AIRPORT MASTER PLAN

NEWPORT STATE AIRPORT
(COLONELROBERT F. WOOD AIRPARK)

FINAL REPORT

Prepared for:

Rhode Island Airport Corporation
2000 Post Road
Warwick, Rhode Island02886

Prepared by:

The Louis Berger Group, Inc.
Providence, Rhode Island
and Albany, New York

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Introduction to the Study

Updating an Airport Master Plan (AMP) is a standard industry practice. The need may be developed based on some dramatic change at the airport, but as a “rule of thumb” the Federal Aviation Administration (FAA) suggests that updates should be considered approximately every five years to maintain the currency of the data, the airport standards, and reassess airport needs.

The airport master plan has basically two components; the report which documents the analytical process and the Airport Layout Plan (ALP), which serves as the graphic representation for future development at the airport. It is the ALP which is approved by the FAA and the airport sponsor, in this case the Rhode Island Airport Corporation (RIAC).

In the case of Newport State (Colonel Robert F. Wood Airpark) Airport (UUU), the last airport master plan study was conducted in 1986, twenty years ago. Even more dramatic is that the 1986 airport master plan did not produce an approved Airport Layout Plan (ALP). The “most current” FAA ALP dates back to 1966, over 40 years ago.

Therefore, the development of this AMP and ALP is essential to establish an understanding of the future direction of the airport. This updated planning document will be used by RIAC and FAA to direct implementation of capital improvement projects at UUU from the short term (5 year) through the long term (20 year) planning period. In addition to meeting the needs of the airport created by the projected demand it will determine the ability of UUU to meet FAA design standards, which have changed since the last approved ALP and how best to bring the facilities that do not meet those criteria up to standard. Alternative use of the AMP is to serve as a guide for RIAC when reviewing private investment at airport. Similarly it can be effective for the Town of Middletown when reviewing land use development around the airport to ensure compatibility with FAA airspace requirements and the environment.

Newport State Airport (UUU) is a part of the Rhode Island State Airport System Plan (RIASP), which is an element of the State Guide Plan (SGP). This Airport Master Plan report has been developed to ensure consistency with the SGP, and any future updates of this document should include a review of the SGP. Should any change in the role of UUU within the RIASP be proposed, coordination with Rhode Island Statewide Planning is required.

The planning activity that was involved with this project was defined by a scope of work, which followed the guidelines provided by the FAA Advisory Circular 150-5070-6B, *Airport Master Plans*. The objectives of the study were to:

- Create an effective coordination and communication process to ensure input from all affected parties;
- Prepare a comprehensive inventory of airport and environmental conditions;
- Develop forecasts to assess the airport role and facility requirements;
- Conduct a comprehensive assessment of the Airport’s ability to meet current FAA design standards;
- Conduct alternatives analysis to consider engineering, operational, environmental and financial factors;
- Identify the recommendations that result from the alternatives analysis; and
- Prepare and approve a new Airport Layout Plan.

The first objective was achieved through the creation of an Airport Advisory Committee (AAC) that was established to discuss and provide comments on technical reports and recommendations developed during the planning process. Membership of the AAC represented a broad range of stakeholders, including airport users, local business, the community, and planning agencies. A copy of the AAC membership and their roles and responsibilities is included in Appendix B.

In addition to eight (8) AAC meetings, Public Information Meetings (PIM) were held at two key points in the process (after the draft forecasts were developed and after completion of the draft AMP and ALP). The purpose of the PIM is to provide the general public with the opportunity to learn about the study and provide input into the process. Notification of these meetings was provided by publishing notices in local newspapers. The Minutes of all these meetings are included in Appendix B. Finally, an airport website was created to provide project information including draft working papers, public notices, and the scope of work.

This Airport Master Plan was prepared and is presented in the following Chapters:

Chapter 1 – Baseline Conditions
Chapter 2 – Airport Role and Forecasts
Chapter 3 – Facility Requirements
Chapter 4 – Alternatives Analysis
Chapter 5 – Environmental Review
Chapter 6 – Airport Layout Plan
Chapter 7 – Implementation Plan
Appendices

The Airport Master Plan report was prepared by The Louis Berger Group, Inc. and the following staff participated in the study:

<u>Project Manager:</u>
Mr. Marc Champigny, Assistant Director of Aviation

<u>Assistant Project Manager:</u>
Ms. Danielle DelBalso, Aviation Planner

<u>Planning/ALP/Graphics/CAD:</u>
Mr. Dan Porter, Assistant Director of Aviation
Mr. David Sperling, Assistant Director of Aviation
Mr. Nicholas Stefaniak, Aviation Planner

<u>Environmental:</u>
Mr. Doug Ganey, Sr. Environmental Scientist

<u>Engineering:</u>
Mr. Andy Chiurazzi, P.E.
Mr. Douglas Fox, P.E.

The Project Management Team also included Mr. Vincent Scarano, RIAC, Project Manager and Ms. Gail Lattrell, FAA, Community Planner.

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Executive Summary

This Executive Summary provides a general overview of the airport master plan study findings and recommendations. For more complete details on specific elements of the study it is essential to refer to the full Newport (UUU) State Airport Master Plan report and Airport Layout Plan drawings.

Newport State Airport is a part of the Rhode Island State Airport System Plan (RIASP), which is an element of the State Guide Plan (SGP). This Airport Master Plan report has been developed to ensure consistency with the SGP, and any future updates of this document should include a review of the SGP. Should any change in the role of UUU within the RIASP be proposed, coordination with Rhode Island Statewide Planning is required.

Chapter 1 – Baseline Conditions

1.1 Introduction

The airport serves the general aviation (GA) needs of the Newport, Middletown, and Portsmouth area. These include aircraft parking, fueling, maintenance, flight training, and aerial tours of the area. It also serves the area’s tourist destinations, corporate and local business aviation needs, and quick access to the area’s harbors for both private boat owners and the ship building industry. Additionally, the Rhode Island Air National Guard regularly uses the facilities.

1.2 Inventory of Airfield Conditions

A basic inventory of the airfield conditions includes the identification, location and condition of each area. The following is a summary of the airfield conditions. Further details can be found in the main report.

<u>Runways and Taxiways</u>

The two runways are designated as 16/34 and 4/22. See Master Plan *Figure 1.2 Existing Airport Layout* and *Table 1.1 Runway Inventory* and *Table 1.2 Taxiway Inventory* for a complete description.

<u>Aprons</u>

There are two aircraft aprons; *Apron A* for transient aircraft parking and maintenance hangar parking, *Apron B* for based and transient aircraft tie-down parking. There is a total of 38 aircraft and 2 helicopters parking positions. See Master Plan *Figure 1.3 Pavement History and Condition Plan* for the pavement rating.

<u>Airport Utilities</u>

Electric Service is provided by Newport Electric Company. The standby generator provides emergency electrical service for only the airfield lighting.

Water Service is provided by Newport Water Department to the terminal/hangar facility. There is no water service to the Snow Removal Equipment building.

Sanitary sewer for the terminal/hangar facility flows into the City sewage system. Currently there is no sanitary sewer service to the Snow Removal Equipment building.

Airport Navigational Aids (NAVAIDS)

NAVAIDS are electronic facilities providing aircraft with enroute or approach guidance information. The NAVAIDS for UUU include:

- *Localizer (LOC)*: A non-precision approach that provides horizontal alignment for to R/W 22
- *Very High Frequency Omni-Directional Range/ Distance Measuring Equipment (VOR/DME*).
- *Global Positioning System (GPS).*
- *Automated Surface Observation System (ASOS)*: provides meteorological conditions to pilots.

Airport Lighting

Airport lighting and visual aids help orient the pilot to the runway environment. The lighting at UUU includes:

- *Medium Intensity Runway Lights (MIRLS)* are provided on Runway 4/22 and 16/34.
- *Runway End Identifier Lights (REILS)* are located on Runway 04, 22, 16, 34 ends
- *Visual Approach Slope Indicators (VASI)* are located on Runway 04, 22, and 16 ends
- *Medium Intensity Taxiway Lighting (MITLS)* are provided on all three taxiways
- *Rotating beacon* is located on top of the electrical vault.
- *Wind cone and segmented circle* provide guidance on the prevailing wind.

Master Plan Figure 1.4 – *NAVAID/Lighting History and Condition Plan* provides a graphic depiction of these facilities.

Additional facilities at UUU and their conditions are identified below:

Airport Services

There are several businesses on the airport that provide a range of services. These services include aircraft maintenance, flight training, helicopter tours, and skydiving.

Fuel Storage

There are two areas designated for fuel storage. (See Master Plan *Figure 1.2* for the fuel storage areas). There is a single self-serve fueling station with 100LL fuel for users.

Buildings

There are currently five (5) main structures located on the Airport. Master Plan *Figure 1.2* identifies the locations of landside facilities and *Table 1.4* lists the *Airport Building Use and Visual Condition.*

Airport Access

Primary access is via the road off Forest Avenue.

Auto Parking

There are 63 parking spaces adjacent to the terminal.

Airport Equipment

Various types of vehicles and equipment are utilized for airport maintenance, upkeep and safety. See Master Plan *Table 1.5 Airport Equipment* for a summary of the equipment used and their condition.

Air Traffic Control

Newport State Airport is within the Boston ARTCC area. Radar approach and departure control is provided by the Providence TRACON at T.F. Green Airport.

Airport Imaginary Surfaces and Approach Categories

Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airways defines a set of airport imaginary surfaces that should be protected. The Part 77 Surfaces are summarized in *Table 2.7 UUU Part 77 Surfaces Runway for Runway 04, 22, 16 and 34*. See Master Plan *Table 1.6 Approach Categories* for FAA requirements and *Table 1.7 UUU Approach Categories* for Newport. A separate obstruction study was completed and the results are in Appendix E.

Newport State Airport Runway Use

UUU has standard left-hand traffic patterns for operations on all runways.

Chapter 2 – Airport Role & Forecasts

2.1 Activity Forecasts

Forecasts are an estimate of future activity levels and provide guidance that assists decision makers in making judgments for future airport development scenarios. General Aviation (GA) includes personal, business and instructional flying. For GA airports, aircraft operations and based aircraft are the two key forecasts. In reviewing the socio-economic data, forecasted trends in the GA industry, and regional and local FAA forecasts, it was concluded that minimal growth is anticipated for the State of RI in employment, population, and GA activities on a local and regional level. In consultation with RIAC, it was determined that the preferred forecasting methodology would be based on a trend analysis of based aircraft and operations, expert judgment in satisfying latent demand, an extensive evaluation of key factors that influence aviation activity at UUU including existing airport conditions and services, and peak period aircraft operations. The annual activity forecasts were derived from (a) the number of based aircraft, (b) an evaluation of the average number of operations per based aircraft, and (c) input from Airport users and RIAC staff.

The analysis was conducted to: (a) determine the number of based aircraft (b) based aircraft type, (c) average number of operations per based aircraft, and (d) determine the airport total operations by type of operation (itinerant, local, military and air taxi). Historical data such as based aircraft, total operations, population and employment figures, the U.S. economic outlook, the TAF for the State of Rhode Island, the GAMA forecast, and the current RISASP were examined.

For historical activities see Master Plan *Table 2.12 Annual Historical Aircraft Operations, Based Aircraft, & Operations per Based Aircraft.* The forecasted activity levels are presented in five (2011), ten (2016) and twenty year (2026) periods. By comparing the existing facilities at the airport with the facilities needed to meet future demand, timely and cost effective improvements can be planned. The realistic period is the short range period (2011). Activity levels should be monitored annually to determine if the medium and long rang projections should be reassessed based on the actual demand.

Forecasting Scenarios

Three different forecasting scenarios were developed:

- *Forecast Scenario One – Baseline:* It represents continued growth without addressing the airport's based aircraft waitlist. (See Master Plan *Table 2.13 Forecasting Scenario One: Baseline).* UUU is projected to reach 53 based aircraft and a total of 28,905 total operations by 2026.
- *Forecast Scenario Two – High Growth:* It represents the high growth forecast and addresses a significant amount of the based aircraft waitlist. In this scenario UUU is projected to reach 87 based aircraft and 43,703 total operations by 2026. *(See* Master Plan *Table 2.14 indicates the forecasted figures for this particular scenario)*.
- *Forecast Scenario Three – Medium Growth:* This is considered to be a medium growth forecast that addresses a portion of the UUU based aircraft waitlist. This forecast scenario indicates that UUU is projected to reach 65 based aircraft and 32,713 total operations by 2026 *(See* Master Plan *Table 2.15. Forecasting Scenario Three: Medium Growth Forecast).*

Fleet Mix Forecast

There is no indication that the fleet mix for UUU will change in the forecasting period. Master Plan *Table 2.17 Based Aircraft Fleet Mix Forecast*, shows the historical fleet mix from 2006 and applies these percentages to each of the forecast scenarios developed above.

Airport Classification

The FAA *National Plan of Integrated Airport Systems* (NPIAS) identifies airports that are significant to national air transportation, and eligible to receive FAA grants. The NPIAS classifies airports by type of service and defines the airport role. The 2007-2011 NPIAS classifies UUU as a GA Airport.

Design Aircraft

The FAA Advisory Circular (AC) *150/5300-13, Airport Design*, recommends the applicable design parameters critical for airports to consider during the master planning process. It is based on an airport's classification and design aircraft, which in turn is related to current and future demand.

The forecast analysis reaffirms the conclusion in the 2004 RI/ASP and the consensus of operators. The family of aircraft anticipated during the forecast period is Approach Category B and Design Group II (ARC - B-II) meaning the airport will continue to serve the current aircraft fleet.

2.2 Recommended Forecast and Summary

Master Plan Table 2.16
UUU Forecast Summary

Scenario		Historical 2006	Growth Rate	Forecast		
				2011	2016	2026
One - Baseline	Based Aircraft	40 21,461	1.50%	43	46	53
	Aircraft Operations		1.50%	23,120	24,906	28,905
Two - High	Based Aircraft		3.97%	52	63	87
	Aircraft Operations		3.63%	27,126	32,431	43,703
Three - Medium	Based Aircraft		2.47%	45	51	65
	Aircraft Operations		2.13%	23,846	29,441	32,173

Master Plan Table 2.20
Summary of Recommended Forecasts

Forecast	2006	2011	2016	2026
Annual Operations	21,461	27,126	32,431	43,703
Local	17,169	21,701	25,945	34,962
Itinerant	4,292	5,425	6,486	8,741
Based Aircraft	40	52	63	87
Single-Engine	32	42	51	70
Multi-Engine	6	8	9	13
Helicopter	2	2	3	4

Chapter 3 – Airport Facility Requirements

3.1 Introduction

The purpose of this chapter, "*Airport Facility Requirements*" is to determine the needs of the airport based on the demand identified in *Chapter 2 – Forecast*. To the reader the title implies that these are the facilities "required" to maintain a viable and safe airport. It is true that in ideal world providing for the requirements to meet the projected demand is a reasonable expectation. On the other hand, the physical and/or financial resources available may not allow an airport to fully develop under the circumstances. Nonetheless, before the planning can take place to achieve what is "doable" it is important to understand the ultimate facility requirements scenario.

3.2 Airport Runway and Taxiway System Analysis

Airport Design Aircraft

The critical aircraft is that aircraft with the most demanding (i.e. largest) critical dimensions and highest approach speed that consistently (at least 500 operations per year) uses the airport. The FAA design standards for a B-II category is applied throughout the facility requirements analysis.

