based research and development, energy park, laboratories, light manufacturing, and warehouse and distribution uses. Facilities could be developed as stand-alone buildings on several acres, or in a campus / corporate park setting. This district could also accommodate activities that are normally considered industrial in nature, but which produce few, if any, external effects that may be adverse to nearby properties or to the community in general. **Exhibit 71: Business and Technology Industries District Location Map** shows the locations of this land use district.

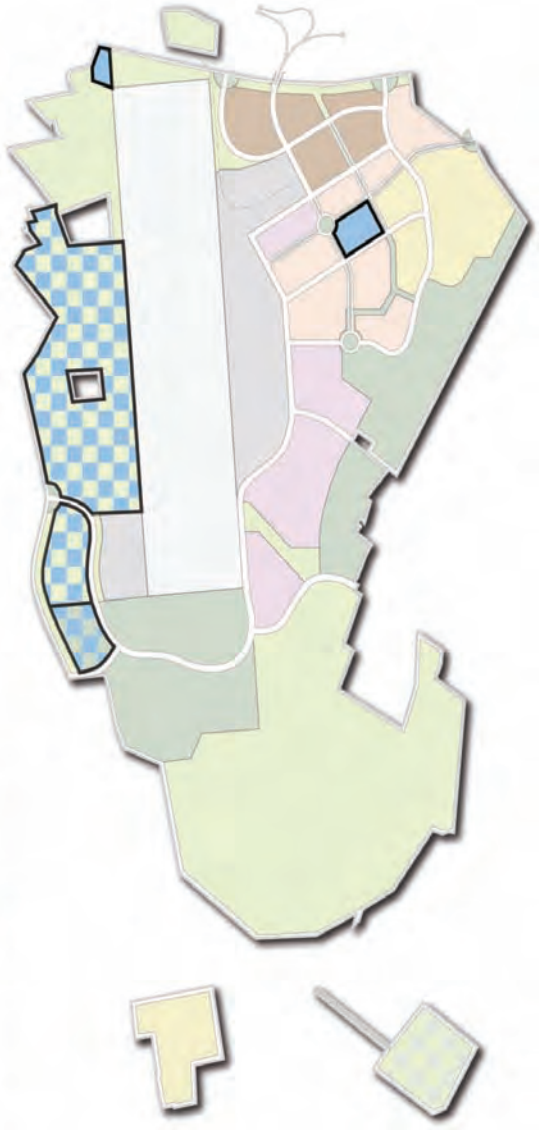
Exhibit 71: Business and Technology Industries District Location Map



Education District

The intent of the 200-acre Education district, light blue on the plan, is to allow for university and college-level academic, administrative and support facilities. Typical uses include college classrooms, administrative and support facilities, athletic and sporting events, and student / faculty housing. More detailed studies are being conducted in the checkered areas to determine specific locations for educational versus natural area uses. **Exhibit 72: Education District Location Map** shows the location of this land use district.

Exhibit 72: Education District Location Map



Residential District

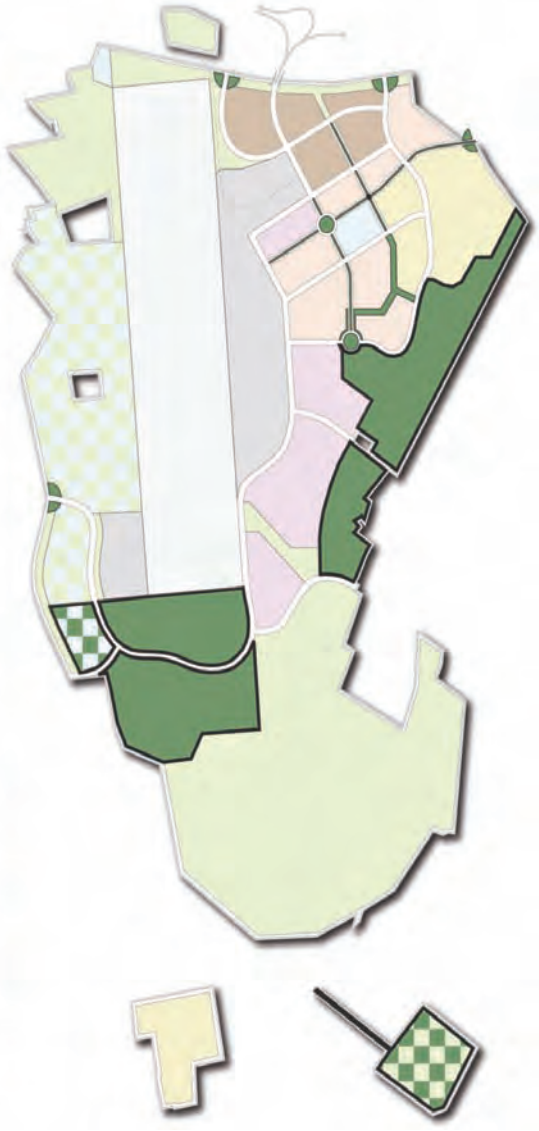
The intent of the 215-acre Residential district, shown in yellow on the plan, is to provide for a variety of housing types in a compact, pedestrian-oriented setting. Typical uses will include single-family attached or detached, multi-family apartments, assisted / senior housing, and retirement / second homes. The proposed density for the McKeen Street housing area is five dwelling units per acre and for the on-base housing areas eight dwelling units per acre. For residential uses in the Community Mixed Use districts, the proposed density is 24 dwelling units per acre. **Exhibit 73: Residential District Location Map** shows the locations of this land use district.

Exhibit 73: Residential District Location Map

Recreation and Open Space District

The intent of the 510-acre Recreation and Open Space district, identified on the plan in dark green, is to provide suitable areas for a variety of commercial and public active and passive outdoor recreational opportunities for the community. Recreational activities could include public parks, recreation fields, golf courses, public gardens, bicycle trails, and equestrian facilities. **Exhibit 74: Recreation and Open Space District Location Map** shows the locations of this land use district.

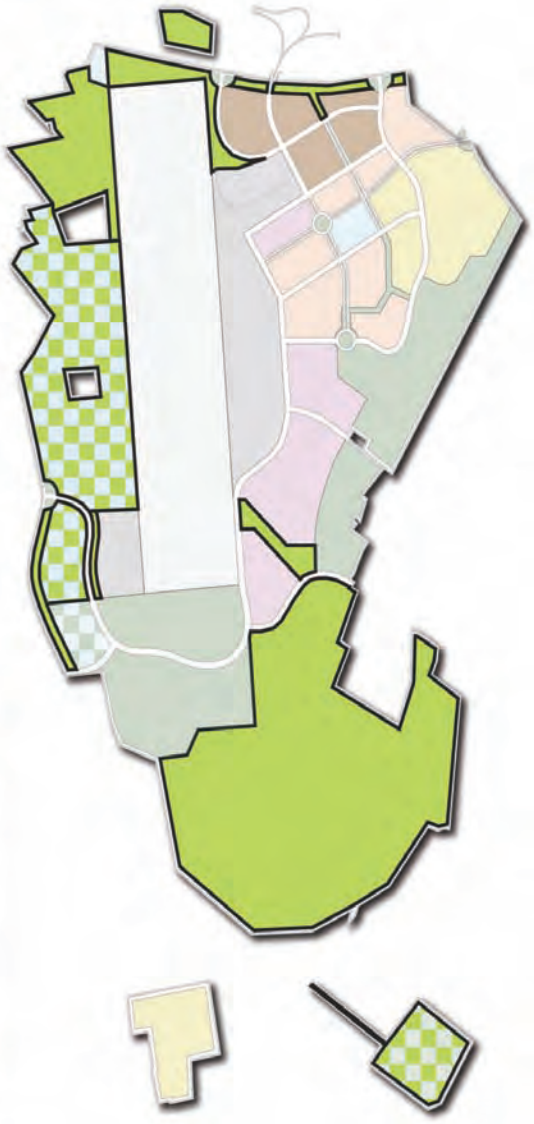
Exhibit 74: Recreation and Open Space District Location Map



Natural Areas District

The intent of the 1,060-acre Natural Areas district, light green on the plan, is to preserve, maintain and enhance existing natural areas for the long-term benefit of area residents and the natural environment. As such, only those uses that would not significantly alter the environment and/or would provide opportunities to experience the environment would be considered, including pedestrian trails, nature and interpretive centers, environmental education, and other non-intrusive passive outdoor recreation and educational uses. More detailed studies are being conducted in the checkered areas to determine specific locations for natural versus educational uses. **Exhibit 75: Natural Areas District Location Map** shows the location of this land use district.