Airport Design Standards

Airport design standards, as defined by FAA AC 150/5300-13, *Airport Design,* are used to properly size and locate airport facilities. There are three types of standards: Dimensional (required width and length of runways and taxiways); Clearance (required clearances between runways, taxiways, and other facilities); and Operational (described below). See Master Plan *Table 3.1 B-II Design Stand*ards and *Table 3.2 B-II Operational Safety Standards*.

Airfield Capacity

The airfield capacity analysis identifies potential capacity and delay issues associated with the airfield infrastructure and projected demand levels. The analysis of the runway and taxiway system at UUU was based upon methodologies in FAA AC 150/5060-5 *Airport Capacity and Delay*. Since the airport configuration has not changed since either the 1986 Airport Master Plan Study or the 2004 RI/ASP were completed, this planning utilized the 200,000 capacity calculations. The projected demand for UUU will not exceed 44,000 annual aircraft operations.

Wind Coverage

Based on the wind data, the runway configuration at UUU meets the 95% FAA guideline all weather wind coverage. For both runways at 10 knots there is 98.4% coverage, and at 13 knots there is 99.7% coverage. See Master Plan *Table 3.5 10 Knot Wind Analysis – Percent Coverage, Table 3.6 13 Knot Wind Analysis – Percent Coverage*.

3.3 Airfield Requirements

This section determines what improvements should be considered for the existing airfield system.

Runway Length Analysis

The runway length analysis was performed using FAA *Airport Design Computer Program 4.2D* and FAA AC *Airport Design*. The program identified a recommended maximum runway length of:

- 3,570 feet for small aircraft (less than 10 passenger seats)
- 4,120 feet for small aircraft (10 or more passenger seats).
- 5,330 feet will accommodate 100 percent of large aircraft (60,000 pounds or less) at 60% percent useful load.

The planning assumed most aircraft will be operating at or near the 60% useful load factor. (See Master Plan *Table 3.7 Aircraft Runway Length Requirements Airport Input Data*). The computer program shows the existing 2,999 feet length for Runway 4-22 was adequate for up to 95% of the small aircraft fleet. Based on the facility requirements analysis, the alternatives analysis should consider the feasibility of lengthening Runway 4/22 to 3,570 feet to serve 100 percent of the small aircraft fleet.

The existing secondary Runway 16-34 provides for the small aircraft that routinely operate at the Airport. The FAA's guidelines state that the cross-wind runway should be at least 80% of the primary runway or a minimum length of 2,460 feet. Runway 16/34 is currently 2,623 feet.

Runway / Taxiway Width and Separation Standards

The existing runway and taxiway infrastructure and separation requirements meet or exceed the required standards B-II standards.

Runway / Taxiway Pavement Conditions

The pavement conditions for UUU's runway and taxiway system can be found on Master Plan *Table 3.10 UUU Runway / Taxiway Pavement Condition.*

Additional Taxiway Needs

Runway 16/34 does not have a parallel taxiway. The alternatives analysis should look at providing a full length parallel taxiway to Runway 16/34 and a stub taxiway access to the parking apron should be evaluated in the alternative analysis.

Runway Safety Areas (RSA)

The RSA is a surface that is clear of obstructions, structures, roads, and parking areas. All RSA's meet the 150 feet (wide) by 300 feet (from runway end) FAA standard. However, the Runway 4 RSA has a drainage issue.

Object Free Area (OFA)

The OFA should be clear of objects except for those that are fixed by function. The OFA for both runways is 500 feet wide (centered on the runway centerline) and extends 300 feet (from the runway end). The OFA at UUU is free of objects and therefore meets FAA standards.

Runway Protection Zones (RPZ)

The RPZ should be clear of obstructions to the greatest extent possible to enhance the approaches to runways as well as protect the people and property on the ground. UUU's RPZ's and their locations are identified below:

- *Runway 04 RPZ* – includes approximately 10 residential homes
- *Runway 22 RPZ* – is entirely within the existing airport property

- *Runway 16 RPZ* – except for a small northern portion it is entirely within airport property.
- *Runway 34 RPZ* – about 50% on airport property and 50% over farmland

NAVAID, Visual Aids, and Instrument Approaches

NAVAIDs are communication and/or electronic facilities and Visual Aids are lighting systems. They provide either enroute information or visual guidance to the pilot using the airport during both good and poor weather conditions. The existing NAVAID equipment includes the Localizer (LOC) and Automated Surface Observation System (ASOS). Visual aids include the Visual Approach Slope Indicators (VASI) and Runway End Identifier Lights (REIL). Runways 4, 16, and 22 have VASI, while Runway 22 also has REIL.

Instrument Approaches include systems such as an Instrument Landing System (ILS), Microwave Landing System (MLS), and GPS. UUU has published non-precision instrument approaches to Runways 16 and 22. Runway 16 utilizes a straight in VOR/DME or GPS approach with visibility minimums for Category A and B aircraft published at 1 statute mile and Category C aircraft published at 1½ statue miles.

GA Terminal Building

The terminal area is approximately 3,500 square feet. The condition of the terminal was reported in fair to poor condition, but it is not a priority to build a new terminal facility in the near term.

Apron and Hangar Space Requirements

The aprons are divided into Apron A, which is primarily used by transient aircraft and Apron B which is primarily used for based aircraft. The parking aprons total about 12,888 square yards. The apron and hangar requirements include:

- *Aircraft Apron Parking Requirements:* See Master Plan *Table 3.16 Based Aircraft Apron Parking Requirements, Table 3.17 Itinerant Aircraft Apron Parking Requirements, Table 3.18 Based and Itinerant Aircraft Apron Parking Requirements* for the calculated aircraft apron parking requirements. To maximize the potential facilities required to meet this demand the numbers assume a high growth scenario.
- *Hangar Space Requirements:* At present there are two conventional type hangars and no T-hangars. The existing hangars are: (a) A conventional hangar (approximately 8,500 square feet) and (b) temporary hangar (approximately 1,400 square feet).

The facility analysis will evaluate the requirements to develop two sets of 10-unit T-hangars. Development of T-hangars will reduce the amount of aircraft parking apron required. 10 T-hangar Units reduces based aircraft apron space by 3,000 square yards. 20 T-Hangar Units – reduces based aircraft apron space by 6,000 square yards.

Fuel Storage Facility

100LL aviation gasoline is maintained in a self-fueling 12,000 gallon tank centrally located between Apron A and Apron B. See Master Plan *Table 3.19 Fuel Storage Requirements for UUU* for the fuel storage requirements. The existing tank capacity should capable of accommodating future demand.

Maintenance / Snow Removal Equipment (SRE) Equipment and Storage

The SRE Building was constructed in 2004 and is approximately 240 square feet.

Airport Utilities

All utility services are provided by National Grid. Backup power is only provided to the airfield lighting. The alternatives analysis needs to evaluate a backup generator system for the terminal facilities.

Access Road and Automobile Parking

While the airport access is fairly direct from Routes 114 and 138, discussions with users indicate that the signage could be enhanced. The existing parking areas appear to be ample for current demand. Future building improvements to the terminal area must provide enough auto spaces.

3.4 Summary of Airport Facility Requirements

The list summarizes the requirements to be addressed in the Alternatives Analysis.

- Extending Runway 04/22
- Construct Parallel Taxiway to Runway 16/34
- Realign Taxiway A
- Rehabilitate Runway and Taxiway Infrastructure
- Improve Drainage for Runway 4 RSA
- Expand Based Aircraft Apron
- Rehabilitate Apron B
- Develop T-Hangar Complex
- Expand Itinerant Aircraft Apron
- Remove Obstructions
- Develop Conventional Hangar
- Construct GA Terminal Building Facility
- Improve Perimeter Fencing

Chapter 4 – Alternatives Analysis

The purpose of this analysis is to identify how projected facility requirements can best be developed and accommodated given the physical constraints of the airport environment. The result of this process is a conceptual plan, which ultimately will be the basis of the Airport Layout Plan.

4.1 Airport Runway System Alternatives

Chapter #1, *Baseline Conditions* identified the primary Runway 4-22, as 2,999 feet long. The runway length analysis completed in Chapter #3 *Facility Requirements* concluded that extending Runway 4-22 from 2,999 feet to 3,570 feet should be evaluated since that length would enable the airport to accommodate 100% of small airplanes. The airport currently accommodates at least 95% of the B-II aircraft at ISA. The additional length would provide limited flexibility to other aircraft which today are unable to use the airport under certain weather conditions. All the alternatives are on the R/W 22 end because of impacts to the wetlands on the R/W 4 end.

The alternatives were: *(See* Master Plan *Figure 4.1)*

<u>R1: No-Build (Status Quo)</u>

- Continue the operational limitations to the fleet of B-II aircraft requiring lengths of > 2,999 ft.
- Under standard conditions this amounts to less than five percent of aircraft.

<u>R2: Extend Runway 4-22 by 140 ft. to 3139’</u>

- Ensures a full safety area (150’ x 300’) at the Runway 22 end
- Remains within the existing airport boundaries up to the existing Oliphant Lane.

- Maintains the required FAR Part 77 clearances (15') over Oliphant Lane.
- The cost to extend the runway for less than 5% of the aircraft is a questionable alternative.

R3: Extend Runway 4-22 by 571 ft. to 3,570'

- It is the length that allows the runway to accommodate 100% of the B-II small aircraft fleet.
- This extension would require: (a) Realigning Oliphant Lane, (b) Mitigating wetlands, (c) Land acquisition, (d) drainage improvements and (e) Removing tree obstructions.
- Results in the greatest operational benefit but would also have the most impacts.

Recommendation: Alternative R1is the recommended alternative.

4.2 Airport Taxiway System: Parallel Taxiway Construction Alternatives

Runway 4-22 is currently served by a full taxiway, but it does not have a parallel alignment.

The alternatives were*: (See* Master Plan *Figure 4.2)*

T1: No Build (Status Quo)

- The no-build scenario will result in no safety enhancements.
- The objective to reduce aircraft runway occupancy time will not be achieved.
- No changes will occur to existing facilities.

T2: Realign Parallel Taxiway to Runway 4-22

- Engineering is feasible, but requires grading around the existing segmented circle.
- Would increase efficiency, keeping taxiing aircraft away from the existing transient apron.
- Limited environmental impacts and no land use change.

T3: Construct Parallel Taxiway to Runway 16-34

- The engineering is significant and associated cost for this alternative exceeds $2 million
- Requires a comprehensive environmental analysis because of wetland impacts.
- The environmental issues are significant tree clearing and filling wetlands.

Recommendation:

- Alternative T3 is not recommended because of the environmental impacts.
- Instead construct a partial parallel taxiway for R/W 16-34.
- Realignment of Taxiway "A" should be included with the partial parallel taxiway to R/W 34.
- Realignment of Taxiway "C" segment is not recommended because it has minimal benefit.

4.3 Apron Area Alternatives

The existing apron space is at capacity for aircraft parking. In addition, the east corner of the apron lies within the Runway Visual Zone (RVZ). The alternatives were*: (See* Master Plan *Figure 4.3)*:

<u>A1: No Build (Status Quo)</u>

- The apron parking space exceeded during peak activity continues to be a problem.
- Using the transient parking space to meet based aircraft parking demand also continues.
- A primary planning objective to improve aircraft parking is not achieved.

<u>A2: Based Aircraft Apron Expansion</u>

- Areas for apron expansion exist to the northwest and southwest of the present apron.
    - Expansion to the northwest is limited due to existing wetland areas.
    - The grade in these areas requires fill.
    - Expansion is impacted by the proposed parallel taxiway and/or taxilane.
- Parking aircraft closer to a taxiing area will result in quicker access to the airfield.
- T-Hangar development will reduce the need for additional based aircraft parking.
- A modification to the UUU SWPPP is required to expand aircraft apron areas.

<u>A3: Transient Aircraft Apron Expansion</u>

Space is available to expand this apron to the southwest adjacent to Taxiway A.

- The operational effectiveness of this apron is impacted by:
    - Activity to and from the hangar accessing the apron
    - The need to maintain a clear line of sight for the RVZ.
- The current transient space is considered adequate until 2011.
- Based aircraft expansion would be a priority that would relieve the transient apron space.
- By 2016, the proposed expansion is increased to provide a minimum area of 3,200 SY.

Recommendation:

- The phased expansion of aircraft apron should be coordinated with T-hangar development.
- The initial expansion should be to the northwest of the existing based aircraft apron.
- The next phase should be constructed southwest of the existing apron to avoid wetlands.
- Phased expansion of the transient apron should be considered in the 10-year period.
- The proposed expansion should be to the southwest of the existing transient apron.

4.4 Conventional Hangar and General Aviation Terminal Alternatives

The alternatives were*: (See* Master Plan *Figure 4.4)*

S1: No-Build (Status Quo)

- The existing conventional hangar and GA terminal provides anticipated needs.
- No development will take place and no changes will occur to existing facilities.

S2: Construct New Conventional Hangar/GA Terminal South of Existing Facility

- The location has direct access to the expanded terminal/transient aircraft parking apron.
- The transient apron requires expansion if it is not completed in a previous project.
- The airport electrical vault requires relocation or incorporation into the new facility.
- The rotating beacon and the temporary hangar require relocation.
- The existing auto parking area can serve the facility but needs to be evaluated for expansion.
- The project would include improvement to utilities and area security lighting.
- It is the only alternative for GA terminal because it needs a location near the transient apron.

S3: Construct New Conventional Hangar Adjacent to SRE Facility

- The transient apron requires expansion if it is not completed in a previous project.
- The affected apron is the based aircraft parking apron.
- The existing auto parking area can serve the facility but needs to be evaluated for expansion.
- The project would include improvement to utilities and area security lighting.

Note: Alternative S2 and S3 requires more evaluation if a proposal is received from a developer.

Recommendation: The S1 No-Build alternative is recommended for the planning period or until such time as hangar/terminal development proposal is received and evaluated.

4.5 T-Hangar Alternatives

Chapter 3 studied the impacts of one or two 10-unit T-Hangar facilities. The alternatives were*: (See* Master Plan *Figure 4.5)*

H1: No-Build (Status Quo)

- The No-Build scenario provides no space for hangars at the airport.
- Based aircraft will continue to use apron tie down spaces.
- An opportunity to increase airport revenue will be lost.

H2: Construct 2 -10 Unit T-Hangars at a location to the west of Runway 22

- T-Hangar units and associated paved taxi areas would be constructed to the west of the Runway 22 end (between Taxiway C and the Industrial Park).

- Because of the space limitations both units would be aligned along the same axis.
- This area is level and is ready for development with limited site preparation. Development includes:
  - A stub taxiway to access Taxiway C,
  - Automobile parking area, an access road from Oliphant Lane,
  - Extension of utilities and security improvements.
- Modifications to the UUU SWPPP would be required prior to constructing T-Hangars.
- Based on demand, consideration should be given to build one 10-unit set at a time, with the southern unit to come first.
- This area is compatible with current zoning/land use, located adjacent to the industrial park to the west.
- Limited environmental impacts, mostly an increase in impervious surfaces, and is outside of airport delineated wetlands.