Exhibit 75: Natural Areas District Location Map



Transportation System

Through the course of the development of the Reuse Master Plan, efforts were made to identify both the nature and magnitude of transportation demands likely to be associated with redevelopment of the facility and the ability of the existing transportation systems to accommodate these demands. A recurring theme from the public was the desire to accommodate viable alternatives to single passenger automobile travel and the need to be sensitive to other land uses in the vicinity of the base. The transportation framework plan element of the Reuse Master Plan addresses both off-site and on-site capacity-related improvements with consideration of these issues. Following are a number of the key components of the Plan:

Facility Access

With the change in use of the base property, there will no longer be a need to maintain only two points of access for security reasons. It is proposed that the Bath Road entrance to the base be relocated to create a four-way intersection with Merrymeeting Plaza and close the existing entrance. In addition to relocating the primary access / gateway to the facility to better coincide with the present pattern of signalization on Bath Road, several key elements are proposed:

- Creation of a new connector spur and interchange connecting to US Route 1 west of the present interchange at Cook's Corner
- New secondary points-of-access onto the adjacent street systems at Bath Road / Gurnet Road / Harpswell Road

Internal Street and Roadway Network

Within the base property, there will be a number of changes in the existing street and roadway network:

- With the change in use and creation of connection points to Harpswell Road on the west and Gurnet Road on the east, there will be a transition in terms of the proportion of east-west versus north-south traffic flow patterns.
- With the changes in traffic patterns and land use, it will be possible to implement a logical system of street hierarchy and character. It is envisioned that primary arterial routes extending through the base will assume the character of boulevards and will serve a number of local and/or collector streets which provide direct access to the individual parcels. The design of these streets will include appropriate consideration of pavement width / geometry, landscaping, lighting, pedestrian features and utility accommodation / access.

Rail Service Considerations and Access

Historically, the base was served directly by rail, via an at-grade crossing of Bath Road. The rail spur extended into the site roughly parallel to the main base entrance. While it has been determined that re-creation of both passenger and freight rail access onto the site would present a key incentive for certain future development, the reintroduction of a grade crossing on Bath Road would present a number of challenges. Initial evaluation suggests that creation of grade separated rail access could be achieved through elevating Bath Road across the north end of the site, which would allow a new rail spur alignment further to the west.

Pedestrian Circulation and Walkability

As noted, significant public input focused on the need to create a facility characterized by "walkability." The improvements contemplated within the plan will provide pedestrian access throughout, with a focus on connectivity with those types of land uses which tend to generate pedestrian traffic, or interface with other transportation modes. To ensure the development of a strong pedestrian and bicycle system as part of the base redevelopment, Town of Brunswick development standards and roadway transportation improvements must incorporate sufficient bicycle and pedestrian facilities.

Transit Interface

Plan development included a number of conversations with CoastalTrans, Inc., which serves as the primary local transit provider. It is proposed that transit stops will be located to correspond with complementary land use elements and transportation nodes.

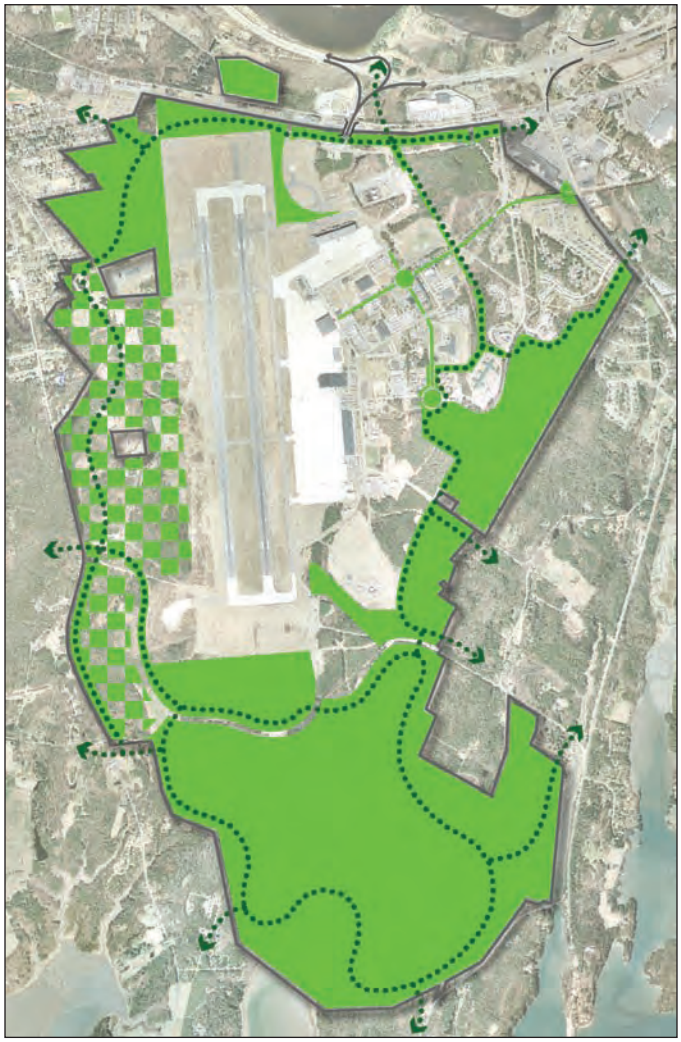
Other Environmentally Sustainable Transportation Modes

In addition to promoting pedestrian, transit and, potentially, passenger rail as key modes of transportation, the Reuse Master Plan has identified the desirability of facilities to support other environmentally sustainable elements, such as provision of bicycle racks and facilities necessary for operation of electric cars and buses.

Open Space System

Over 1,500 acres (49%) of the site are dedicated to open space and natural areas, where wetlands, drainageways, wildlife corridors and other sensitive natural systems are prevalent. Urban parks and formal open spaces are envisioned in the more developed areas, with pedestrian linkages to ensure connectivity not only throughout the property, but also into the adjacent neighborhoods and community. This approach promotes the concept of conservation and preservation of site and area-wide natural systems, while also providing a variety of locations and conditions for both active and passive recreational activities. **Exhibit 76: Open Space System Map** shows in green the areas designated in the Reuse Master Plan as either Recreation / Open Space or Natural Areas combined as a single Open Space system.

Exhibit 76: Open Space System Map



Source: Matrix Design Group

Environmental Influences

A detailed opportunities and constraints analysis was performed with respect to environmental conditions to help guide the development of the Reuse Master Plan. The analysis produced an implementation strategy that will best position designated land use districts for redevelopment. As a result, specific recommendations have been incorporated into the land use master plan, including:

- Minimization of residential development in areas with environmental contamination
- Location of the golf course over the Eastern Plume to provide recreational outdoor activities, while limiting potential for structures that may result in indoor air issues and elevated risk to human health
- Placement of golf course club house location off the Eastern Plume footprint to limit indoor air impacts
- Boundaries around the landfills have been modified where appropriate to avoid segregation of the landfill into several land uses (so as to not split any short or long term obligations)
- Zoning or long-term planning for the landfill areas will incorporate use designations with consideration of the landfills. For example, placement of a parking lot over the landfills may be appropriate with limited cap revisions, whereas placement of buildings would be more difficult given the existing conditions and long term monitoring requirements
- The Explosive Ordnance Disposal Training Area (Site 12) and other uninvestigated munitions areas have been designated as open space
- Like-use as an airport will result in a less stringent remediation (i.e., industrial cleanup standards) for this land use district as opposed to some other use, such as mixed use or residential use that would require additional remediation
- Reuse of the existing hangars as industrial uses results in less stringent cleanup standards
- Identifying the many data gaps for the environmentally impacted sites in the "Front Door" area has prioritized the additional investigation necessary for this area. This land use district is a proposed professional office campus and with attentive environmental planning, the redevelopment of this area can proceed smoothly and more quickly

Section 7: Plan Implementation Considerations

As the Midcoast Regional Redevelopment Authority (MRRA) focuses on implementation of the Reuse Master Plan for redevelopment of the Brunswick Naval Air Station, more detailed planning, market and economic studies, environmental investigations, building evaluations, and other activities will need to be programmed. The following section provides a discussion of a variety of issues that will aid MRRA in making decisions related to future economic development, transportation and infrastructure, environmental cleanup, and property transfer.

Economic and Development Impacts

The following development impact estimates (in current dollars) represent the jobs, wages and taxes that could be generated, assuming full build-out of the BNAS site according to the Reuse Master Plan. ERA includes all new development as well as the reuse of select existing buildings for education tenants. ERA does not include construction labor or short-term employment generated by residential development. Regarding the development of commercial space, ERA assumes:

- A floor-to-area ratio (FAR) of 0.25
- Usable square feet equal to 85% of gross square feet

When possible, ERA uses the jobs and wages projected by tenants themselves. Other assumptions include:

- 250 square feet per office per R&D employee
- 500 square feet of space per retail employee
- 1,000 square feet of space per warehousing / manufacturing employee

ERA applies reasonable distributions of types of uses and commercial space for each land-use district within the Reuse Master Plan and utilizes Maine Department of Labor industry data to estimate total wages and a combination of US Census and Maine Department of Revenue data to estimate income taxes. A more detailed description of the methodology used to calculate income taxes can be found on the Maine Department of Revenue website (www.maine.gov/revenue). To estimate commercial property taxes, ERA uses per square foot construction cost quotes from builders active in the local market to come to total construction costs, which are used as a proxy of market value. According to the Town of Brunswick Tax Assessor, assessed value is 60% of market value and tax liability is $22.00 for every $1,000.00 of assessed value. To estimate residential property taxes, ERA assumes a median housing unit value of $220,000 and calculates

the total market value of on-site housing units based on residential densities by land-use district. ERA assumes that no property tax is generated by airport operations or education tenants.

Current operations at BNAS generate:

- Total employment of 4,863
- Total annual wages of roughly $115,000,000
- An average annual wage of roughly $24,000

The following tables summarize development impacts (in current dollars) including total employment potential, annual wages, income and property taxes at BNAS by land-use district, assuming full build-out of the entire site in 20 years or more. The Reuse Master Plan could generate by the end of the redevelopment period:

- Total employment of 13,800 workers
- Total annual wages of $732,390,000
- An average annual wage of roughly $53,000
- Total annual income taxes of $40,849,000
- Total annual commercial and residential property taxes of $19,011,000. This potential property tax revenue could be a source of tax increment financing (TIF) to assist in funding reinvestment in public infrastructure and other base redevelopment activities. Property valuation that is not sheltered in a TIF district would be subject to the impact of the state's school funding formula, county tax assessment and state municipal sharing formula.

Exhibit 77: BNAS Employment

Uses	Percent Use	Employment Potential
Airport Operations and Aviation Related Businesses	23%	3,200
Education	7%	1,000
Professional Office	32%	4,400
Community Mixed Use	16%	2,200
Business and Technology Industries	19%	2,600
Resort / Conference Center / Golf	3%	400
Total	**100%**	**13,800**

Note: Numbers rounded to the nearest one hundredth

Source: US Census, Edwards & Kelcey, Bowdoin College, SMCC and ERA

Exhibit 78: Total Wages

Uses	Average Annual Wage	Total Annual Wages
Airport Operations and Aviation Related Businesses	$94,000	$295,800,000
Education	$50,000	$49,400,000
Professional Office	$43,000	$191,030,000
Community Mixed Use	$33,000	$71,520,000
Business and Technology Industries	$46,000	$119,200,000
Resort / Conference Center / Golf	$15,000	$54,400,000
Total	**$53,000**	**$732,390,000**

Note: Average annual wages rounded to the nearest one thousand and total annual wages to the nearest ten thousand

Exhibit 79: State Income Tax

Uses	Joint Filers Taxes	Separate Filers Taxes	Total Income Tax
Airport Operations and Aviation Related Businesses	$10,168,000	$9,895,000	$20,063,000
Education	$1,206,000	$1,425,000	$2,631,000
Professional Office	$4,041,000	$5,189,000	$9,230,000
Community Mixed Use	$1,153,000	$1,695,000	$2,848,000
Business and Technology Industries	$2,662,000	$3,335,000	$5,997,000
Resort / Conference Center / Golf	$25,000	$55,000	$80,000
Total	**$19,255,000**	**$21,594,000**	**$40,849,000**

Note: Numbers rounded to nearest ten thousand

Source: Maine Department of Revenue, US Census and ERA

Exhibit 80: Local Property Tax

Uses	Market Value	Assessed Value	Tax Liability
Aviation Related Businesses	$260,489,000	$156,293,000	$3,438,000
Residential (Moderate Density)	$387,200,000	$232,320,000	$5,111,000
Residential (Lower Density)	$35,200,000	$21,120,000	$465,000
Professional Office	$196,020,000	$117,612,000	$2,587,000
Community Mixed Use	$366,785,000	$220,071,000	$4,842,000
Business and Technology Industries	$144,534,000	$86,720,000	$1,908,000
Resort / Conference Center / Golf	$50,000,000	$30,000,000	$660,000
Total	**$1,440,228,000**	**$864,136,000**	**$19,011,000**

Note: Numbers rounded to nearest ten thousand

Source: Maine Department of Revenue, Town of Brunswick Tax Assessor, US Census & ERA

Transportation and Infrastructure Impact Considerations

As a part of the planning effort, preliminary "order of magnitude" estimates were developed relative to the degree of public sector capital investment that will be necessary for implementation of the 20-year redevelopment plan. The majority of the costs relate to rehabilitation of existing facilities and construction of new transportation and utility infrastructure. Primary cost components include:

- Arterial, collector and local streets
- Water and sewer systems
- Storm drainage
- Electrical transmission and distribution
- Telecommunications

The total projection for these costs (through build out) is estimated at approximately $240 million, which includes a contingency allowance of 25 percent and approximately 18 percent for "soft costs," such as engineering, permitting, and related items.

Based on recent analysis using ITE trip generation figures and proposed types and areas of land use, it appears likely that build out would be accompanied by increases in traffic generation associated with the facility during both AM and PM peak hours to at least twice their current levels. Clearly this has the potential to severely exacerbate congestion and delays at those intersections (such as Cook's Corner) that are presently

experiencing lower levels of service. While some of the impacts may be mitigated through creation of additional points of access to the adjacent street system, the Plan has identified certain off-site improvements, such as a direct connection from the facility to Route 1, as necessary to accommodate these increased traffic volumes and the widening of Bath Road.

The time frames necessary for implementation of utility and transportation infrastructure improvements will be dictated to a large extent by the rate at which new businesses and residents occupy the facility; phasing may also be driven by the logistics of transfer of ownership and operations responsibility of any utility systems. The need for capacity-related improvements to the transportation network in the vicinity of the base will be dictated primarily by the rate at which existing facilities are reused, and new facilities are constructed.

Due to the extremely long lead-time associated with major transportation improvements (driven in large part by the funding process), it is essential that this element be given a high priority. Given the time requirements associated with completion of an Environmental Assessment (EA) or Environmental Impact Statement (EIS), as required under the National Environmental Policy Act, it is quite conceivable that, even by starting the process now, the existing Cook's Corner intersection / interchange may be at an unacceptable level of service by the time the construction of a new connection to Route 1 is completed.

While several options remain relative to the logistics associated with future operation of existing utility systems on the base, it is clear that extensive rehabilitation of the existing systems and construction of new system components will be required. While, ideally, the market will allow the reuse of facilities which can receive improved utility service based on limited "up front" capital investment first, it is likely that significant infrastructure improvements will be necessary, particularly in the areas of water and sewer system rehabilitation, streets and roadways and communications infrastructure. At this stage of the planning effort, it is assumed that the capital investment in utility and transportation infrastructure will be spread over a 20 year period with weighting on the initial five years.

Environmental Considerations

There are numerous environmental issues that must be considered prior to, and during, implementation of the plan. Environmentally-impacted sites on the property are at various stages of investigation, remediation, and closure; some potential areas of environmental concern have not been assessed at all. A number of known environmentally-impacted areas have not been adequately investigated to determine the nature and extent of contamination. Environmental investigation and site characterization for known and potential environmentally-impacted sites are critical

elements to redevelopment because the extent of contamination must be defined prior to being able to adequately estimate costs for remediation to be protective of human health and the environment for the land use(s) described in the plan, and to adequately estimate and consider long term obligations (e.g. long-term monitoring or land use controls). The environmental strategy for proceeding with cleanup and redevelopment in accordance with the Reuse Master Plan should include filling identified data gaps while coordinating further site investigation, remediation, and closure of contaminated sites consistent with the redevelopment schedule and priorities. For details on the known and potential environmental issues, how they relate to the land uses described in this Reuse Master Plan, and the status of the Navy's investigation and planned cleanup, please refer to **Appendix G**.

Environmental Investigation

Because BNAS was included on the National Priority List (NPL) in 1987, EPA is the lead environmental regulatory agency, with input from Maine Department of Environmental Protection (MeDEP). Since BNAS is a Superfund site listed on the NPL, it is regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The CERCLA process can be time consuming, and therefore it is imperative that the Navy move through the process as quickly and expeditiously as possible to gain as much information and advance as far through the process as possible before transfer.

The goal of environmental investigation and remediation is the cleanup and delisting of the property from the NPL. Under CERCLA law, it is possible to delist portions of property from the NPL if the property is clean and suitable for intended reuse.

However, if long term obligations persist (such as long term groundwater monitoring), the property cannot be delisted until all cleanup goals are achieved. It is therefore imperative that the LRA work closely with the Navy and EPA to identify portions of property that are appropriate for delisting, so that property can be sold and developed without the stigma of being a Superfund site and still protect public health and safety and the environment.

Contaminated sites at BNAS are in various stages of the CERCLA process, and some potential areas of concern have not been assessed at all. For sites that have not been assessed at all, it is difficult to consider environmental constraints in the reuse process, and therefore, the Reuse Master Plan must be initially developed independently of potential environmental issues while still considering the known environmental issues. There are a number of known environmentally impacted areas at BNAS that have not been adequately investigated to determine nature and extent of contamination. Areas not sufficiently investigated for a determination of environmental impacts and if necessary, remediation include (see **Exhibit 40: Environmental IRP Sites Map**):

- Installation Restoration Program (IRP) Sites 1/3 – Orion Street Landfill North and Hazardous Waste Burial Area (evaluation of remedial action effectiveness including assessment of the slurry wall)
- IRP Site 2 – Orion Street Landfill South (evaluation of remedial action effectiveness and investigation of area North of Site 2)
- IRP Site 4 – Acid / Caustic Disposal Pit (investigation needed beneath Building 548)
- IRP Site 7 – Old Acid / Caustic Pit
- IRP Site 9 – Neptune Drive Disposal Area
- IRP Site 11 – Fire Training Area (present groundwater treatment system reinjection gallery)
- IRP Site 12 – Explosive Ordnance Disposal (EOD) Area
- IRP Site 13 – Defense Reutilization and Marketing Office (DRMO) Area (investigation needed beneath paved parking area)
- IRP Site 17 – Former Pesticide Storage Shop
- Petroleum, Oil, and Lubricant (POL) Site 2 – Navy Exchange Service Station
- Eastern Plume, including a groundwater model
- Potential environmental areas of concern including:
    - Base-wide groundwater impacts
    - Potential methane gas generation from glycol use near the runways
    - Existing fuel farm
    - Weapons area compound
    - Base-wide radiological survey to assess for potential contamination from possible nuclear weapon storage

- Former residential Underground Storage Tank (UST) locations with petroleum-contaminated soil from heating oil
- Picnic Ponds contamination
- Military Munitions Response Program (MMRP) Sites including: the Southwest Old Quarry, IRP Site 12 – EOD Area, and other potential MMRP sites including bunkers, ranges, etc.