H3: Construct 2 -10 Unit T-Hangars at a location behind based aircraft Apron B

- T-Hangar units and associated paved taxi areas would be constructed behind, or southwest of based aircraft Apron "B".
- The units would be placed one behind the other as shown on Figure 4.5.
- Taxiway access will be via the based aircraft apron and Taxiway B.
- The existing auto parking area must be expanded to accommodate the additional vehicles.
- Access is proposed via the existing airport access road.
- Development includes extension of utilities and security improvements.
- Modifications to the UUU SWPPP would be required prior to constructing T-Hangars.
- Development of T-hangars in any other areas in this location would impact wetlands or require significant fill making them cost prohibitive.

H4: Construct 2 -10 Unit T-Hangars at a location to the east of Runway 22

- T-Hangar units and associated paved taxi areas would be constructed to the east of the Runway 22 end.
- Because of the space limitations both units would be aligned along the same axis.
- Development includes:
  - An extended taxiway to access Runway 22,
  - An automobile parking area and access road from Oliphant Lane,
  - Extension of utility lines and security improvements.
- Modifications to the UUU SWPPP would be required prior to constructing T-Hangars.
- Based on demand, consideration should be given to build one 10-unit set at a time, with the northern unit to come first.
- There would be significant impact to delineated wetlands, requiring mitigation measures ultimately making this area cost prohibitive.

Recommendation: Alternative H2, development on the west side of the Runway 22 end, is the preferred alternative. H3 and H4 will be further evaluated in the subsequent Environmental Assessment as secondary T-hangar locations.

4.6 Other Airside and Landside Issues

Airport Drainage Runway Safety Area (RSA) for Runway 4

The grading in this area does not meet the requirements for a RSA. In addition, the entire airport experiences drainage problems. An airport drainage study is recommended to determine the cause of the problems and recommendations for improvements.

Obstructions Analysis and Removal

A separate obstruction study was conducted. It identifies penetrations to all Part 77 surfaces with recommended corrective actions. Information is contained in Appendix E of this Master Plan.

Runway and Taxiway Rehabilitation

Chapter 3 included results of a pavement condition survey for all the airfield pavements. Rehabilitation recommendations include:

- The R/W 16- 34 pavement (including the intersection) was rated "fair". Reconstruction of the pavement should be planned for the 5 – 10 years period.
- The R/W 4-22 pavement (excluding the intersection) was rated "good". Reconstruction of the pavement should be planned for the 10 – 20 years period.
- The taxiways were rated "good" and do not require any rehabilitation in the 5 – 10 year period.

Apron Rehabilitation

The airport's two aircraft parking aprons were evaluated during a 2006 pavement inspection. Rehabilitation recommendations include:

- Apron A, the transient aircraft apron, was rated "excellent", and therefore requires no rehabilitation in the near-term.
- Apron B, the based aircraft apron, was rated "poor". It is currently the worst pavement on the airport. Reconstruction of the pavement is recommended in the 0 – 5 year period.

Water Line Improvements

Expansion of facilities or future construction will require extension of water service and increased capacities. In addition, construction of high pressure water lines and hydrants would provide a level of fire safety needed to protect facilities, aircraft and equipment.

Backup Electrical Generator

The backup power is only provided to the airfield lighting circuits. A backup generator should be installed to provide for all essential facilities when terminal area improvements are made.

Perimeter Fencing

Fencing improvements should be considered to add or replace fencing to provide a uniform 8 feet high chain link fence with 1 foot barbed wire extensions. The following locations are major areas where fencing should be improved: (a) Airport Entrance Area, (b) Northeast Corner/Stone Plant

Maintenance Equipment

Based on the inventory of equipment conducted at the onset of this planning study and discussions with Airport staff, there are no equipment deficiencies at this time.

Access Road and Automobile Parking

Signage and cosmetic improvements are needed to the access road. Parking should be evaluated based upon current and future anticipated employees, tenants and visitors.

Chapter 5 – Environmental Review

The purpose of this Chapter is to conduct a general assessment of the environmental effects of the preferred alternative and to define the potential extent of future environmental analyses that is needed to implement the airfield improvements shown on the ALP.

This environmental review, while not a formal Environmental Assessment (EA), will consider the environmental elements described in FAA Advisory Circular 150/5070-6B, FAA Order 5050.4B, Airport Environmental Handbook, and relevant Rhode Island environmental regulations and procedures. Unless otherwise identified as “Categorically Exempt” an EA will be necessary for the projects on the ALP that are anticipated to be implemented in the short-term (5 year) planning period. An EA will be conducted for those projects identified in the short-term planning period (Phase 1). An EA will include opportunity for public comment and will define any “Categorically Exempt” improvements as defined by FAA Order 5050.4B, as well as identify any possible mitigation measures or modifications to the ALP to avoid, minimize or mitigate environmental impacts, should any exist.

The recommended projects for the five year planning period do not appear to have a significant impact on the surrounding community or environment. There will be a need, however, to complete coordination with federal, state, and local agencies when the recommended projects are initially designed. This coordination can be done as part of the follow-on Environmental Assessment that should address the following. A summary of the recommendations identified in this analysis are as follows:

- Activities in or adjacent to wetland areas will require a State Water Quality Certification (WQC) and DEM permit;
- A drainage study is recommended for the entire airport as part of the preferred alternative, especially the Runway 4 end, including an assessment of off-airport flooding impacts;
- Prior to construction activities, the UUU SWPPP should be modified to control sedimentation and erosion during construction;
- A field inspection and research at the RIHPHC and RIHS should be conducted to identify potential

cultural resources sites within the project vicinity prior to implementation of the preferred alternative; and

- If it is determined that the preferred alternative may affect soils protected under the Federal Farmland Protection Act, it may be necessary to contact the NRCS for completion of a Farmland Conversion Impact Rating Form.

Chapter 6 – Airport Layout Plan

This Chapter presents the Airport Layout Plan (ALP) and associated drawings for Newport State Airport (UUU). The ALP drawing set depicts, graphically, the development of the airport proposed over the twenty-year planning period. Although the planning process is dynamic in nature, the ALP is intended to serve as the framework for future development and growth for UUU.

The Airport Master Plan, along with the ALP, must be supplemented by an annual evaluation of airport needs, upon which scheduling and project development presented in the ALP occurs. Updating the ALP and the Master Plan should occur every five to ten years to identify the progress of airport development, identify trends in aviation, and developing recommendations that will address the needs of the airport.

The Airport Layout Plan is provided on the following page. The complete ALP set can be found in Chapter 6 of the Master Plan.

Page reserved to insert "Airport Layout Plan" Sheet by LBG

Chapter 7 – Implementation Plan

The Chapter identifies the phased scheduling of projects identified in the AMP and the financial implications on the resources of RIAC. Prior to implementing the recommendations they are subject to an environmental evaluation and approval by FAA and RIAC. The schedule of development for the proposed projects is identified in Master Plan *Tables 7.1, 7.2, 7.3*. It is based on the assumption that activity will grow consistent with the forecasts.

Besides potential RIAC funding sources from State transportation bonds, short and long term borrowing and operating revenue from the airport system the FAA Airport Improvement Program (AIP) funds is the primary source of funding projects. The AIP funds include:

- Entitlement – Based on a defined formula tied closely to airport volume.
- Apportionment – A defined amount of funding provided to each State.
- Discretionary – Awarded at FAA discretion to projects that meet national criteria

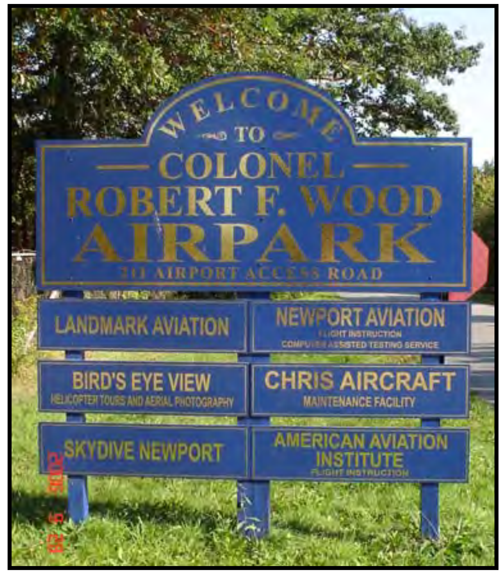
Master Plan Table 7.4
Summary of Estimated Project Costs

#	Project Description	Est. Total	FAA[1]	RIAC	Other
1	Environmental Assessment	$150,000	$142,500	$7,500	$0
2	Drainage Evaluation Study	65,000	61,750	3,250	0
3	Drainage Improvements	660,000	627,000	33,000	0
4	Rehabilitation & Expansion of Based Aircraft Apron and Lighting	1,600,000	1,520,000	80,000	0
5	Rehabilitation of Runway 16-34, Intersection, Lighting & PAPI	2,500,000	2,375,000	125,000	0
6	Obstruction Easements (off-airport)[2]	1,600,000	1,520,000	80,000	-
7	Construction of Partial Parallel Taxiway to Runway 16- 34	1,675,000	1,591,250	83,750	0
8	10-Unit T-Hangars	600,000	0	0	$600,000
	Phase I Total	$8,750,000	$8,312,500	$437,500	$600,000
9	Rehabilitation of Runway 4-22 and Lighting	$2,700,000	$2,565,000	$135,000	$0
10	Obstruction Removal (off-airport)[2]	600,000	570,000	30,000	-
11	Expand Transient Apron (Phase 1 & 2)	400,000	380,000	20,000	0
12	Perimeter Fencing Improvements	250,000	237,500	12,500	0
13	10-Unit T-Hangars	600,000	0	0	600,000
14	Airport Layout Plan Update	150,000	142,500	7,500	0
	Phase II Total	$4,700,000	$4,465,000	$205,000	$600,000
15	Expansion of Based Aircraft Apron (Phase 2 and 3)	$1,570,000	$1,491,500	$78,500	$0
16	New Terminal Area Facility, Utility and Electrical Vault Improve.	4,500,000	0	4,500,000	0
17	Realignment/Rehabilitation of Taxiway A	965,000	916,750	48,250	0
18	Purchase of Updated Snow Removal Equipment (SRE)	250,000	237,500	12,500	0
	Phase III Total	$7,285,000	$2,645,750	$4,639,250	$0
	Phase I, II and III Total	$20,735,000	$15,423,250	$5,281,750	$1,200,000

[1] The final FAA funding of projects will be determined after coordination of the Newport Airport CIP with FAA. It is also affected by the funding considerations for the other RIAC GA airports.
[2] To be determined pending an action plan by RIAC and public coordination.

Chapter 1.0 - Baseline Conditions

This Chapter of the Master Plan provides an overview, or inventory, of the Newport State Airport (UUU). It is a compilation of all pertinent data relative to the airport, including airfield conditions, operational activity, environmental conditions, and economic conditions.



The inventory involved data collection over an array of data sources. These include:

- The Rhode Island State Airport System Plan (2004),
- Previous master plan reports (1966 and May 1986),
- Other pertinent reports and studies (varied)

Baseline conditions data was also collected through site visits on September 27, 28, October 4 and 5, 2006. In addition, a tour of the Airport was conducted on October 23 for the Master Plan's Airport Advisory Committee. This Chapter is categorized into the following main sections:

- Section 1 - Newport State Airport
- Section 2 - Airfield Conditions
- Section 3 - Operational Activity
- Section 4 - Environmental Conditions
- Section 5 - Economic Conditions

The information collected in this effort was utilized throughout the master planning process to assess, project and recommend a master plan and Airport Layout Plan for the Airport.

1.1 Introduction to Newport State Airport

1.1.1 History

The airport serves the multi-faceted general aviation needs of the area and is a vital component of the Rhode Island Airport System operated by RIAC. The services include aircraft parking/storage, fueling, maintenance, flight training, and aerial tours of the area. Not only is it used for local general aviation traffic, but UUU also serves the area's tourist destinations, corporate and local business aviation needs, and quick access to the area's harbors for both private boat owners and the ship building industry.

The airport's history begins in 1945 when Colonel Robert F. Wood, a decorated World War II pilot and Newport native, acquired a 117 acre dairy farm from his uncles with the idea of building an airport on Aquidneck Island. Col. Wood built an airfield that had two grass runways that were built very close to the airport's current runway orientation. As operations increased over the years, dust from arriving and departing aircraft became a problem, which was remedied in 1949 with the installation of paved runways.

On July 1, 1960, the state of Rhode Island officially purchased the airport from Col. Wood as a part of a movement to preserve the Island's only air link from residential development. In 1963 the state purchased an additional 124.32 acres, effectively doubling the size of the airport to nearly its current size. In 1967 construction was completed on two new runways, a system of taxiways, and an access road.

On December 9, 1992, the Rhode Island Airport Corporation (RIAC) was formed as a quasi-public subsidiary of the then Rhode Island Port Authority, now the Rhode Island Economic Development Corporation, to operate and maintain the state's airport system, which includes UUU. The Airport is currently managed under contract by Landmark Aviation, which is responsible for providing services at the State's four other general aviation airports (Block Island State Airport, North Central State Airport, Quonset State Airport, and Westerly State Airport) as well.

1.1.2 Airport Property and Vicinity

Newport State Airport is located in Middletown, Rhode Island, approximately 2 miles to the north of the City of Newport, 0.5 miles south of the City of Portsmouth, and sits at an elevation of 172 feet above mean sea level (MSL). The Airport is situated on approximately 223 acres located in the north-central part of Middletown. Middletown is located between the City of Newport to the south and the Town of Portsmouth to the north. These three municipalities make up Aquidneck Island, which is bound by Mount Hope Bay to the north, Narragansett Bay to the west, the Sachuest River to the east, and Rhode Island Sound and the Atlantic Ocean to the south. The airport provides general aviation services to the Aquidneck Island communities, which include Middletown, Newport and Portsmouth, as well as the East Bay communities of Little Compton, Barrington, Bristol, Warren, and Tiverton.

1.1.3 Previous Airport Planning and Airport Improvements

Master plans were previously completed for UUU in 1966 and 1989. The last approved Airport Layout Plan on record for UUU with the FAA is dated 1966. The 1989 master plan effort completed under the Rhode Island Department of Transportation resulted in a master plan report but the ALP was not submitted to FAA for approval.

While these documents are dated, the Airport, now under the control of RIAC is directing this effort to initiate and conduct a new planning process. At the same time RIAC has continued to make improvements at the airport since it assumed management of the airport.

Table 1.0 identifies the improvements made at UUU over the past three decades.