In addition to the above investigations, a minimum of a Phase I Environmental Site Assessment (ESA) is recommended to identify potential environmental conditions on the base and to satisfy the All Appropriate Inquiry Rule to qualify for the innocent landowner defense, the bona fide prospective purchaser defense, or the contiguous landowner defense to liability under CERCLA and for the purpose of identifying potential development and liability considerations associated with the purchase and development of the base including identification of contaminants that exceed EPA or MEDEP standards.

Environmental Phasing

During the development of the Reuse Master Plan, certain areas have been identified as priorities in redevelopment phasing for the BLRA. The priority areas include property that may be transferred to the MRRA prior to 2011 base closure, areas that will be developed to include special activity centers or economic centers, and areas that will require significant cleanup time or areas that have not yet been investigated and may require a long lead time for investigation and remediation. At this planning stage, the following priorities related to environmental investigation and cleanup have been identified, along with the reasoning associated with the priorities:

- Currently, groundwater use base-wide is prohibited by the EPA unless groundwater modeling is performed. A base-wide groundwater model must be developed utilizing data from existing monitoring wells, as well as from additional wells in areas of potential concern to evaluate base-wide hydrology, contaminant plume nature and extent, and effects of groundwater extraction and re-injection on contaminant migration. This model would be useful in understanding the hydrogeology of the contaminated groundwater from the various IRP sites (or other sites not yet identified) and their relation to the Eastern Plume, and in minimizing the future land use controls (LUCs) that may be necessary to protect human health and the environment and/or minimizing the long-term restrictions on groundwater use. In addition, parcel delisting from the NPL will not be possible without completion of this groundwater model and close coordination with EPA.

- Property at, and adjacent to, the new “front door” slated for development as a high-end business park must be investigated so that potential remediation can be estimated and integrated into the development pro forma and schedule. The

following sites are included in the "front door" area: Site 7 – Old Acid / Caustic Pit, Site 17 – Former Pesticide Shop, and Site POL1 – Old Navy Fuel Farm. Since the Navy's existing fuel farm is also located in this area, it is possible the fuel farm may be closed and relocated to a property adjacent to the airfield. Therefore, it is recommended a soil and groundwater contamination study be performed on the area. To date, potential impacts to soil and groundwater in the area surrounding the existing fuel farm have not been assessed and will be required for site closure and redevelopment.

- Under the MMRP, the Navy intends to evaluate the following munitions sites: the explosive ordnance disposal (EOD) site (also known as IRP Site 12), the former munitions bunker (west area), the machine gun boresight range, the skeet range, and the quarry on the western perimeter of the base. However, a much larger area was or is currently used for munitions storage, including, but not limited to: the munitions compound (adjacent to Sites 1 and 3), and the magazine storage bunkers in the Weapons Complex near Site 12. These areas have not been identified by the Navy either under the installation IRP or MMRP program for assessment. The potential for Munitions and Explosives of Concern and Munitions Constituents must be assessed prior to base redevelopment.

- Anecdotal information suggests that the Navy stored and loaded nuclear weapons onto P3 and C130 aircraft at the base. The transportation and storage of nuclear and/or radioactive material could have resulted in radiological contamination on portions of the base. To help alleviate community, MRRA, and regulatory agency concerns, it is recommended that a base-wide radiological survey be performed.

- A survey and evaluation of the potential glycol contamination on the airfield and adjacent to former glycol underground storage tanks is also recommended. This soil gas survey would evaluate the potential for presence of explosive levels of methane gas. Historical use of glycol as a deicing fluid for aircraft may have resulted in glycol contamination in soil and groundwater. As glycol degrades, methane gas can be generated as a byproduct and is explosive at concentrations between five and fifteen percent. The methane gas can migrate along utility corridors, which can be very dangerous during base redevelopment as utilities are replaced or relocated.

- Potential investigation at areas identified as possible areas of environmental concern in the Phase I Environmental Impact Statement should be conducted prior to property transfer, including areas identified as potential Recognized Environmental Conditions or actual Recognized Environmental Conditions (i.e. areas identified during a Phase I site reconnaissance as areas that are or potentially are impacted by on-site or off-site environmental activities). A

Phase I/II ESA is required to qualify for the innocent landowner defense prior to property transfer, and to establish "baseline" environmental conditions before new ownership.

Following investigation and the determination of the nature and extent of contamination at impacted sites, the environmental cleanup process will remedy selection and implementation to provide properties for transfer with as few LUCs as possible. Schedules for cleanup of individual sites will be driven by redevelopment phasing and priorities.

Environmental cleanup of the 3,200-acre BNAS property is an issue of significant concern, not only because of potential impacts on quality of life and phasing of redevelopment, but also the significant costs associated with cleanup activities. It will be in the best interest of the redevelopment of BNAS, therefore, that financing mechanisms be flexible in the event that a privatized approach to cleanup is utilized in order to hasten redevelopment. At the same time, discussions and negotiations with the Navy need to establish an expedited timeframe for any necessary environmental remediation if alterative methods for cleanup do not materialize.

Property Transfer Considerations

After the final property disposition strategies have been agreed upon by the LRA and the Navy, a parcel by parcel implementation occurs until all the property has been conveyed. As part of this process, the DOD, MRRA and the State of Maine reach consensus on responsibility for completing remaining environmental restoration activities for each parcel, and environmental cleanup or remediation is implemented by either the DOD or the property recipient. If the property recipient accepts responsibility for environmental restoration activities, a covenant deferral request and a Finding of Suitability for Early Transfer (FOSET) is signed by the Governor, and other legal and regulatory documents identifying the responsible party, the terms of the transfer, and scope of work for environmental restoration must be prepared and finalized.

There are a number of property transfer mechanisms that could be used to convey all or portions of the BNAS property to new owners. The BLRA envisions that: (1) properties identified and approved by the Board through the Notice of Interest (NOI) process will be transferred via the appropriate public benefit conveyance authority; (2) the MRRA could seek to acquire portions of the property via an Economic Development Conveyance; and/or (3) the MRRA could negotiate with the Navy to acquire select parcels within the property via the Negotiated Sale transfer mechanism. It is also assumed that the Navy will make select parcels available to the highest bidder via Public Sales. Such transfers would require consistency with this Reuse Master Plan, and be subject to zoning and other land use controls and restrictions that might be placed

on the property by the Town of Brunswick and/or the MRRA. The following sections provide additional information related to potential property transfer mechanisms and recommendations made by the BLRA Board of Directors for implementation of the plan.

Public Benefit Conveyances

A Public Benefit Conveyance (PBC) is "the transfer of surplus military property for a specified public purpose at up to a 100 percent discount" (Department of Defense Base Redevelopment and Realignment Manual, 2006). Surplus military property may be conveyed to public agencies and not-for-profit organizations to provide public goods and services. PBC categories include: parks and recreation, historic monuments, airports, health, education, correctional facilities, highways, self-help housing, wildlife conservation and emergency management. For each of these public purposes, there is a sponsoring federal agency with regulations that determine applicant eligibility and need. Through the State and Local Screening process, the BLRA Board reviewed proposed uses to see how well they fit with the overall guiding principles and direction of the Master Reuse Plan.

Notice of Interest Applications

On or before May 14, 2007, fourteen NOIs were received from state, local and non-profit entities representing approximately 1,960 acres of land and eighteen buildings, comprising about 390,000 square feet. All entities that submitted an NOI were asked to make a brief presentation to the BLRA Board at the May 16, 2007 monthly board meeting.

The submitted NOIs were forwarded to the BLRA's State and Local Screening Committee for evaluation and recommendation to the BLRA Board. The Committee then held in-depth interviews and work sessions with each of the interested entities on May 17, 18, 24 and 31; June 25 and 29; and, July 6, 2007. The purpose of these sessions was to allow Committee members to gain a thorough understanding of each entity's specific proposal and determine how they fit into the base reuse master plan.

Recommendations

Based upon the NOI evaluations, interviews and work sessions, the State and Local Screening Committee recommended approval for the following (each item is numbered to correspond with its location on **Exhibit 81: Recommended PBC Location Map**):

#1 - Brunswick-Topsham Water District: Approximately twenty-six (26) acres of land located on the north side of Bath Road for aquifer protection purposes.

#2 - Bowdoin College: Six (6) acres of land in the extreme northwest corner of the BNAS property for educational support uses.

#3a - Bowdoin College: One hundred seventy (170) acres, plus or minus five (5) acres, of developable land located (where feasible) for educational uses along the westerly section of the base between the airport and Harpswell Road.

#3b - Bowdoin College: If sufficient developable acreage is not found within the area identified as #3a, developable acreage within #3b will be made available until the 170 acre target acreage has been met. Any land in #3a or #3b not developable or not required to meet Bowdoin's target acreage will be included as part of the Town of Brunswick's conservation area (see Town of Brunswick below).

#4 - Bowdoin College: Building 644 for educational uses related to technology support in cooperation with Southern Maine Community College and the Midcoast Regional Redevelopment Authority for a server farm / IT center.