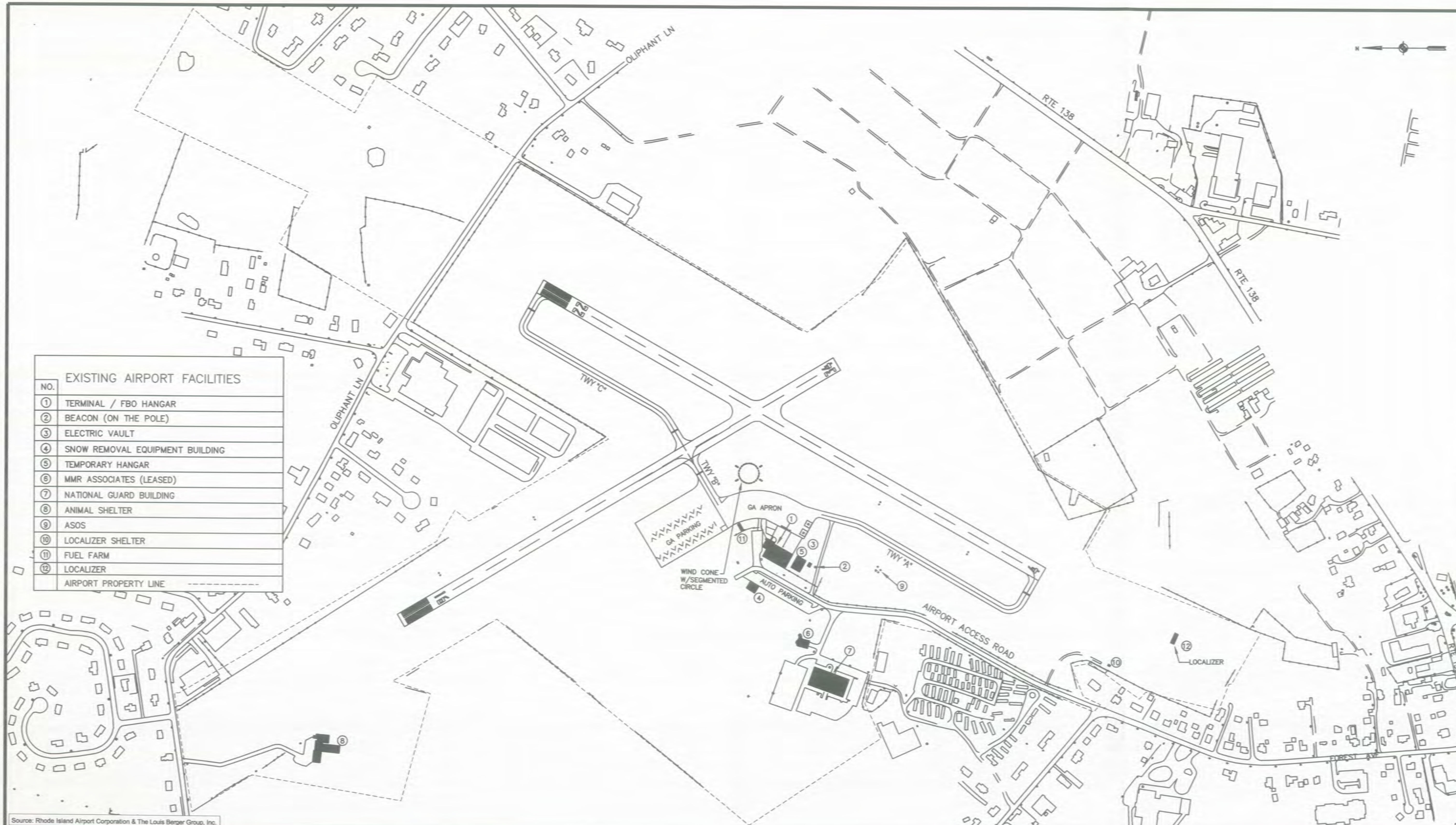
Table 1.0
Airport Improvement Projects

Year	Project Description	FAA Funds
1970	Rehabilitate of Taxiway C	Not Avail.
1984	Conduct Airport Master Plan	$80,280
1985	Rehabilitate/Extend Runway 4-22 and Install Runway Lights	$72,533
1987	Rehabilitate Runway 16-34 and Obstruction Removal	$750,609
1990	Rehabilitate Runway 4-22, Improve RSA and Airport Drainage	$736,005
1999	Rehabilitate Apron and Taxiway	$85,906
1999	Conduct Environmental Study	$82,339
2000	Rehabilitate Taxiway and Apron	$494,579
2003	Obstructions Removal (on-airport)	$65,746
2004	Obstructions Removal (on-airport)	$280,526
2005	Obstructions Removal (on-airport)	$1,569,214
2006	Rehabilitate Taxiway C (Design only)	Not Avail.

Source: FAA Grant History

Figures 1.1 and 1.2 provide the general airport layout of UUU.

The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**Aerial Photo** Newport State Airport	December 2007	FIGURE 1.1



NO.	EXISTING AIRPORT FACILITIES
①	TERMINAL / FBO HANGAR
②	BEACON (ON THE POLE)
③	ELECTRIC VAULT
④	SNOW REMOVAL EQUIPMENT BUILDING
⑤	TEMPORARY HANGAR
⑥	MMR ASSOCIATES (LEASED)
⑦	NATIONAL GUARD BUILDING
⑧	ANIMAL SHELTER
⑨	ASOS
⑩	LOCALIZER SHELTER
⑪	FUEL FARM
⑫	LOCALIZER
	AIRPORT PROPERTY LINE ------------

Source: Rhode Island Airport Corporation & The Louis Berger Group, Inc.

The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**Existing Airport Layout** Newport State Airport	December 2007	FIGURE 1.2

1.2 Inventory of Airfield Conditions

A complete inventory of the airfield conditions at UUU were reviewed looking at airfield pavement, lighting and NAVAIDS, airport terminal and other airport structures, airport access and parking, airport equipment, airspace and runway approaches.

The conditions reported are based upon a review of the site inspection report completed (July 2006) by FAA, RIAC and Landmark, review of other airport plans, and discussions with airport staff.

Basic guidelines for airport design are set forth in the FAA's Advisory Circular (AC) 150/5300-13 *Airport Design*. Each airport can be classified based on the aircraft which it is designed to serve using the Airport Reference Code (ARC). The ARC is established by two separate factors: ***Approach Category*** which group aircraft based on approach speed and ***Design Group*** which group aircraft based on wingspan.

Aircraft approach categories are defined as follows:

- Category A: Speed less than 91 knots.
- Category B: Speed 91 knots or more, but less than 121 knots.
- Category C: Speed 121 knots or more, but less than 141 knots.
- Category D: Speed 141 knots or more, but less than 166 knots.
- Category E: Speed 166 knots or more.

Airplane design groups are defined as follows:

- Group I: Up to but not including 49 feet (with a subcategory for small aircraft).
- Group II: 49 feet or more, but less than 79 feet.
- Group III: 79 feet or more, but less than 118 feet.
- Group IV: 118 feet or more, but less than 171 feet.
- Group V: 171 feet or more, but less than 214 feet.
- Group VI: 214 feet or more, but less than 262 feet.

Operations at UUU are characterized by single and twin-engine piston aircraft activity. ***The previous Master Plan and the Rhode Island State Aviation System Plan both identified the airport as typically serving aircraft from Category B, and Design Group II for both Runway 4/22 and 16/34.*** As a part of this planning effort, the airport's designation will be reassessed to ensure it is still current.

1.2.1 Airfield Pavement

Newport State Airport has two runways, designated as 16/34 and 4/22. **Figure 1.2 – Existing Airport Layout** identifies each runway. Runways are numbered based on their magnetic heading, to the nearest 10 degrees, and by removing the final "0". For example, if an aircraft is on the end of the runway labeled "16" facing the "34" end, the magnetic compass for that aircraft should read 160°. Therefore, the difference in runway numbers will always be 18, or 180°. For aviation purposes, North is considered 360°, East is 90°, South is 180°, and West is 270°.

Table 1.1
UUU Runway Inventory

Name	Runway 4/22	Runway 16/34
Length	2,999 feet	2,623 feet
Width	75 feet	75 feet
Material	Bituminous Concrete[1]	Bituminous Concrete
Strength	30,000 lbs. Single Wheel	30,000 lbs. Single Wheel
Lighting	MIRLS	MIRLS
Markings	4 – Visual 22 – Non-Precision Instrument	16 – Non-Precision Instrument 34 – Visual
Visual Aids	4 and 22 – VASI 22 – REIL	16 – VASI 34 – None
RSA	150 feet wide by 300 feet long	150 feet wide by 300 feet long

Abbreviations:
MIRLS – Medium Intensity Runway Lighting System; REIL – Runway End Identification Lights
RSA – Runway Safety Area; VASI – Visual Approach Slope Indicator

There is a partial system of taxiway. Back taxiing is required on Runway 16/34 due to the lack of a parallel taxiway. Taxiways are identified by letters of the alphabet. Figure 1.1 shows the designations of each taxiway. A detailed description of each runway and taxiway follows in this section.

Table 1.2
UUU Taxiway Inventory

Name	Taxiway A	Taxiway B	Taxiway C
Width	40 feet	40 feet	40 feet
Type	Parallel to 4/22	Stub Across 16/34	Parallel to 4/22
Runway Centerline Separation	250 feet	n/a	250 feet
Material	Bituminous Concrete	Bituminous Concrete	Bituminous Concrete
Lighting	MITLS	MITLS	MITLS

Abbreviations:
MITLS – Medium Intensity Taxiway Lighting System

Aircraft parking aprons are accessed from taxiways and are used for maneuvering, parking, and servicing of aircraft. UUU has two airport apron or apron areas. They are shown in Figure 1.2. The aircraft aprons are located immediately in front of and to the north of the terminal building, and are a combined 20,400 square yards in size.

- Apron A is located immediately in front of the terminal building and is used for transient aircraft parking, maintenance hangar parking, and based aircraft tie-down parking. There are six aircraft and two helicopter tie-downs available on the apron, not including transient aircraft parking space. It is constructed of bituminous concrete.

  Total Aircraft Parking Positions: 6 Aircraft, 2 Helicopters

[1] Bituminous concrete is commonly referred to as asphalt, which is a type of concrete with bituminous materials replacing cement as the binder in the mixture. Bituminous material is a mixture of residual organic fluids obtained during the distillation of crude oil.

- **Apron B** abuts Apron A and is located north of the terminal building and Taxiway B. It is used for based and transient aircraft tie-down parking and has 30 positions. Apron B is also constructed of bituminous concrete.

  Total Aircraft Parking Positions: 30 Aircraft

Total aircraft parking positions at Newport State Airport: 36 aircraft and 2 helicopters

Apron A

Apron B

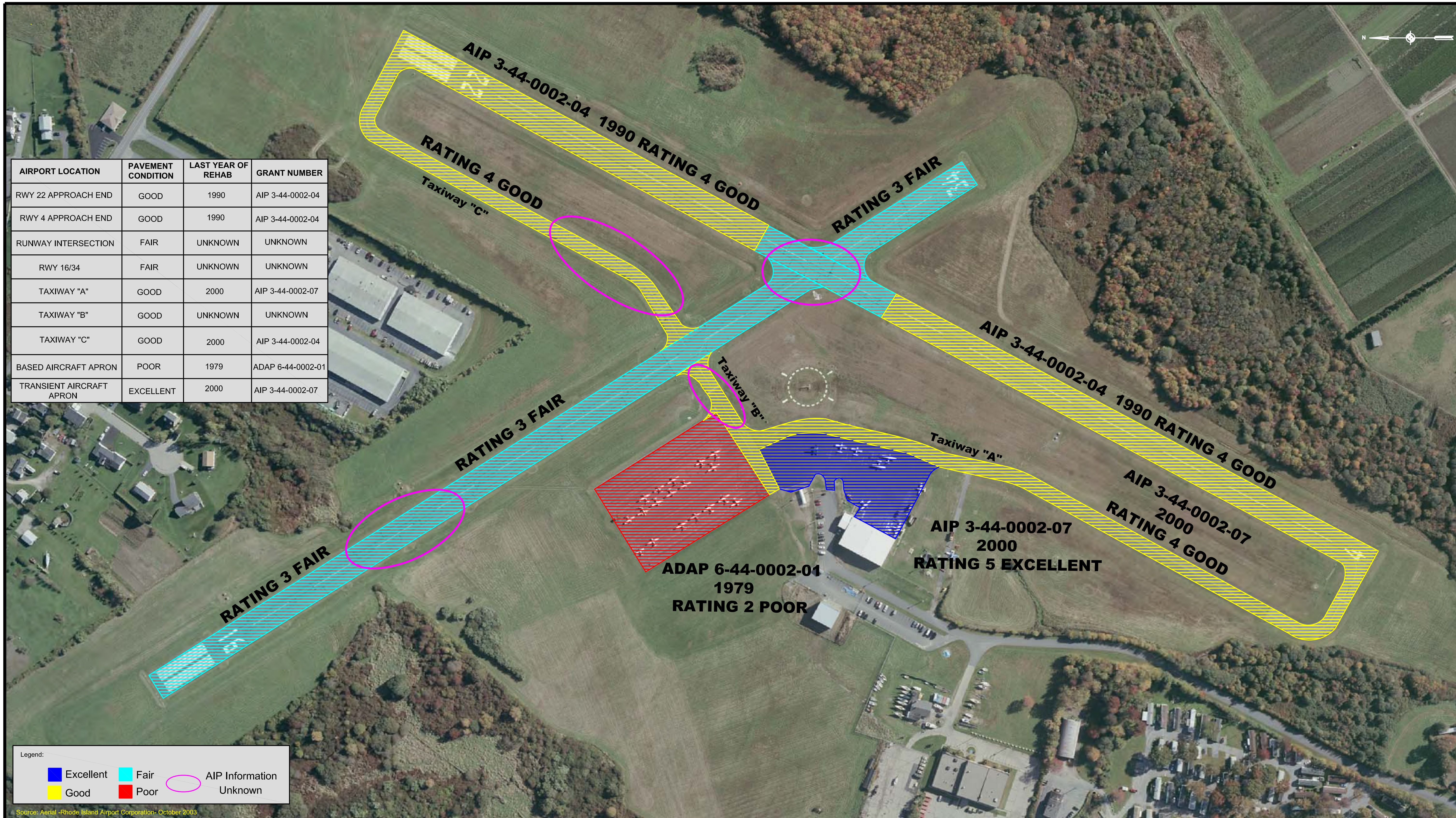
Figure 1.3 – Pavement History and Condition Plan, provides a graphical representation the runways, taxiways, and aprons at UUU. The figure provides the pavement rating along with the year the pavement was last rehabilitated and the FAA grant number that funded the improvement.

Using the Pavement Surface Evaluation and Rating (PASER) system established by the FAA, pavement ratings were established for the airside pavement. PASER uses visual inspection to evaluate pavement surface conditions for four major categories of pavement surface distress:

- Surface defects: loss of pavement, loss of pavement grooving, or excess asphalt caused by poor mix design
- Surface deformation: ruts, pavement distortion
- Cracks: includes but is not limited to thermal cracking, edge and joint cracks, and alligator cracks
- Patches and potholes: original surface repairs and pavement holes

Based up on the results of the visual inspection, each pavement area is given a rating from 1-5, which is further described as follows:

- Rating 5 – Excellent: No maintenance is required
- Rating 4 – Good: Minor routine maintenance, crack sealing as needed
- Rating 3 – Fair: Preservative treatments, crack sealing and surface treatment is necessary
- Rating 2 – Poor: Structural improvement and leveling is needed
- Rating 1 – Failed: Reconstruction is necessary



AIRPORT LOCATION	PAVEMENT CONDITION	LAST YEAR OF REHAB	GRANT NUMBER
RWY 22 APPROACH END	GOOD	1990	AIP 3-44-0002-04
RWY 4 APPROACH END	GOOD	1990	AIP 3-44-0002-04
RUNWAY INTERSECTION	FAIR	UNKNOWN	UNKNOWN
RWY 16/34	FAIR	UNKNOWN	UNKNOWN
TAXIWAY "A"	GOOD	2000	AIP 3-44-0002-07
TAXIWAY "B"	GOOD	UNKNOWN	UNKNOWN
TAXIWAY "C"	GOOD	2000	AIP 3-44-0002-04
BASED AIRCRAFT APRON	POOR	1979	ADAP 6-44-0002-01
TRANSIENT AIRCRAFT APRON	EXCELLENT	2000	AIP 3-44-0002-07

The Louis Berger Group, Inc.

Rhode Island Airport Corporation

Pavement History and Condition Plan
Newport State Airport

December 2007

FIGURE 1.3

1.2.2 Utilities, NAVAIDS and Lighting

1.2.2.1 Airport Utilities

The following is a summary of the utilities serving UUU. Information on utilities was obtained from a review of airport files, on-site investigation, and discussions with airport personnel.

Electric Service

Electric power is provided to the Airport from National Grid utility poles located along the airport access road. Service to airport buildings is through underground cables from the utility poles. The electrical vault which controls the airfield lighting and houses the airport's generator is located to the southwest of the existing terminal building and is shown on Figure 1.0. The generator provides emergency electrical service to the airfield lighting only. Emergency electrical service is not provided to the terminal building, hangar, and Snow Removal Equipment (SRE) building.

Water Service

Water service is provided to the Airport via the Newport Water Department. It is only provided to the terminal/hangar facility but not to the Snow Removal Equipment (SRE) building.

Sanitary Sewer

Sewer service is provided by the Town of Middletown. Sewage pipes that service the terminal/hangar facility flow into the Town sewage system, and then treated at the City of Newport treatment facility. Holding tanks contain the sewage, which is then pumped into the City system when capacity is reached. As with water service, there is no sanitary sewer service to the SRE facility.

1.2.2.2 Airport Navigational Aids (NAVAIDS)

Navigational Aids (NAVAIDS), are electronic facilities providing enroute or approach guidance information. They are used by pilots to navigate to and from an airport. NAVAIDS are generally used in concert with airport runway lighting and visual aids (such as approach lights, VASI, etc.). They provide visual cues and orientation to the pilot. UUU approaches have three NAVAIDS:

- Localizer (LOC);
- Very High Frequency Omni-Directional Range (VOR); and
- Global Positioning System (GPS) approach (RNAV).

This section describes the NAVAIDS and a summary of the approaches is provided at the end.

Localizer (LOC)

A localizer provides horizontal alignment for approaches to Runway 22. Since a localizer alone cannot provide vertical alignment data, it is typically installed in conjunction with a Glide Slope (GS) to form an instrument landing system (ILS). That provides a precision approach. In the absence of a GS the R/W 22 approach at UUU is identified as a non-precision. The LOC is on a frequency of 108.5 MHz and is identified by the Morse code of IOTI.

Very High Frequency Omni-Directional Range (VOR)

There are three VOR in the airport area that are used for navigation and non-precision instrument approaches. One of them, the PROVIDENCE VOR located at T.F. Green Airport. It provides guidance for the non-precision approach to Runway 22. This VOR also has Distance Measuring Equipment (DME) associated with it, providing distance-to-runway information to the pilot.

Global Positioning System (GPS) Approach (RNAV)

Global Positioning System (GPS) is a recent development in air navigation technology and is widely implemented. GPS works on a system of 24 satellites in orbit above the earth. A receiver in the plane accepts signals from multiple satellites and calculates its position and altitude based on the distance from each satellite. GPS technology (when not supported by ground-based error correction stations) has been approved for enroute navigation and non-precision approaches. The GPS approach for Newport State Airport is based on the airport identifier “UUU”.

Automated Surface Observation System (ASOS)

An ASOS was commissioned at UUU and is located southwest of the terminal facility. This device provides pilots with airport meteorological conditions such as wind speed, direction, and ceiling

UUU ASOS Weather System

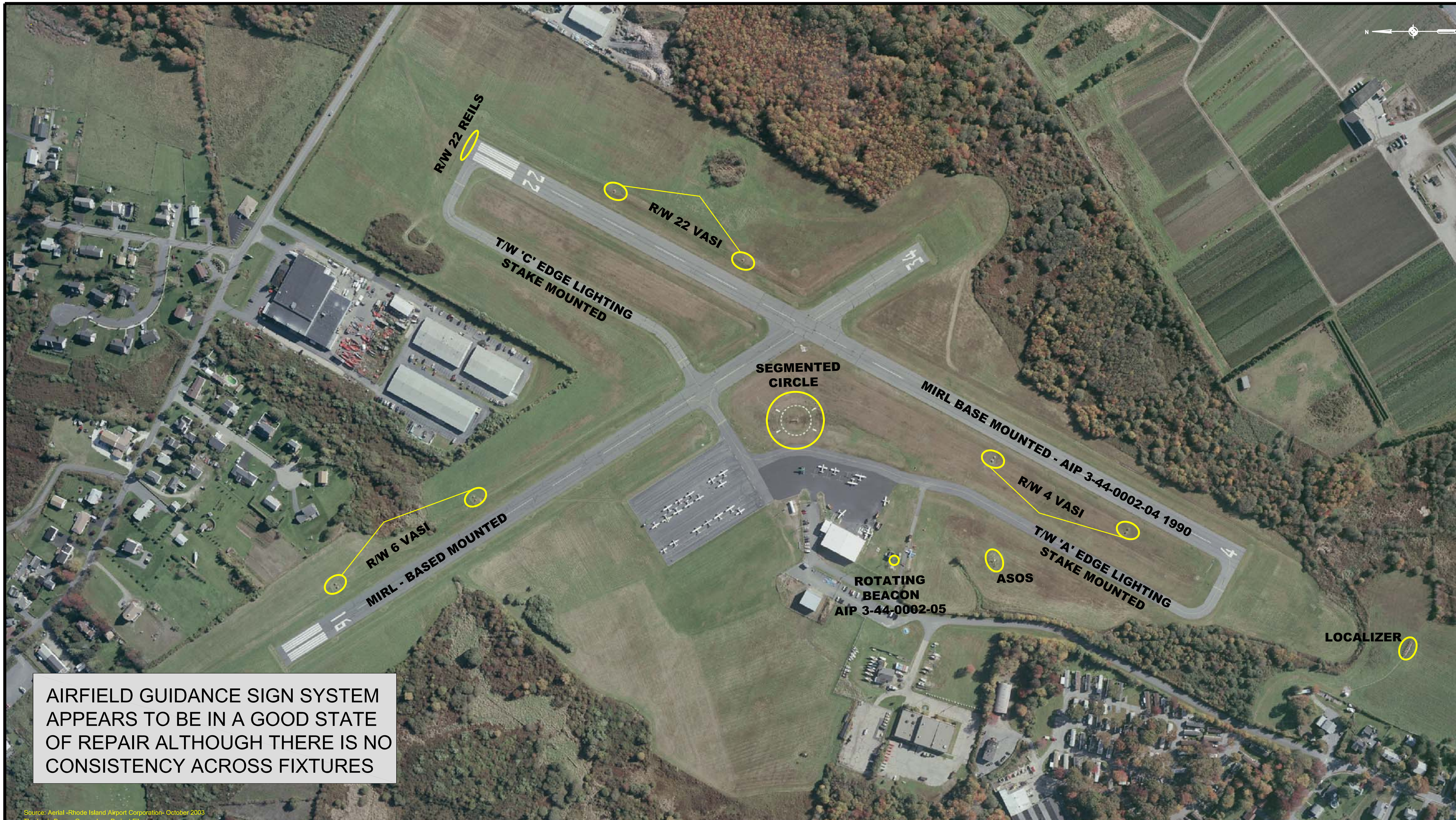
1.2.2.3 Airport Lighting

Just as NAVAIDS provide pilots with enroute and approach guidance information, airport runway lighting and visual aids are intended to help orient the pilot when in the Airport environment.

Both Runway 4/22 and 16/34 have medium intensity runway lights (MIRLS). In addition, runway end identifier lights (REILS) can be found on all four runways. Visual Approach Slope Indicators (VASI) are located on Runways 4, 22, and 16. All three taxiways are also equipped with medium intensity taxiway lighting (MITLS). The backup generator located in the Airport's electrical vault provides service to the airfield lighting during a power failure. The airfield lights are activated by remote control by pilots "clicking" their microphone button to the UNICOM frequency.

Both the wind cone and segmented circle wind indicators are lighted. The rotating beacon is located on top of the electrical vault and operates from dusk to dawn or during periods of Instrument Meteorological Conditions (IMC). The rotating beacon is white on one side and green on the other side, which identifies UUU as a non-military, lighted land airport.

Figure 1.4 – NAVAID/Lighting History and Condition Plan, provides a graphical representation of the NAVAIDS and lighting at UUU. The figure provides the visual inspection information along with the year (if available) the equipment was installed or last upgraded and the FAA grant number that funded the improvement.



The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**Navaid/Lighting History and Condition Plan** Newport State Airport	December 2007	FIGURE 1.4

1.2.3 Airport Terminal and Structures

This section describes the landside facilities at UUU. These facilities include the terminal building, hangar, snow removal equipment building, electrical vault, fuel farm, and other leased buildings. Figure 1.1 identifies the locations of landside facilities.

1.2.3.1 Airport Services

Several businesses on the airport provide a range of services. These services include aircraft maintenance, flight training, helicopter tours, and skydiving. Businesses providing services at the airport include:

Table 1.3
Airport Businesses

Business	Location	Service
Landmark Aviation	Terminal Building	Airport management, maintenance, and fueling.
Skydive Newport	Terminal Building	Skydiving, training, and sightseeing services.
Chris Aircraft Services	Hangar	Aircraft maintenance.
Bird's Eye View Helicopters	Temp. Hangar	Helicopter training, aerial photos, and sightseeing.
Newport Aviation	Terminal Building	Flight training, aircraft rentals, sightseeing tours
American Aviation Institute	Terminal Building	Flight training

Source: Landmark Aviation

1.2.3.2 Fuel Storage

There are two separate areas designated at the airport for fuel storage. Figure 1.1 identifies the fuel storage areas. For aircraft fueling services, there is a single self-serve fueling station with a 12,000 gallon above ground tank that provides users with 100LL fuel.

Airport equipment uses diesel fuel, which is stored in a 200-gallon above ground tank with a secondary storage tank located adjacent to the electrical vault.

UUU 100LL Fuel Storage

UUU Diesel Fuel Tank

1.2.3.3 Buildings

There are five (5) main structures located on the Airport. Table 1.4 summarizes the airport buildings along with their condition. The information on this table was obtained from airport staff, supplemented by field observations from the consultant team.

Table 1.4
Airport Building's

Building	Use	Approximate Size (S.F.)	Visual Condition
Terminal Building	Offices, lounge, parachute packing	3,500	Fair to Poor
Snow Removal Equipment (SRE)	Storage of equipment	2,400	Excellent
Original Terminal Building w/ Tower	Rental property	unknown	Poor
Temporary Hangar	Storage of Bird's Eye View's helicopter	1,400	Excellent
Hangar	Aircraft maintenance/storage	8,500	Fair to Poor
Electrical Vault	Electrical circuits for airport	N/A	Fair


Existing Terminal Building


Snow Removal Equipment (SRE) Building

Original Terminal Building


Temporary Hangar

Hangar

Electrical Vault and Beacon

1.2.4 Airport Access and Parking

Newport State Airport is accessible via the Airport Access Road off of Forest Avenue. This road is a two-lane east-west residential connector road connecting four-lane routes 114 (West Main Road) and 138 (East Main Road). Oliphant Lane, a two lane road bounds the airport on the north end but provides no direct access to the Airport. Access to the airport is constrained by the conditions along Routes 114 and 138, which are considered high traffic arterials with low levels of service. Airport traffic enters or exits the airport access road at the Forest Ave/Route 114 or Forest Ave/Route 138 intersections. Airport signs are placed at locations on both highways and local roads; however, not all of them identify the airport by name. Airport signing should be reviewed continually to assure that signs have not been taken down and that they are adequate for locating the Airport.

Auto parking areas are located in front of and adjacent to the main terminal entrance. There are 63 parking spaces adjacent to the terminal, 13 spaces in front of the terminal, and one handicapped space next to the terminal entrance.

1.2.5 Airport Equipment

Various pieces of equipment are utilized to provide a safe operation and maintenance of the facility. **Table 1.5 Airport Equipment** summarizes a list of major equipment used for maintenance, upkeep and safety of the Airport.

Table 1.5
Airport Equipment

Equipment	Quantity	Year	Visual Condition
Ford F250 with Snowplow	1	2000	Fair/Good
RIDOT Snowplow Truck (Louisville)	1	1997	Good
John Deere Front End Loader	1	1997-2000	Good
John Deere Lawn Tractor w/ Attachments	1	2001	Poor/Fair
Mack Sno Go	1	1985	Fair
Aircraft Tow Tug (Electro)	1	Unknown	Poor
John Deere Walk Behind Snowblower	1	Unknown	Very Good
Golf Cart	1	Unknown	Fair

Source: Landmark Aviation

1.2.6 Airspace and Approaches

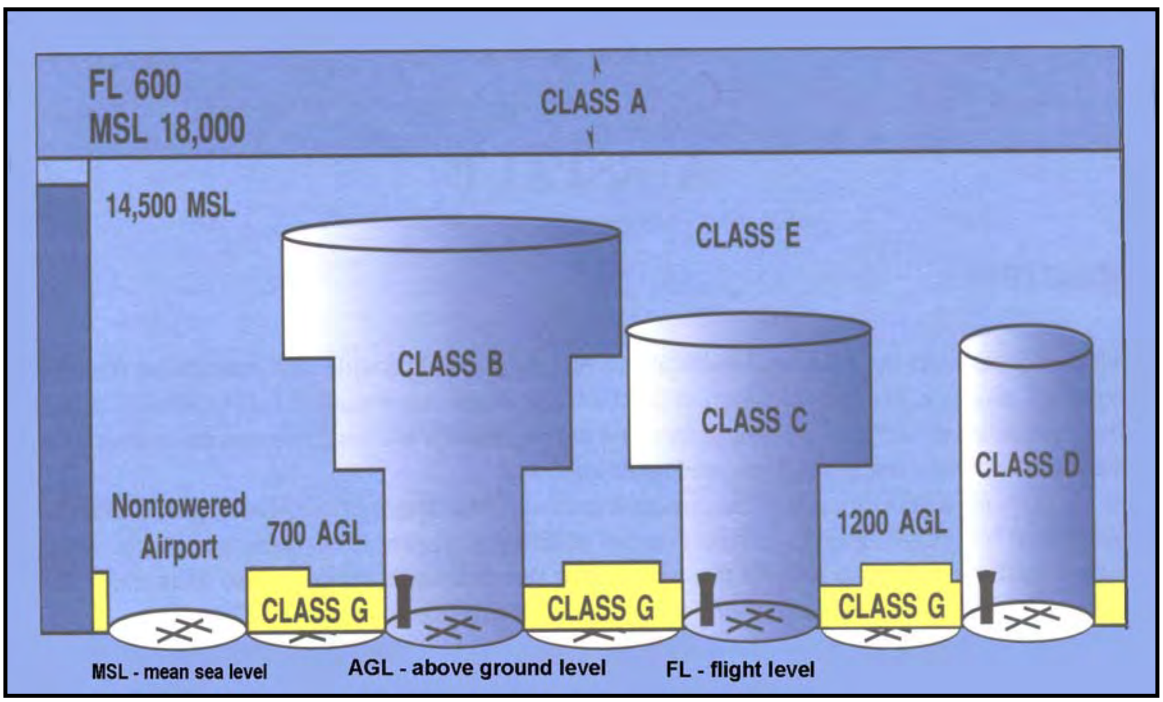
Aircraft in flight, approaching or departing an airport are subject to a system of air traffic controls designed to provide of the safe separation of one aircraft from another. Aircraft are subject to varying degrees of control, depending on the specific airspace and meteorological conditions in which they operate. The air traffic control system is the statutory responsibility of the FAA. They establish, operate and maintain air traffic control facilities and procedures.