#5a, #5b and #6 - Town of Brunswick: Approximately 1,100 acres of land located in the northwestern and southern parts of the base (labeled as #5a and #6) plus land that is not developable or not required for Bowdoin College in #3a and #3b, for conservation purposes. Area #5b is also included in the town's 1,100 acre conservation area but would be made available to Bowdoin if the college's target of 170 acres of developable land cannot be met in areas #3a or #3b.

#7 - Town of Brunswick: Building 102 and approximately one (1) adjacent acre for public safety indoor small arms range uses.

#8 - Town of Brunswick: Building 211 (former Neptune Hall) and approximately eighteen (18) adjacent acres for recreation purposes.

#9a - Town of Brunswick: Fifteen (15) acres located at the far eastern edge of the base for future active recreation uses (part of 65-acre conveyance with #9b).

#9b - Town of Brunswick: Fifty (50) acres of land located north of existing golf course for future active recreation uses (part of 65-acre conveyance with #9a).

#10 - Town of Brunswick: Approximately sixty-six (66) acres at the East Brunswick transmitter site for conservation purposes.

#11 - Maine State Museum: Building 585, approximately six (6) acres of adjacent land (Memorial Gardens), the two large static display aircraft and miscellaneous base-related historical artifacts for development of a naval air museum.

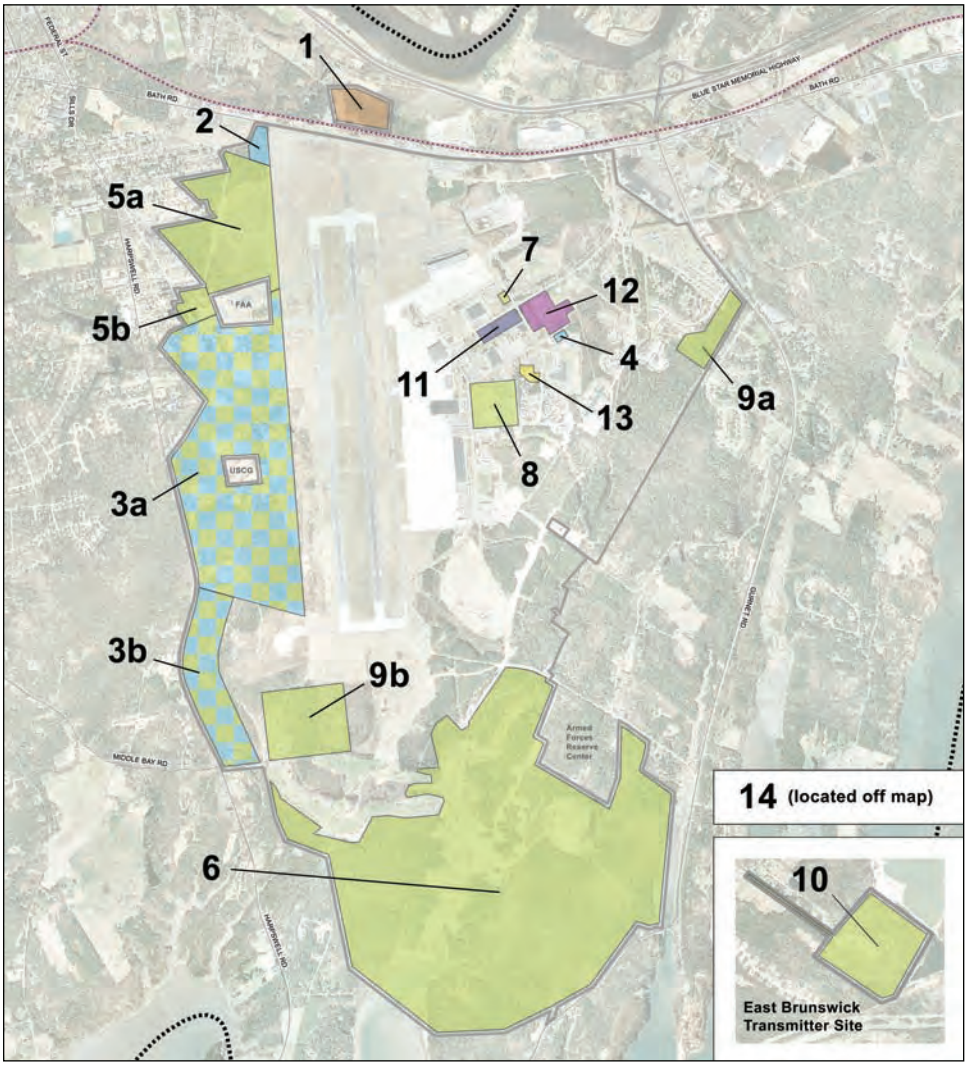
#12 - Southern Maine Community College: An approximately eleven (11) acre parcel of land containing Buildings 150, 151, 512 and 645 and parking areas for the establishment of a college campus in conjunction with University of Southern Maine.

#13 - Family Focus: Buildings 21 and 26 for general child care facilities of up to 100 children that support base redevelopment efforts.

#14 - Town of Phippsburg: Small 0.25-acre parcel (a former observation site located near Popham beach) for municipal purposes.

Additionally, the Town of Brunswick had also submitted a request for a five-acre parcel for a new police station. The Board approved the request and agreed to work with the Town to find a suitable location. However, the town withdrew its request on October 26, 2007.

Exhibit 81: Recommended PBC Location Map



Source: Matrix Design Group

Based upon the NOI evaluations, interviews and work sessions, the State and Local Screening Committee recommended not approving the following:

- **Coastal Economic Development**
  Buildings 21 and 26 for Head Start program: This applicant requested the same buildings as Family Focus for a Head Start program. The Committee felt that the Family Focus proposal for a general child care facility open to families of all income levels would provide greater value for the redevelopment of the base.

- **Coastal Humane Society**
  10-20 acres for animal facility: The Committee did not feel this proposal was a good fit with the land uses contemplated in the reuse plan.
- **Maine State Housing Authority**
  Approximately 22 acres (known as the former 28 pad mobile home park) and Buildings 730 and 731 of the Bachelor Enlisted Quarters for the purposes of providing self-help housing opportunities for low income homeownership.

  Based upon the upcoming availability of housing in the region as a result of the base closure, a unique opportunity is presenting itself to help insure home ownership opportunities for the same demographic group as well as other affordable housing opportunities. Accordingly, the Committee believes that the LRA should work with the Maine State Housing Authority and future housing developers to establish an affordable housing fund and ensure the long term availability of affordable units.
- **Town of Brunswick**
  - School Department's request for workshop (Building 19) and vehicle maintenance garage (Building 590)
  - Recreation Department's request for Auto Hobby Shop, Recreation Mall, and miscellaneous athletic fields and courts
  - Conservation Commission's request for 171 acres on the eastern side of base property

No action was recommended to the following requests because they were not eligible to receive a public benefit conveyance:

- Maine Veterans Authority: Navy Exchange and Navy Lodge - Veterans Service Center
- Sea Cadet Corps: Sea Cadet Building (Building 226)

Airport PBC

In addition, as a partial basis of the Reuse Master Plan, the BLRA commissioned an Aviation Feasibility Study, as referenced and summarized earlier in this report. It is the intent of the MRRA to prepare an Airport Master Plan as part of its Year 1 Work Plan, and subsequently apply for an Aviation Public Benefit Conveyance consistent with the intent of this Reuse Master Plan. The full Aviation Feasibility Study Report can be found in **Appendix E**.

Additional documents relating to Notices of Interest from state / local entities, as well as all information related to the homeless screening process can be found in **Appendix F**.

Homeless Assistance Provisions

As part of the planning process, the BLRA contracted with Planning Decisions (a local planning firm and member of the Matrix Design Group Planning Team) to work with area homeless service providers and state organizations to identify the unmet needs of the homeless in the vicinity of BNAS. The "vicinity of the base" has been defined as the towns of Brunswick, Harpswell, Freeport, and Durham and all of the communities in Sagadahoc County (Arrowsic, Bath, Bowdoin, Bowdoinham, Georgetown, Phippsburg, Richmond, Topsham, West Bath, and Woolwich). It should be noted that within this general area, the Topsham LRA is considered responsible for the homeless demand from Topsham, Bowdoin, and Bowdoinham.

Using information provided from both area homeless service providers and Maine State Housing Authority, a report entitled *Report on the Homeless in Midcoast Maine* was created to assist the BLRA in understanding the scope of homeless needs in the area of BNAS. The report estimated that the unmet homeless gap in the vicinity of the base is a range of four to 14 supportive housing units and access to supportive services. The reason for a supportive housing unit range is based on "existing" lengths of stay, and not "ideal" lengths of stay.

Three Notice of Interest applications were received from area homeless service providers in response to the BLRA's February 9, 2006 request to 164 area homeless service providers. On June 20, 2007, the BLRA Board authorized the Homeless and Housing Committee and staff to negotiate a Legally Binding Agreement (LBA) with Tedford Housing of Brunswick, Maine. Tedford Housing is the primary provider of shelter and services to the homeless in midcoast Maine and is located in Brunswick.