There are two basic types of aircraft flight regimes recognized by the air traffic control system; those operating under visual flight rules (VFR) which depend primarily on the "see and be seen" principal for separation, and those operating under instrument flight rules (IFR) which depend on radar detection for separation by ground controllers. IFR flights are controlled from takeoff to touchdown, while VFR flights are controlled only in the vicinity of airports. The FAA provides guidance and separation for both flight regimes, but the degree of positive control varies in different types of airspace.

1.2.6.1 Airspace Structure

United States airspace is structured into controlled and uncontrolled areas. Controlled airspace, reclassified in 1993, is further delineated as Class A, B, C, D, or E. Uncontrolled airspace is referred to as Class G. Each class of airspace classifications is identified in Figure 1.5.

Figure 1.5
Airspace Classifications



Source: Federal Aviation Administration

Newport State Airport is in Class E Airspace.

1.2.6.2 Air Traffic Control Facilities

Information and guidance are available to pilots through several sources. Most public airports are equipped with a Universal Integrated Communication (UNICOM) system, which is a nongovernmental air-to-ground communication station that can provide airport information. The UNICOM frequency is used by pilots to report their position and intentions and obtain runway and wind information. Additionally, some airports have a Common Traffic Advisory Frequency (CTAF), which is used by pilots to coordinate arrivals and departures safely, giving position reports and acknowledging other aircraft in the airfield traffic pattern.

1.2.6.3 Air Traffic Control – Newport State Airport

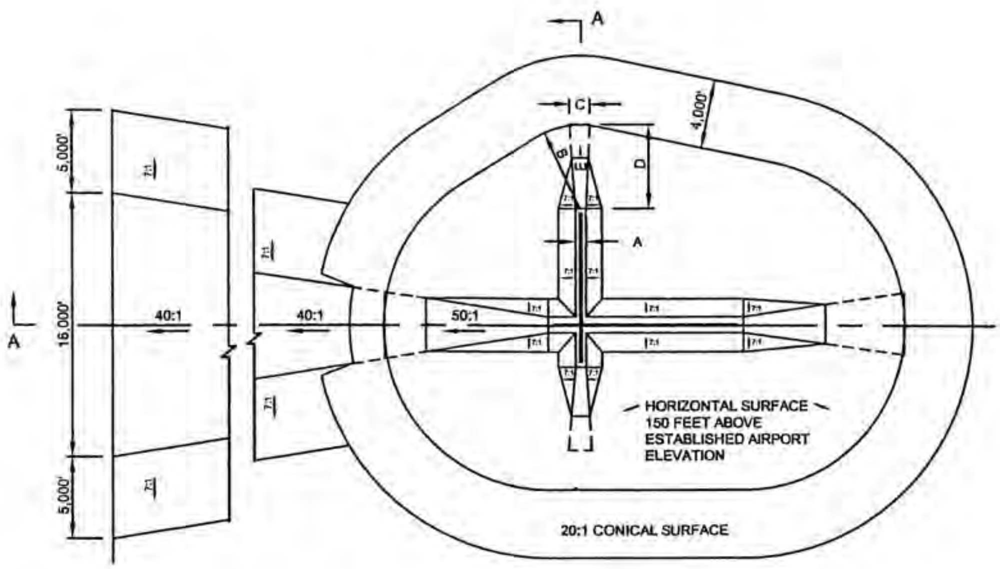
Weather, navigational aid status, and other pertinent airport information are available through the Bridgeport Flight Service Station (FSS). UUU has no operational ATCT, and operates as Class G airspace wherein the pilots are responsible for reporting their positions and intentions to other pilots. Both CTAF and UNICOM communications are transmitted on 122.8, and weather information is also available on the airports Automated Surface Observation System (ASOS) frequency 132.075.

1.2.6.4 Airport Imaginary Surfaces and Approach Categories

Regulations on the protection of an airport's airspace are defined by ***Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airways***. The regulation establishes a requirement for anyone proposing to build a structure near an airport to report their intentions to FAA. In addition it defines a series of standards used for determining obstructions to an airport's navigable airspace. This is accomplished through the establishment of a set of airport imaginary surfaces, that if penetrated represent an obstruction to air navigation. In some cases they may be also classified by FAA as a "hazard". Airport imaginary surfaces consist of the following elements. Typical FAR Part 77 surfaces are shown in Figure 1.6 and defined later in this section.

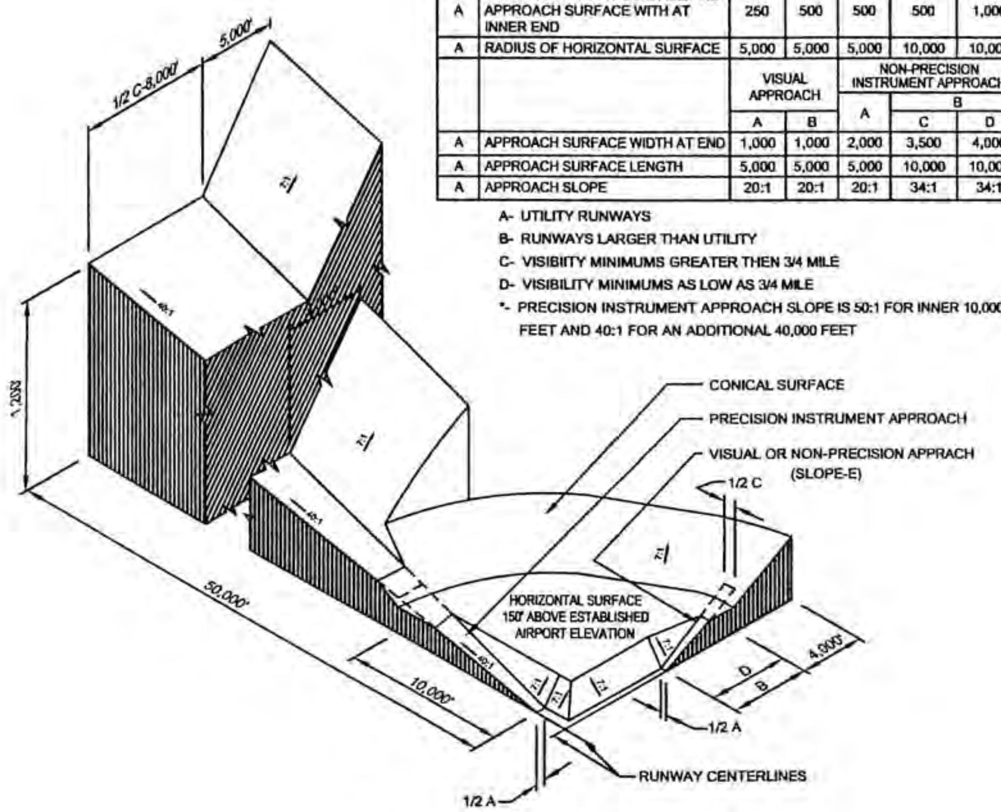
- Primary Surface: This surface is longitudinally centered on each runway and extends 200 feet beyond each runway end (if the runway is paved). The elevation of the primary surface of a given runway is the same as that of the nearest point on the runway centerline.
- Approach Surface: The approach surface is a trapezoidal-shaped surface that begins at the primary surface of each runway end, upwards and outwards for a prescribed slope and distance based on the type of approach (visual, non-precision, or precision).
- Transitional Surface: This surface is a plane with a 7:1 slope (horizontal to vertical) that extends upwards, outwards, and at right angles from the primary and approach surfaces, terminating at the airport horizontal surface.
- Horizontal Surface: This is a horizontal plane 150 feet above the established airport elevation. This surface is defined by drawing semi-circles of a given radius from the ends of the primary surfaces. The radius of the circle is determined by the type of approach serving each runway end.
- Conical Surface: The conical surface is an enclosed plane that extends upward and outward from the horizontal surface at a 20:1 slope.

Figure 1.6
Typical FAA Part 77 Imaginary Surfaces



DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WITH AT INNER END	250	500	500	500	1,000	1,000
A	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL APPROACH		NON-PRECISION INSTRUMENT APPROACH			PRECISION INSTRUMENT APPROACH
		A	B	A	B		
					C	D	
A	APPROACH SURFACE WIDTH AT END	1,000	1,000	2,000	3,500	4,000	16,000
A	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
A	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A- UTILITY RUNWAYS
B- RUNWAYS LARGER THAN UTILITY
C- VISIBIITY MINIMUMS GREATER THEN 3/4 MILE
D- VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
*- PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET



ISOMETRIC VIEW OF SECTION A-A

All runway ends have an approach surface associated with them. This is an imaginary surface, as previously described, which no obstacles should protrude. This provides a clear area to allow a gradual descent to landing. There are three categories of approach surfaces: visual, non-precision and precision. The slope of the approach surface is based on the category. Table 1.6 identifies the slope of each approach category and Table 2.6 identifies UUU approach category and Table 1.7 identifies UUU approach categories.

Table 1.6
Approach Categories

Category	Description	Slope
Visual	No instrument approach	20:1
Non-Precision	Served by a non-precision instrument approach (LOC, VOR, NDB, GPS, etc.)	34:1
Precision	Served by a precision instrument approach (ILS, GPS, CAT I, etc.)	50:1

Source: FAR Part 77

Table 1.7
UUU Approach Categories

Runway	Category	Required Slope	Actual Slope
4	Visual	20:1	15:1
22	Non-Precision	34:1	21:1
16	Non-Precision	34:1	20:1
34	Visual	20:1	18:1

Source: FAR Part 77 and FAA Form 5010: Airport Master Record

1.2.6.5 Newport's Approaches

An instrument approach is used by a pilot who is on an IFR flight plan. The instrument approach provides guidance to an airport or to a specific runway during good, marginal, or bad weather conditions and utilizes a specific NAVAID facility located on or off the airport. Instrument approaches are categorized as either a precision approach, providing horizontal and vertical guidance, or a non-precision approach, giving horizontal guidance only. The instrument approach procedure requires that a pilot fly a specific descent profile. Upon reaching an identified point, the pilot must have visual contact with the runway, or perform a missed approach. The missed approach takes the pilot away from the airport to a point where the approach may be initiated again. Each instrument approach has a ceiling and visibility limit, referred to as minimums. If the reported weather conditions fall below the approach minimums, the approach cannot be attempted. UUU currently has two non-precision approaches.

- Runway 22 currently has a LOC non-precision approach established, with a minimum visibility of one mile and a MDH of 468 feet above ground level.

- Runway 16 currently has a VOR/DME or GPS non-precision approach established with a minimum visibility of one mile and a minimum decision height (MDH) of 518 feet above ground level.

These approaches are shown in the figures on the following pages.

Figure 1.7
Localizer Runway 22

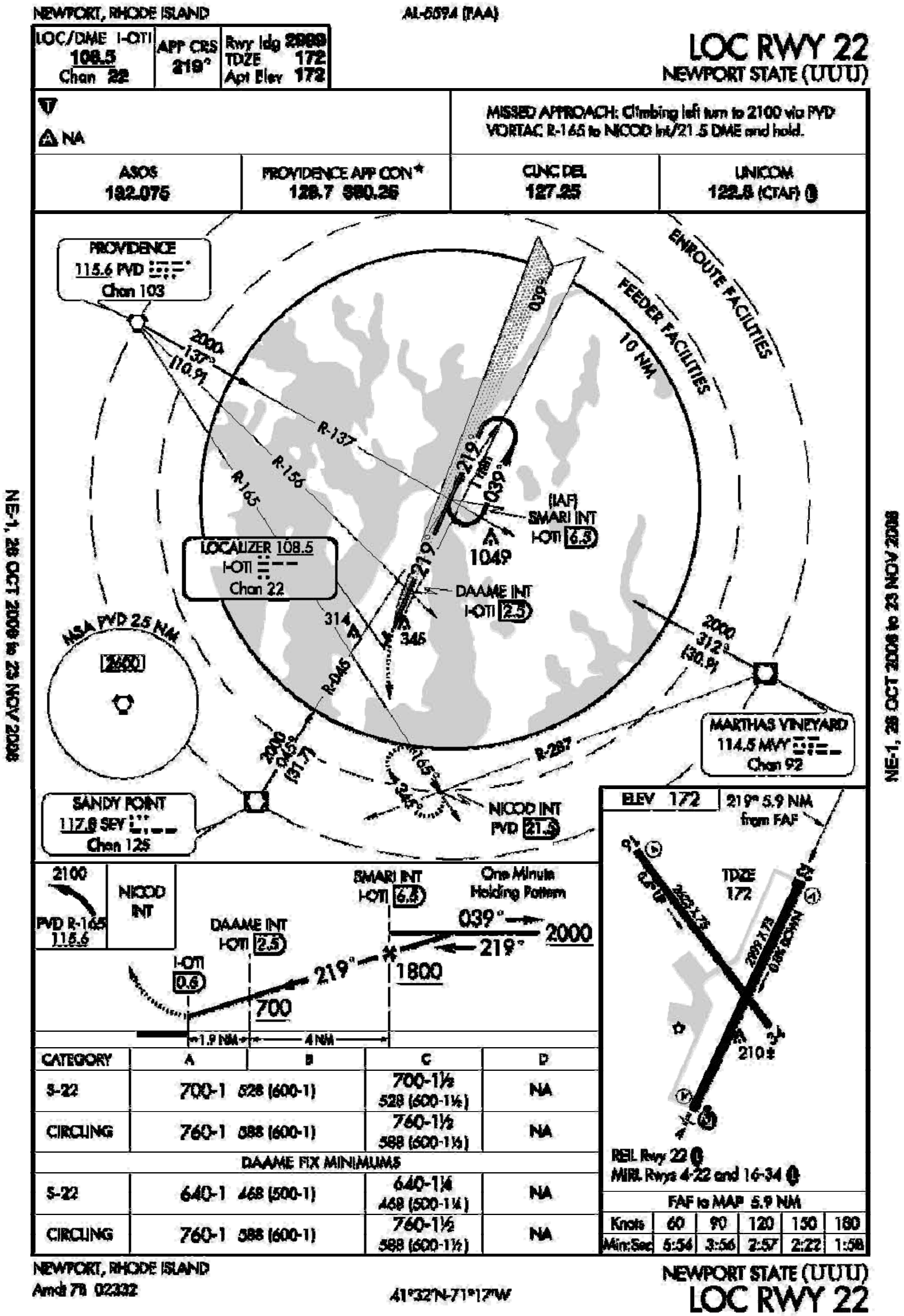
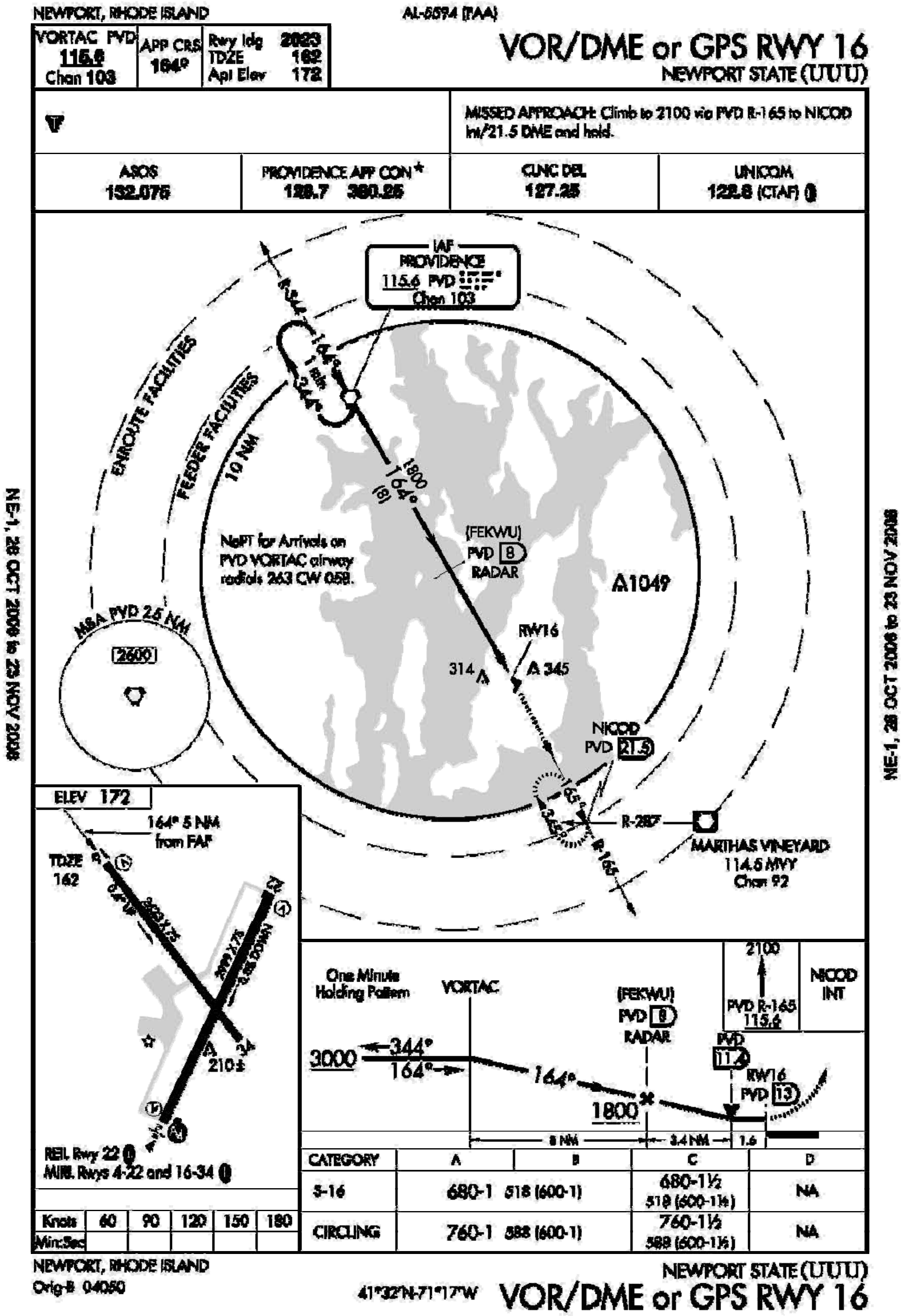