Based upon the NOI evaluations and interviews, recent homeless studies, and recommendations from the Homeless and Housing Committee, the BLRA selected Tedford Housing's NOI proposal because its proposed activities most closely addressed the needs of the homeless in the vicinity of base. In order to best address this issue, the BLRA agreed to establish a homeless services trust fund to be capitalized by future base property sales / transfers or development exactions to support both housing and related services for homeless persons. Providing service funding also allows the homeless to integrate throughout the community and lessen the impact on the municipal services in one area by spreading the demand over a wider area. Under the proposed Legally Binding Agreement, Tedford Housing would provide $600,000 of support services over a period of five years to homeless persons and families within the vicinity of the base for the following activities:

- Housing vouchers for homeless families
- The lease or purchase of permanent supportive housing units for up to eight homeless families

- Half of the wage and benefit costs of a case manager providing services to homeless families
- The wage and benefit costs of a housing attendant providing services to homeless families

Economic Development Conveyances

If approved by the Navy, transfer of select properties within the base via an economic development conveyance could be granted to the MRRA for the purpose of job creation. This type of conveyance may be at a discounted price or at fair market value.

Negotiated Sales

A Negotiated Sale option might be considered for the parcels not acquired via PBC or other type of conveyance from the Navy. Negotiated sales must be to a recognized redevelopment authority for a specified public purpose. Negotiated sale authority requires the payment of fair market value.

Public Sales

For those areas not considered for acquisition by the MRRA, the implementation LRA, the Navy is likely to dispose of the property via public sale. The Navy has disposed of numerous properties via online Internet auction sales over the past five years. In addition, the Navy has ongoing auctions for portions of several closed bases, including portions of the Orlando Naval Training Center and the Roosevelt Roads Naval Station in Puerto Rico. Information on the Navy's property sales can be seen at http://www.braclandsales.com.

Navy / Northeast Partners (GMH) Privatized Housing Issue

In an effort to accelerate the upgrading of existing housing and the creation of new housing, the Navy implemented a nationwide housing privatization program in the 1990s. In essence, this program resulted in the transfer of physical assets such as housing units and common areas (and the associated cash flow from sailors), to private companies in exchange for a commitment to construct and/or upgrade units; however, ownership of the land under the housing units remained with the Navy. The Navy's expectation was that all existing housing units would ultimately be demolished and new units constructed for Navy personnel. Under this program, Northeast Partners, LLC acquired the ownership interest in all family housing units on the base. Northeast Partners LLC includes GMH, the military housing division of GMH Communities Trust, which manages the properties for the partnership, and the Navy.

This housing privatization program is relatively new within the Navy. Furthermore, no prior BRAC round involved privatized housing. As such, BNAS properties represent a unique and new experience for BRAC in general, and for GMH and the Navy in particular.

Specifically, while the Navy has the ability to dispose of the land under procedures commonly used as part of BRAC, the improvements on that land are currently under the control of GMH. The issue is further complicated by the fact that the Navy's land is subject to a 50-year lease to GMH, of which approximately 47 years remain. The GMH lease envisioned that the property would be redeveloped at no cost to the Navy, for the primary benefit of Navy personnel. As such, the land lease does not require a lease payment to the Navy. This means that the Navy's land is encumbered by a lease without a source of revenue. Once the land passes from the control of the Federal government, any private sector user will be responsible for the payment of property taxes, meaning that the land could have expenses (taxes) without an ability to generate revenues (due to the GMH lease) throughout the remaining term of the lease.

The housing owned by GMH is also affected by the BRAC decision. As originally envisioned, GMH would have the ability to demolish the existing housing units and construct new units based on the strength of the cash flows associated with a 50-year income stream from Navy personnel. Today, GMH has an existing asset (the family housing units), with a limited life. The Navy is required by the BRAC law to complete the closure of the Brunswick Naval Air Station before 2011. Closure could occur sooner as functions and squadrons depart and facilities become available, possibly during 2008 when the first squadrons are relocated to Florida. At that point, GMH could opt to market the vacated housing units for rent to non-Navy personnel.

Since the BRAC announcement, GMH has indicated publicly that they do not want to continue to own and operate housing units after closure of the base. Given the expectation that the regional housing market will decline with the departure of Navy

personnel from the region, the GMH housing faces limited upside potential. The fact that the existing housing is leased by GMH makes that company the most likely buyer for the property. However, requirements of the Property and Administrative Services Act of 1949 discourage direct negotiations with a single private-sector buyer. As such, the Navy is expected to utilize the public sale process described above to dispose of the housing areas as well as other select parcels, in accordance with the Reuse Master Plan.

Economic Feasibility and Public Benefit Analysis

Economic Feasibility

The Reuse Master Plan supports the industries targeted in ERA's January, 2007 report. In that report, ERA identified composites, information technology, biomedical, radio frequency identification, Open Source software and alternative energy as technology-based industries that should be targeted tenants for a Maine Center of Innovation. The business and technology district(s), outlined in the Reuse Master Plan, would serve as the location for the Center. ERA also worked with Edwards and Kelcey in reviewing the potential for on-site airport operations. The Aviation Feasibility Study confirmed the potential for general and corporate aviation, government agencies, maintenance, repair and overhaul and research and development activities. Consequently, the Reuse Master Plan designates 500 acres for airport operations and 230 acres for aviation-related businesses. In addition, ERA underlined the demand for a resort and conference center, linked to a golf course, as well as supportive retail, second homes, retirement homes, education and aviation. The Reuse Master Plan takes all of this into account and designates an appropriate mix of land-use districts allowing for space to grow and expand over time.

Public Benefit Analysis

There are several benefits likely to result from the proposed PBCs at BNAS. ERA considered the following PBCs as likely to occur and generate significant benefits. The buildings and land to be occupied by Bowdoin College and Southern Maine Community College will result in:

- Access to advanced technology training and education
- Potential synergies with relevant firms and industries
- Pipeline of entry-level workers for targeted industries

Over 1,000 acres of open space and conservation land along with select community recreational facilities will be transferred to the Town of Brunswick. The land and the existing buildings have the potential to provide:

- Walking, biking and cross country skiing trails
- Access to green space for residential homeowners
- A marsh and bay water trail for recreational boaters
- Access for canoes and kayaks to promote low-impact exploration of the coastal habitat
- Commercial shellfish opportunities for local shellfish harvesters
- Facilities for gym use, and health and wellness programming
- Future athletic field space
- Recreational programming for area youths
- An attractive amenity to commercial residential and resort development
- A higher quality of life

Management Considerations

The Midcoast Regional Redevelopment Authority (MRRA) is a public municipal corporation chartered by the state legislature with the responsibility to implement the Reuse Master Plans for the BNAS facilities in Brunswick and Topsham. Members of the Authority have been appointed by the Governor and confirmed by the Legislature. At this time, the proposed staffing model will include an executive director, a deputy director, a planning and environmental manager, a property manager, grants and communications coordinator and an executive administrative assistant. The estimated MRRA budget for 2008 is $858,911.

Exhibit 82: MRRA Estimated 2008 Budget

Category	Cost
Personnel	$440,805
Fringe Benefits	$138,090
Travel	$30,493
Supplies	$4,188
Contractual	$87,100
Other	$158,235
Total	**$858,911**

Source: Midcoast Regional Redevelopment Authority

The following outline establishes how economic development at BNAS can best be accomplished by successful management and marketing activities and by leveraging the assets of various regional, state and federal resources. The action plan is loosely

based upon the phasing strategy outlined for facility development although should be considered only a basic guide for future planning bearing in mind that an element of flexibility should be maintained as the project progresses.

First Steps

Management

The following items should be addressed by the authority in the earliest stages of implementation prior to closure:

- Continue the working relationship with the Navy to ensure rapid successful reuse of the base.
- Solicit funding from the FAA for the development of an airport master plan.
- Work with the Maine Department of Transportation to develop a transportation improvement plan related to the redevelopment of BNAS in Brunswick and Topsham.
- Work with the Navy and sponsoring federal agencies on property transfer and conveyance issues.
- Work with the Navy on environmental studies including the Environmental Impact Statement for BNAS Brunswick and Environmental Assessment in Topsham and clean up activities.
- Work with the Navy in regards to aviation training and maintenance efforts as the Navy begins to significantly expand the privatization of its maintenance and repair for aviation assets.
- Establish economic development goals and benchmarks for measuring success.
- Conduct a feasibility study and develop a business plan for renewable energy generation and distribution.
- Develop an infrastructure management plan.
- Begin to plan for and secure financing for Phase 1 of redevelopment.
- Develop a real estate development strategy and business plan.
- Create an inventory and analysis of existing structures to ensure readiness of occupancy.

Marketing

The managerial body should begin working with the Navy in marketing BNAS by establishing a comprehensive strategy that incorporates benchmarks for measuring the strategy's success. These benchmarks can then be used as a means of reformulating the strategy to achieve the pre-determined goals. The following strategies and regional institutions should be regarded as instrumental to the marketing success of BNAS:

- Develop a comprehensive marketing plan that identifies a series of target companies and identify successful strategies to approach those companies and key location determinates for each industry cluster.
- Develop a website.
- Establish a dedicated staff person to manage business development and outreach efforts.
- Enter into an agreement with Bowdoin College, the Maine Community College System, the University of Maine System, Embry Riddle University and others to integrate higher education, continuing education, training, and research and development activities on the base.