Figure 1.8
VOR/DME or GPS Runway 16



1.2.6.6 Airport Airspace Obstructions

The FAR Part 77 Surfaces for UUU are summarized in Table 1.8. These dimensions reflect the fact that Runways 16 and 22 have non-precision approaches, while Runways 34 and 4 are visual approach runways. It should be noted that any changes in the category of approach designated for a runway will change these dimensions.

Table 1.8
UUU Part 77 Surfaces

Runway	16	22	34	4
Primary Surface Width	500'	500'	250'	250'
Approach Surface Length	10,000'	10,000'	5,000'	5,000'
Approach Surface Outer Length	3,500'	3,500'	1,250'	1,250'
Approach Surface Slope	34:1	34:1	20:1	20:1
Horizontal Surface Radius	10,000'	10,000'	5,000'	5,000'

Source: RIAC and FAR Part 77

An aeronautical study was recently completed at UUU. This study can be found as Appendix E of this report.

1.2.6.7 Runway Use and Noise Abatement

Newport State Airport has standard left-hand traffic patterns for operations on all runways. Traffic pattern altitude is the standard 1,000 feet above the indicated airport elevation (in this case 172 feet MSL). Therefore, Newport's traffic pattern altitude is 1,172 feet MSL.

Flight activity primarily occurs on Runway 4-22 as a result of the Localizer approach. However, during winter months, Runway 16-34 is primarily utilized due to prevailing wind conditions.

There is currently no noise abatement procedures established at UUU.

1.3 Inventory of Operational Activity

This section provides an overview of historical and current aircraft activity at Newport State Airport. In the forecast effort for this master plan, this information will be supplemented with other data to develop projected airport activity for a twenty-year planning period. Data sources utilized for this section include RIAC records, the Rhode Island Airport System Plan (RI/ASP), previous AMP efforts and other studies, FAA records, statewide and regional activity statistics, and discussions with local officials.

1.3.1 Airport Operations

The FAA distinguishes airport operations between local an itinerant.

- Local Operations: Generally, operations occurring within sight of the airport or 20 nautical miles; these are typically training operations. Local Operations are subdivided into two classes:
  - Civil: All operations other than military operations.
  - Military: All operations performed by the military (ANG, USMA, etc.)
- Itinerant Operations: All aircraft operations other than local operations. Itinerant Operations are subdivided into three classes:
  - Air Taxi: Scheduled and non-scheduled passenger service.
  - General Aviation: Includes aircraft used for personal, recreational, or business use.
  - Military: All operations performed by the military (Air National Guard, United States Military Academy, etc.)

Above is the traditional method of defining local and itinerant operations at airports. In this inventory process the airport operator, Landmark Aviation, tracks aircraft operations by the following definition:

- Local Operation: If an aircraft is based at any of RIAC airports and the operation occurs between any of those airports, then the operation is considered a local operation.
- Itinerant Operation: This operation is any other operation other than a local operation, in this case, a transient aircraft.

The definition of the data is not as important as knowing the methods of collection to be sure the numbers are used appropriately in later sections of this Master Plan. Tables 1.9 and 1.10 summarize annual operations at UUU from 1968 to 2006.

Table 1.9
Annual Historical Aircraft Operations

Year	Total Operations		Year	Total Operations		Year	Total Operations
1968	21,174		1981	14,105		1994	15,984
1969	21,901		1982	15,901		1995	16,824
1970	18,418		1983	23,000		1996	8,317
1971	23,152		1984	18,440		1997	11,366
1972	26,446		1985	17,136		1998	13,533
1973	27,391		1986	22,275		1999	11,911
1974	26,920		1987	28,567		2000	13,552
1975	27,830		1988	25,962		2001	12,485
1976	31,934		1989	N/A		2002	16,155
1977	34,091		1990	N/A		2003	18,582
1978	27,813		1991	20,507		2004	19,243
1979	22,982		1992	17,706		2005	18,813
1980	24,194		1993	13,753		2006	21,461

Source: FAA Form 5010-1 Airport Master Record

Table 1.10
Historical Local vs. Itinerant Aircraft Operations

Year	Itinerant	%	Local	%	Total
1997	2,434	21	8,941	79	11,366
1998	6,819	50	6,714	50	13,533
1999	7,801	65	4,110	35	11,911
2000	11,075	82	2,477	18	13,552
2001	10,181	82	2,304	18	12,485
2002	7,993	53	7,650	47	16,155
2003	7,988	46	10,050	54	18,582
2004	4,050	24	14,673	76	19,243
2005	2,736	18	15,479	82	18,813
2006	3,051	14	17,235	86	21,461

Source: Rhode Island Airport Corporation and Landmark Aviation

1.3.2 Based Aircraft

Based aircraft are defined as non-transient aircraft that either hangar or tie down at the airport. These aircraft are one of the biggest factors in planning for future facility needs. The number of based aircraft correlates to operational demands it places on airport facilities like runways, taxiways, lighting and navigational/visual aids, they directly relate to ground facilities, like hangar storage, fueling facilities, and aircraft service and repair needs.

Based aircraft data for UUU was collected from the FAA Terminal Area Forecast (TAF) data. Table 1.11 identifies the based aircraft for each aircraft category dating from 1980. Landmark Aviation has indicated that there is a waiting list for tie-down space at the airport of more than 20 aircraft. The current fleet mix of UUU based aircraft includes: 32 single-engine; 6 twin-engine; and 2 helicopters.

Table 1.11
2006 Based Aircraft Fleet Mix Percentage

Aircraft Type	Number of Based Aircraft	Percentage of Total Aircraft
Single Engine	32	80%
Twin Engine	6	15%
Helicopters	2	5%
Total	40	100%

Source: Rhode Island Airport Corporation, Landmark Aviation, and the Louis Berger Group

Table 1.12
Newport Historical Based Aircraft

Year	Total Based Aircraft	Ops Per Based Aircraft	Year	Total Based Aircraft	Ops Per Based Aircraft	Year	Total Based Aircraft	Ops Per Based Aircraft
1980	31	780	1989	-n/a-	-	1998	24	564
1981	-n/a-	-	1990	-n/a-	-	1999	26	458
1982	22	722	1991	35	586	2000	26	521
1983	22	1,045	1992	37	479	2001	27	462
1984	28	658	1993	34	405	2002	26	621
1985	22	779	1994	30	533	2003	34	547
1986	32	696	1995	20	841	2004	34	566
1987	48	595	1996	18	462	2005	40	470
1988	-n/a-	-	1997	20	568	2006	40	537

Source: Rhode Island Airport Corporation, Landmark Aviation and the Louis Berger Group, Inc.

3.3 Fuel Sales

Aircraft are fueled through a self-service fueling island providing 100LL gasoline. No Jet-A is provided at UUU. Table 1.13 provides the historical fuel sales at UUU for the last ten years.

Table 1.13
Newport Historical Fuel Sales

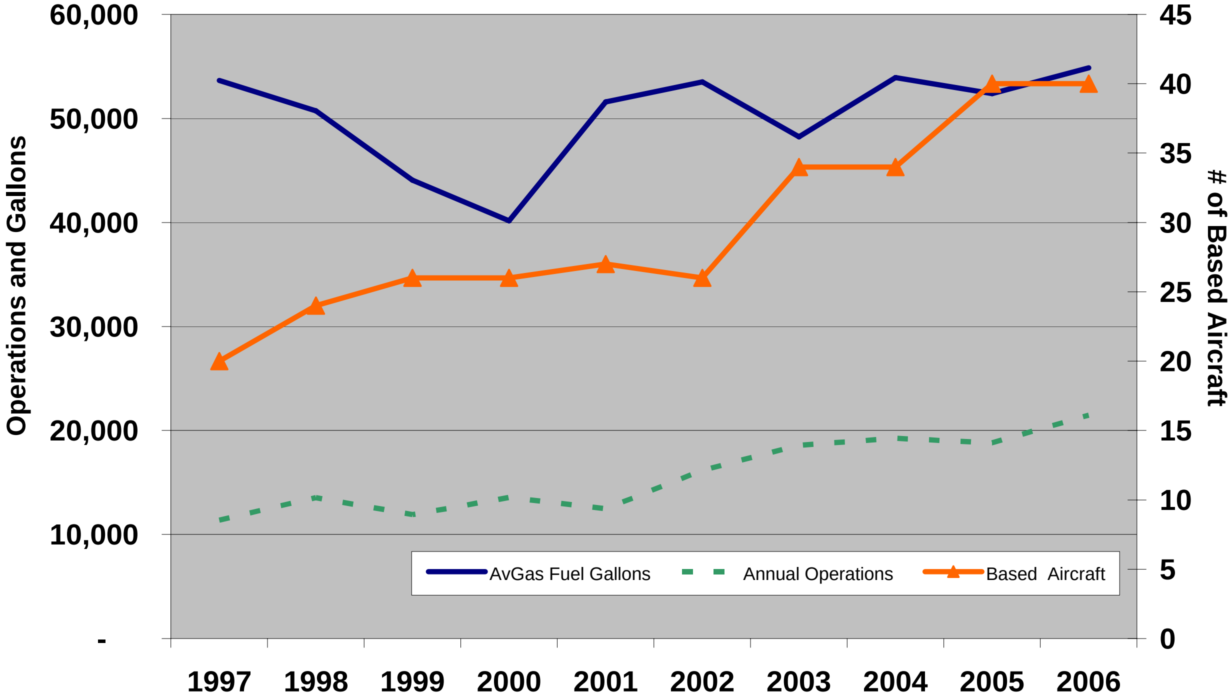
Year	Fuel Gallons
1997	53,658
1998	50,737
1999	44,072
2000	40,170
2001	51,590
2002	53,512
2003	48,230
2004	53,927
2005	52,383
2006	54,864

Source: Rhode Island Airport Corporation, Landmark Aviation and The Louis Berger Group, Inc.

1.3.4 Summary

The graph below summarizes the historical data provide above for the past ten years and will be used as the basis for the airport forecasts.

Figure 1.9
10-Year Historical Activity
Newport State Airport 1997 to 2006



1.4 ENVIRONMENTAL OVERVIEW

1.4.1 Introduction

This section provides an overview of environmental conditions at UUU. It is a compilation of pertinent environmental data relative to the airport, including physical setting, water resources, ecology, air quality, hazardous materials, and historical and cultural resources.

The environmental inventory is based on a review of available information, including airport, Federal, State, and municipal records, review of previous studies, including master plan reports and Environmental Assessments, a site inspection, and interviews with officials familiar with airport operations.

1.4.2 General Setting

A description of the general setting for UUU was previously given in Section 1.1 Figure 1.10 identifies the location of UUU on a U.S. Geological Survey topographic map for the Prudence Island and Newport, Rhode Island Quadrangles.

The climate within the region is coastal, temperate type. Warm ocean currents result in winters that are milder than in inland areas of the state. There is a complete weather record maintained at T.F. Green Airport, located in Warwick, Rhode Island. Annual temperature in the area can range from a mean of 28°F in January to 73°F in July. The mean annual precipitation is 45.6 inches. Monthly precipitation levels are fairly uniform ranging only between 3.2 and 4.4 inches. The highest monthly precipitation over the period of record was 12.7 inches.

According to the 2000 U.S. Census the Town of Middletown has an estimated population of 17,334 residents,. The Town population grew steadily from about 1,475 in 1900 to a peak of 29,290 in 1970 (Town of Middletown, 2004). Population decreased following personnel cutbacks at the U.S. Newport Naval Station in 1973. Town population is currently increasing and projected to reach 21,373 by 2010. In 2000 the population of the City of Newport was 26,475, a decrease from the 1990 population of 28,227. In 2000 the population of The Town of Portsmouth was 17,149, a slight increase from the 1990 population of 16,857 (Rhode Island Economic Development Corporation, 2006).

4.3 Zoning and Land Use

The area in which UUU is located can be described as a mix of residential, commercial, and agricultural areas. The Town of Middletown's Zoning Ordinance has designated the airport as Zone LI, Light Industry, as adopted on October 30, 2006. The airport includes a main terminal/hangar building, a maintenance/snow removal building, and additional structures leased and used by the Rhode Island Air National Guard (RIANG), MMR & Associates (refurbish boats), Bird's Eye View helicopter tours, and the Potter League for Animals animal shelter.