Federal Incentives

The following state and federal incentives available to BNAS businesses should be aggressively marketed to prospective tenants:

Small Business Innovation Research Program (SBIR): SBIR is a program administered by the US Small Business Administration (SBA) and intended to encourage small business innovation and pursuits in R&D by providing incentive to profit from its commercialization. Through this program, funding allows small businesses to compete at the same level as large business, thereby helping small businesses to compete for federal research and development awards. In order to qualify for the SBIR program, a small business must meet the following criteria:

- American-owned and independently operated
- For-profit
- Principal researcher employed by business
- Maximum company size of 500 employees

Qualifying small businesses compete for an SBIR award based upon their degree of innovation, technical merit and future market potential. If successful, SBIR businesses begin a three-phase program:

- **Phase 1:** Awards of up to $100,000 for approximately 6 months to help support exploration of an idea of technology.
- **Phase 2:** Awards of up to $750,000 for as many as two years building upon the results of Phase 1 and pursuing R&D and commercialization.
- **Phase 3:** This is when innovation is intended to move to the marketplace. No SBIR funding is provided during this phase.

Small Business Technology Transfer (STTR) Program

Administered by the SBA, STTR is a program that aims to expand funding opportunities to small business and not-for-profit research institutions through joint venture opportunities in the areas of federal innovation research and development. Small businesses must meet the following criteria to be qualified to participate in this program:

- American-owned and independently-operated
- For-profit
- Principal researcher need not be employed by small business
- Maximum company size of 500 employees

Although there is no size limit for the not-for-profit research institution, it must be located in the US, and meet one of the following three definitions:

- Not-for-profit college or university
- Domestic not-for-profit research organization
- Federally funded R&D center (FFRDC)

Small businesses/nonprofit research institutions that receive an STTR award then begin a three-phase program:

- **Phase 1:** Awards of up to $100,000 for approximately 6 months to help support exploration of an idea of technology.
- Phase 2: Awards of up to $750,000 for as many as two years to build upon the results of Phase 1 and pursue R&D and commercialization potential.
- Phase 3: This is when innovation is intended to move to the marketplace. No SBIR funding is provided during this phase.

Small Business Administration HUB Zone Status: The HUB Zone Program stimulates economic development and creates jobs in urban and rural communities by providing federal contracting preferences to small businesses. These preferences go to small businesses that obtain HUB Zone (Historically Underutilized Business Zone) certification in part by employing staff who live in a HUB Zone. The company must also maintain a “principal office” in one of these specially designated areas. The program resulted from provisions contained in the Small Business Reauthorization Act of 1997. Congress determined that former military bases closed because of BRAC quality for HUB Zone status for a five-year period from the date of formal closure.

To qualify for the program, a business (except tribally-owned concerns) must meet the following criteria:

- It must be a small business by SBA standards.
- It must be owned and controlled by at least 51% US Citizens, or a Community Development Corporation, or an agricultural cooperative or an Indian tribe.
- Its principal office must be located with a 'Historically Underutilized Business Zone,' which includes lands considered Indian Country and military facilities closed by the Base Realignment and Closure Act.
- At least 35% of its employees must reside in a HUB Zone.

Existing businesses that choose to move to qualified areas are eligible. To fulfill the requirement that 35% of a HUB Zone firm's employees reside in the HUB Zone, an employee must live in a primary residence within that area for at least 180 days or be currently a registered voter in that area. There are four types of HUB Zone contract opportunities:

Competitive: Contracts set-aside for HUB Zone competition when the contracting officer has a reasonable expectation that at least two qualified HUB Zone small business concerns (SBCs) will submit offers and that the contract will be awarded at a fair market price.

Sole-Source: HUB Zone contracts can be awarded if the contracting officer determines that:

- Only one qualified HUB Zone SBC is responsible to perform the contract
- Two or more qualified HUB Zone SBCs are not likely to submit offers and the anticipated award price of the proposed contract, including options, will not exceed $5 million for a requirement within the North American Industry Classification System (NAICS) code for manufacturing; or, $3 million for a requirement within all other NAICS codes

Full and Open: Full and open competitive contracts can be awarded with price evaluation preferences. The offer of the HUB Zone small business must not be 10 percent higher than the offer of a non-small business.

Subcontracting: All subcontracting plans for large business federal contractors must include a HUB Zone subcontracting goal.

Free Trade Zone or Sub Zone Status: The US Foreign Trade Zones (FTZ) (also known as a free trade zone) program was created by the Foreign Trade Zones Act of 1934. The Foreign Trade Zones Act was created to "expedite and encourage foreign commerce" in the United States through the designation of geographical areas adjacent to customs ports of entry. In an FTZ, commercial merchandise receives the same customs treatment it would if it were outside the commerce of the United States. Therefore, goods entering

FTZs are not subject to customs tariffs until the goods leave the zone and formally enter US Customs territory. Merchandise that is shipped to foreign countries from FTZs is exempt from duty payments. This provision is especially useful to firms that import components in order to manufacture finished products for export.

Merchandise of every description may be held in the Zone without being subject to Customs duties and other ad valorem taxes. This allows firms to minimize their costs while their products are waiting to be shipped. In addition, quota restrictions are, in some cases, waived for items entering an FTZ. This tariff and tax relief is designed to lower the costs of US-based operations engaged in international trade and thereby create and retain the employment and capital investment opportunities that result from those operations.

The FTZ program has grown profoundly over the last 30 years. In 1970 there were eight Foreign Trade Zone projects (with a total of three subzones) in the United States. Today there are over 230 Foreign Trade Zone projects (with nearly 400 Subzones) in the United States.

Designation of a FTZ by the Federal Trade Zone Board within the Department of Commerce must first be authorized by state enabling legislation. The Maine Legislature passed enabling legislation in 2005 for MRRA to submit an application for Foreign Trade Zone status.

State Incentives

Management at BNAS should be kept aware of state-level programs that could benefit existing and prospective tenants. The following programs could be of significance to the economic development of BNAS during these early stages:

Military Redevelopment Zone (PTDZ)

Up to 1,000 acres at BNAS may be designated as a military redevelopment zone within seven years of the military facility's closure and may receive the benefits of Pine Tree Development Zone designation (PTDZ). According to Maine's Department of Community and Economic Development, depending on the level of new qualified business activity conducted in a PTDZ, starting with the statutory requirement for hiring a minimum of one net new qualified employee, the tax burden of qualified businesses may be reduced through the following exemptions, reimbursements, and credits:

- Corporate Income Tax Credit (100%, Years 1-5; 50%, Years 6-10): the tax credit benefit derives from net new PTDZ payroll and property as a percentage of all Maine payroll and property.
- Insurance Premiums Tax Credit (100%, Years 1-5; 50%, Years 6-10): the tax credit benefit derives from net new PTDZ payroll and property as a percentage of all Maine payroll and property.

- Income Tax Reimbursement (80%, Years 1-10): the tax reimbursement benefit derives from income taxes withheld for net new jobs created, i.e. those qualified employees hired above the "old" employment baseline that existed in Maine prior to the expansion may be eligible for Employment Tax Increment Financing.
- Sales and Use Tax (100% Personal Property Exemption, Years 1-10): the tax exemption benefit, effective the later of July 1, 2005 or date of certification, derives from the qualified business paying no tax on all new tangible personal property purchases for its qualified business activity.
- Sales and Use Tax (100% Real Property Reimbursement, Years 1-10): the tax reimbursement benefit, effective the later of July 1, 2005 or date of certification, derives from paying no tax on all new tangible property purchases that are to be physically incorporated in, and become a permanent part of, real property of a qualified business and used in its qualified business activity.
- Property Tax Reimbursement (up to 100% and 30 years): the tax reimbursement benefit derives from local incremental taxes on new real and personal property investments that may be returned to a business as Municipal Tax Increment Financing if approved by the host municipality; and access to reduced electricity rates as requested by Central Maine Power, Bangor Hydro Company and Maine Public Service and approved by the Public Utilities Commission.

North Star Alliance (NSAI)

According to the Maine State Government, NSAI is a revolutionary industry-led collaborative, synthesizing business, R&D, education, workforce, and economic development resources to re-skill a workforce and launch a new regional economy in coastal Maine. The strategy focuses on building capacity and addressing gaps in Workforce Development, Research and Development, Outreach and Market Development, and Capitalization and Infrastructure Development.

- The targeted industry sectors of Maine's North Star Alliance include a vast range of enterprises that make up or support the marine trades and those that utilize advanced composite materials, including boat building, marine / waterfront infrastructure, marine service and repair, building products, sporting goods, and ballistic armor. These industries represent the majority of the economic base of Maine's midcoast region.
- Maine's North Star Alliance Initiative will serve the eight counties that comprise Maine's coastal region (York, Cumberland, Sagadahoc, Lincoln, Knox, Hancock, Waldo, and Washington) as well as the additional four counties most affected by the impending closure of the Brunswick Naval Air Station: Androscoggin, Kennebec, Penobscot, and Piscataquis. This region also encompasses the four local areas authorized under the Workforce Investment Act and comprises 12

of Maine's 16 counties. The Initiative will address needs identified by targeted industries located within this region that are critical to their growth and expansion.

Funding

Phase 1 of development and redevelopment at BNAS involves new construction and redevelopment as well as infrastructure upgrades and extensions. To finance initial upgrades at BNAS, ERA recommends a financing strategy that combines State General Fund / Capital Outlay financing with the following sources:

Bonds

Special purpose districts are authorized by the enabling statute that created the Midcoast Regional Redevelopment Authority to issue and sell notes, bonds, certificates of indebtedness and other obligations to achieve its public or corporate purpose.

Earmarks

Based upon comparable military base economic development projects, BNAS could potentially receive finding through a Department of Commerce Economic Development Assistance bill, an amendment to a Defense Department appropriations bill, or Department of Housing and Urban Development appropriations or reauthorization bill. As a highly competitive process with limited funding, involvement by the Navy may improve chances for funding approval.

Small Cities Community Development Block Grant and Section 108 Loan Guarantee

The primary objective of the Community Development Block Grant (CDBG) program is to develop viable communities by expanding economic opportunities, principally for those of low to moderate income. According to officials at the US Department of Housing and Urban Development, CDBG funds could be applied towards the following upgrades at BNAS:

- Construction or reconstruction of streets, water and sewer facilities
- Demolition of existing structures
- Rehabilitation of existing structures
- Planning activities
- Assistance to private and non-profit entities to carry out economic development activities

The Section 108 Loan Guarantee is a provision of the CDBG program and provides financing to local governments for economic development including large scale physical development projects. Under the Section 108 Loan Guarantee, loans can be made up to $300 million for as much as 20 years. This federal loan program may be best suited for the following redevelopment activities:

- Long-term phased funding of the business park
- Short-term existing structure rehabilitation and modernization
- Major infrastructure work including road improvements and utility upgrades

Economic Adjustment Assistance Program

Administered through the Economic Development Administration, this grant program is intended to be part of a long-term strategy to promote a region's success in achieving a rising standard of living through the development of emerging industry clusters or the attraction of new regional economic drivers. Typically, applicants for this competitive grant are considered most seriously when a one to one funding match is provided by the state or local government. Appropriate projects for funding consideration under this program could include:

- Building rehabilitation
- Utility upgrades
- Road improvements

USDA Rural Development Community Programs

The United States Department of Agriculture (USDA) Rural Development Community Programs can make and guarantee loans to develop essential community facilities in rural areas and towns of up to 20,000 in population. Loans and guarantees are available to public entities such as municipalities, counties, and special-purpose districts, as well as to non-profit corporations and tribal governments.

Applications must have the legal authority to borrow and repay loans, to pledge security for loans and to construct, operate, and maintain the facilities. They must also be financially sound and able to organize and manage the facility effectively.

Repayment of the loan must be based on tax assessments, revenues, fees, or other sources of money sufficient for operation and maintenance, reserves, and debt retirement. Feasibility studies are normally required when loans are for start-up facilities or existing facilities when the project will significantly change the borrower's financial operations. The feasibility study should by prepared by an independent consultant with recognized expertise in the type of facility being financed.

Community Programs can guarantee loans made and serviced by lenders such as banks, savings and loans, mortgage companies which are part of bank holding companies, banks of the Farm Credit System, or insurance companies regulated by the National Association of Insurance Commissioners. Community Programs can also make direct loans to applicants who are unable to obtain commercial credit. Eligible community facilities include:

- Airport hangars
- Airports
- Bridges
- Sidewalks
- Street Improvements
- Infrastructure for Industrial Parks
- Railroads
- Low Head Hydro-Electric Facilities
- Natural Gas Distribution Systems

The amount of grant assistance for project costs depends upon the median household income and the population in the community where the project is located and the availability of grant funds. In most instances, projects that receive grant assistance have a high priority and are highly leveraged with other loan and grant awards. Grant assistance may be available for up to 75% of project costs. Grant funding limitations are based on population and income, economic feasibility, and availability of funds. Projects will be selected based on a priority point system. Projects that will receive priority are those that:

- Serve small communities – with the highest priority going to projects located in a community with a population of 5,000 or less
- Serve low-income communities – with the highest priority going to projects serving communities with median household incomes below the higher of the poverty line or 60% of the State non-metropolitan median household income
- Provide public safety, or public and community services

Grant funds cannot be used to:

- Pay any annual recurring costs, including purchases or rentals that are generally considered to be operating and maintenance expenses
- Construct or repair electric generating plants, electric transmission lines, or gas distribution lines to provide services for commercial sale
- Pay costs to construct facilities to be used for commercial rental where the applicant has no control over tenants and services offered
- Construct facilities primarily for the purpose of housing State, Federal or quasi-Federal agencies
- Finance recreational facilities or community antenna television services or facilities

Second Steps

Management

The Authority should continue to work closely with State officials and the Navy to maintain an effective line of communication that will allow development to occur smoothly at BNAS. Management should actively be monitoring conditions at the site regarding space demand and inquiries, and adjusting their marketing strategies accordingly. Establishing a realistic target for future absorption at the facility will help to inform near-term economic development goals for Phase 2 of construction:

- Develop realistic near-term economic development goals and milestones in conjunction with the Navy.
- Coordinate development plans for Phase 2 based upon refined goals.
- Help to develop funding sources through federal, state, local and private sector agencies to finance Phase 2 of development.
- Coordinate infrastructure development and operations to ensure business opportunities exist at BNAS.
- Seek outside expertise to improve development capacity.
- Negotiate deals with new tenants in existing/new business park areas.
- Monitor prospective tenant inquiries and refine future absorption expectations.
- Assess facility performance according to benchmarked economic development objectives.
- Seek outside expertise to financially assess the possibility of land ownership at the business park.
- Consider prospects for an incubator.
- Assess how existing tenant operations and business development can be enhanced through industrial outreach.

Marketing

The MRRA should continue to work closely with state officials and the Navy to maintain an effective line of communication that will ensure rapid and successful reuse of BNAS. Management should actively be monitoring conditions at the site regarding space demand and inquiries, and adjusting their marketing strategies accordingly. Establishing a realistic target for future absorption at the facility will help to inform near-term economic development goals for Phase 2 of construction:

- Develop realistic near-term economic development goals and milestones in conjunction with the Navy.
- Coordinate development plans for Phase 2 based upon refined goals.

- Help to develop funding sources through federal, state, local and private sector agencies to finance Phase 2 of development.
- Coordinate infrastructure development and operations to ensure business opportunities exist at BNAS.
- Seek outside expertise and/or partners to improve development capacity
- Negotiate deals with new tenants in existing / new business park areas.
- Monitor prospective tenant inquiries and refine future absorption expectations.
- Assess facility performance according to benchmarked economic development objectives.
- Assess the financial feasibility of land ownership at the business park.
- Identify business incubator opportunities and partners.
- Maintain an aggressive business development outreach program.

Funding

In conjunction with Economic Adjustment Assistance financing, State General Funds, bonds and CDBG dollars, ERA recommends a Phase 2 financing strategy that explores the possibility of economic development conveyances and subsequent land sales. As demand for space at BNAS evolves, land sales may become a more feasible means of developing cash flow. Moreover, the MRRA could apply for an EDA Public Works Program grant (as described below):

Public Works Program

Administered through the Economic Development Administration (EDA), this grant is intended to enhance regional competitiveness and promote economic development in regions of underinvestment to attract industry, generate jobs and stimulate economic growth. A grant intended primarily for construction, this money may be invested at BNAS towards the following:

- Phased industrial park construction
- Facility road improvements
- Public works improvements
- Existing facility upgrades

According to EDA officials, Public Works Program grant awards are typically in the range of $1.2 million although usually require a one to one funding match from a state or local government.

Third Steps

Management

The Authority should be maintaining regular contact with state officialsand the Navy to coordinate Phase 3 of the development strategy. The management team should continue to refine their marketing and management strategies to ensure business development meets the benchmarked economic development goals and objectives. The following actions are recommended to the managing body to further economic development at BNAS:

- Analyze the performance of site management assessing whether marketing and outreach strategies are meeting benchmarked economic development goals.
- Refine development plans for Phase 3 based upon anticipated absorption and development benchmarks.
- Refine the real estate development strategy and business plan.
- Pursue funding through federal, state, local and private sector agencies to finance Phase 3 of development.
- Coordinate infrastructure development and operations to ensure business development and rapid and successful reuse of BNAS.
- Evaluate how the incubator can support existing BNAS businesses, generate new business development and integrate research and development activities with nearby college and university partners.
- Develop a business incubator management strategy and define its near-term objectives.
- Work with the Maine Department of Economic and Community Development's Office of Innovation and Maine Technology Institute to secure funding for a technology business incubator.

Marketing

A central piece to the overall site development of BNAS will be the Business and Technology District(s). ERA sees these districts as critical to the successful redevelopment of BNAS. To reflect previous market findings and serve in the redevelopment of the base, the development of these districts should collectively represent a Maine Center for Innovation housing established tenants specialized in technology-based industries as defined in ERA's market report. The Center should also seek to play the role of a business incubator. Incubator development will require a separate marketing and outreach strategy, although it should complement overall business development strategies at BNAS. To effectively develop an incubator that meets the needs of area entrepreneurs and achieves long-term success, the follow steps should be taken:

- Develop a list of target business activities for the incubator
- Develop a business incubator marketing strategy
- Join state and national small business trade associations

Incubator management is critical to the success of these facilities and should combine expertise in industrial outreach, business development, tenant management and leasing.

Funding

Phase 3 of development at BNAS involves further investments in infrastructure, land assembly and real estate development. ERA recommends a financing strategy that combines state and federal funding sources, in conjunction with facility revenue. As density increases at BNAS, net operating income will increase and become a viable source of cash for these facility investments. Land sales will also become a more realistic source of revenue as demand at the facility increases.

Reuse Master Plan Consultant Team

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