Areas east and north of the airport are zoned as Residential R-30, Medium Density Residential, and R-30A, Traffic Sensitive Medium Density Residential. The traffic sensitive area is located along East Main Road (Rhode Island Route 138). The area of Middletown east of the airport is also used extensively for agriculture and a parcel of airport property located north of Oliphant Lane is used for agriculture. Areas northeast, northwest, and south of the airport are zoned as Residential R-20, also Medium Density Residential. Areas west of the airport are zoned as R-10, High Density residential and GBA, Traffic Sensitive General Business. This area is located along West Main Road, Rhode Island Route 114. Zoning proximate to Newport Airport is shown on Figure 1.11.

Section 713 of the Middletown Zoning Ordinances is entitled "Airport Height Restrictions; 'Airport Approach Plan for Newport State Airport'". This section states that "the height of any structure or growing thing, hereafter erected or permitted to grow in the vicinity of the Newport State Airport shall not exceed the heights indicated on the map entitled "Airport Approach Plan for Newport State Airport" as filed in the Office of the Town Clerk, and as it may be revised from time to time under the provisions of Section 1-3-4 of the General Laws of Rhode Island, 1956, as amended."

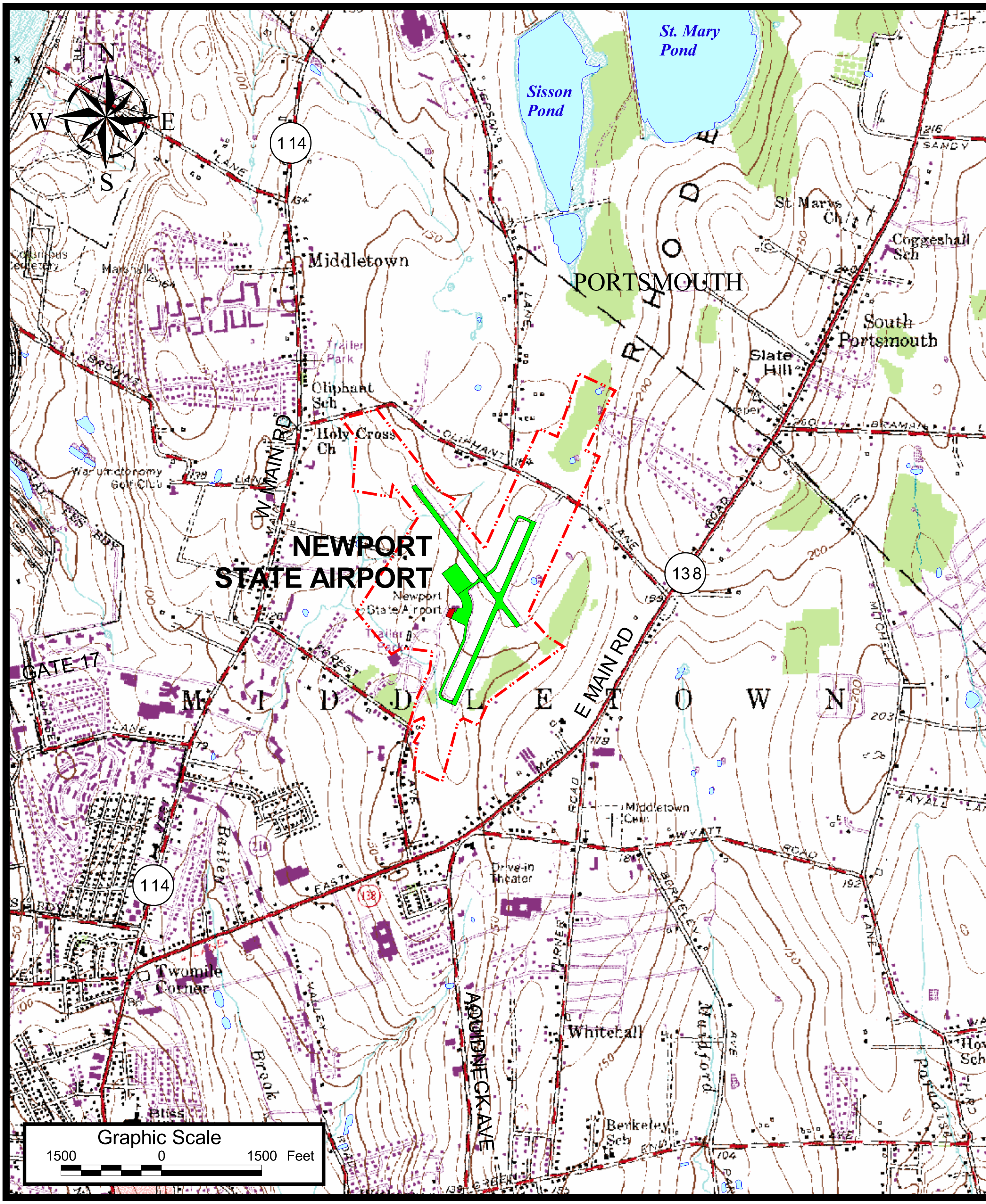
The Town of Middletown Watershed Protection District is superimposed over all other Town zoning districts. Zone 1 of the Watershed Protection District includes areas within 200 feet of the centerline of the watercourse or the edge or bank of a surface water body or as otherwise shown on the Official Zoning Map; those areas of Stissing silt loam (Se) and Mansfield mucky silt loam (Ma) as designated in the *Soil Survey of Rhode Island* (Soil Conservation Service, 1981); C. Zone 1 includes areas of UUU within 200 feet of Bailey Brook and its tributaries and areas of Stissing soils. Use of Zone 1 is restricted to the following purposes:

A. Conservation of soil, water, plants, and wildlife;
B. Water supply facilities and accessory uses and structures;
C. Public water and/or sewer transmission pipelines or related facilities;
D. Public streets or highways;
E. Public or private parks;
F. Uses customarily accessory to residential uses;
G. Stormwater detention and/or retention areas or systems.

All other uses within Zone 1 must be granted by a special-use permit from the Middletown Zoning Board of Review. Zone 2 is the watershed area which contributes to surface water runoff to the primary water bodies contained in Zone 1, and which drains into Zone 1 areas either through surface water runoff or groundwater movement. Although less restrictive, Zone 2 prohibits the storage of hazardous materials and petroleum products.

Development and land use on Aquidneck Island have historically been a balance of agriculture, residential and commercial development, with much of the commercial development geared towards to the Island's summer tourism industry (e.g. restaurants, hotels). A moderate mix of residential and commercial development surrounds the airport, with a majority of the residential development surrounding the perimeter of airport property to the south and east and commercial development occurring north and west of the airport.

Currently there is no local zoning and building code enforcement that occurs on state properties, including UUU.



NEWPORT AIRPORT MASTER PLAN

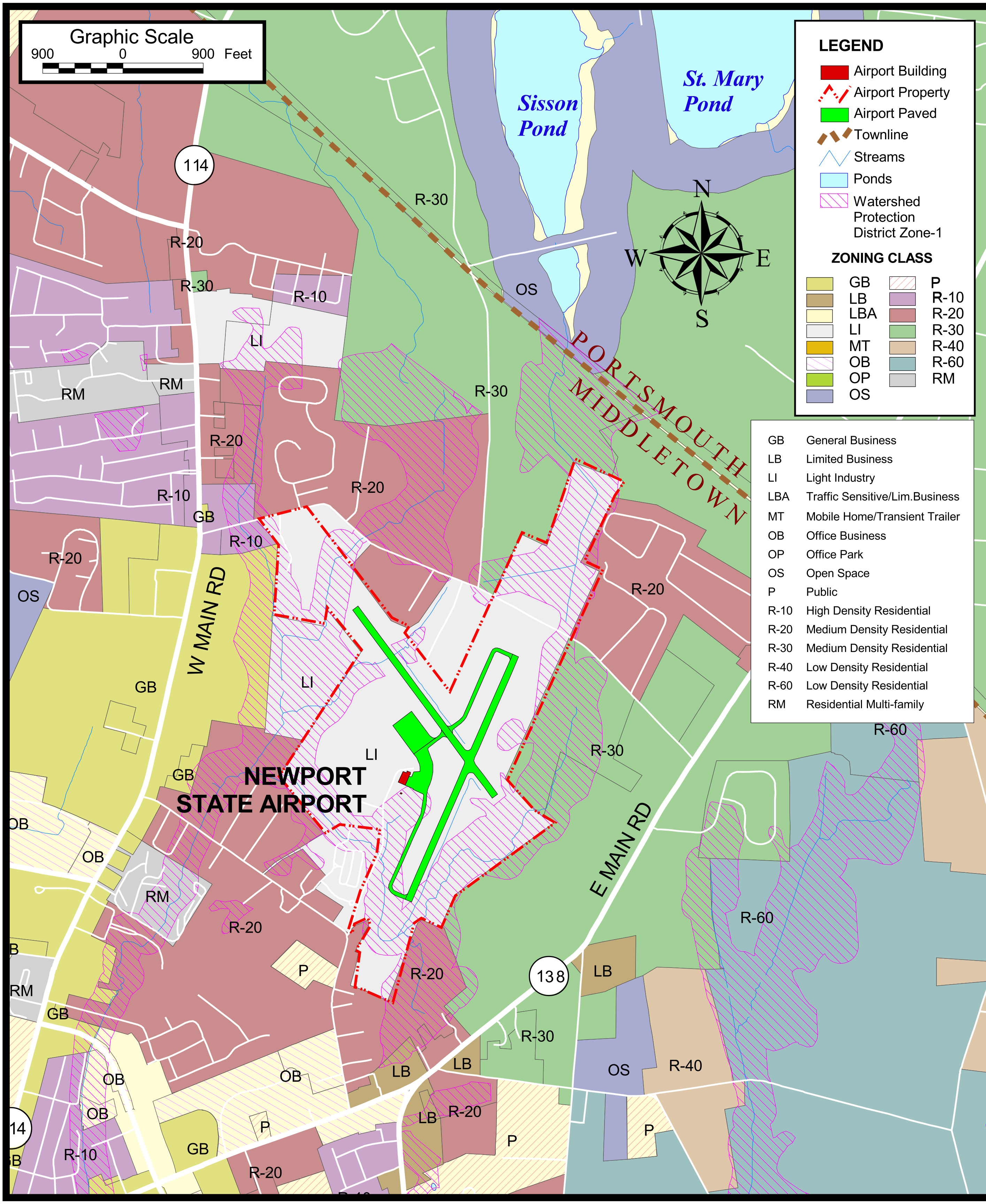
The Louis Berger Group, Inc.

Figure 1.10:
AIRPORT LOCATION MAP

Rhode Island Airport Corporation

Source: RIGIS-2007, USGS Newport and Prudence Island quadrangles

riac_swppp_locus_newp.apr



NEWPORT AIRPORT MASTER PLAN

The Louis Berger Group, Inc.

Figure 1.11: ZONING MAP

Rhode Island Airport Corporation

Source: RIGIS-2006, Town of Middletown.

riac_swppp_locus_newp.apr

1.4.4 Topography and Geology

The elevation of UUU in the vicinity of the terminal building is about 150 feet above MSL. The terrain of the area is characterized by gently rolling hills with altitudes increasing to the north and west. Airport topography is relatively flat with a general slope to the southwest toward Bailey Brook and its tributaries.

According to the *Soil Survey of Rhode Island*, as mapped by the Natural Resources Conservation Service (NRCS, formerly Soil Conservation Service), soils on airport property consist of several types. Primary soil groups consist of glaciofluvial silty loams. These soils include Newport series (Ne) soils, which are well-drained and Pittstown (Pm) series soils, which are moderately drained. Both of these soil types are identified as prime farmland soils in the *Soil Survey of Rhode Island* (Section 4.19). Other soil types present on airport property include Stissing (Se) silt loam, a poorly drained soil on glacial upland hills, and soils mapped as urban land (Ur, UD) in developed portions of the airport where filling, paving, and/or structures are present.

Information on geology was provided in the Middletown Comprehensive Plan (2004), and by the Office of the Rhode Island State Geologist (1994). Bedrock in Middletown consists primarily of sedimentary rocks of the Narragansett Basin. The Narragansett Basin was formed about 300 million years ago and contains rocks of the Rhode Island Formation. In southern Rhode Island, rocks of the Rhode Island Formation consist of meta-sandstone, meta-conglomerate, schist, carbonaceous schist, and graphite. The Rhode Island Formation underlies UUU and its vicinity.

The bedrock formations in Rhode Island are almost completely mantled by deposits of outwash and glacial till. Soils in Middletown are largely comprised of a relatively thin layer of glacial till. Till is an ice-deposited sediment, and it is highly variable in texture (clay to boulder size), composition, thickness, and structural features. This variability is often reflected in its hydraulic properties. Outwash or stratified drift deposits consist of well-sorted fine to coarse-grained sand and silt deposited from glacial meltwaters.

The glacial deposits in Rhode Island can be divided into four principal types: upland till plains, Narragansett till plains, Charlestown and Block Island moraines, and outwash deposits. The area of the UUU is dominated by the Narragansett till plains, which consist of till derived mostly from sedimentary rock such as shale, sandstone, conglomerate, and coal.

1.4.5 Surface Water Resources

Surface water resources in the airport vicinity include Bailey Brook and the Northeast Branch and East Branch of Bailey Brook, which transect airport property. The East Branch Bailey Brook flows northwesterly past the Runway 4 end and is associated with wetland systems at the southern end of the airport property. The Northeast Branch Bailey Brook flows northeasterly and through a culvert beneath Runway 16. This stream is associated with wetland systems to the east and west of Runway 16.

Bailey Brook watershed is the primary drinking water source for Aquidneck Island. The headwaters of Bailey Brook are located north of Oliphant Lane about 2,000 feet northwest of the airport. Bailey Brook drains to Green End Pond in the southern part of Middletown. Green End Pond and the adjacent South Easton’s Pond are reservoirs and part of the City of Newport Water Division’s public water supply. Newport Water Division also provides public water supply to the Town of Middletown and portions of the Town of Portsmouth. Newport Water gets its water supply from a system of nine reservoirs. The closest of these to UUU is Sisson Pond, located about one-half mile north of the airport.

Bailey Brook is listed on the Rhode Island List of Impaired Waters (Rhode Island Department of Environmental Management (DEM), 2006) for biodiversity impacts and lead. Bailey Brook is not meeting Rhode Island Water Quality Standards and total maximum daily load development is planned for between 2010 and 2012.

1.4.6 Stormwater Drainage

The stormwater drainage system at UUU primarily consists of grass swales that discharge to the tributaries of Bailey Brook. According to the LBG Draft Stormwater Pollution Prevention Plan (2006) for UUU, the airport is subdivided into eight drainage areas (Figure 1.12):

- Drainage Area 1 includes most of the airport buildings and structures and discharges to the Bailey Brook tributaries via overland flow and groundwater infiltration. An exception is a series of roof and storm drains located at the RIANG Building that discharge to the East Branch Bailey Brook via stormwater outfall O-001.

- Drainage Area 2 includes the southern and eastern portions of the airfield and the area along the east side of the airport access road, including the generator building. Stormwater in Drainage Area 2 discharges to the East Branch Bailey Brook as overland flow. There are four outfalls, O-002, O-003, O-004, and O-006, in Drainage Area 2.

- Drainage Area 3 includes the apron and central portion of the airfield and storm drains and catch basins in Drainage Area 3 discharge west of taxiway A.

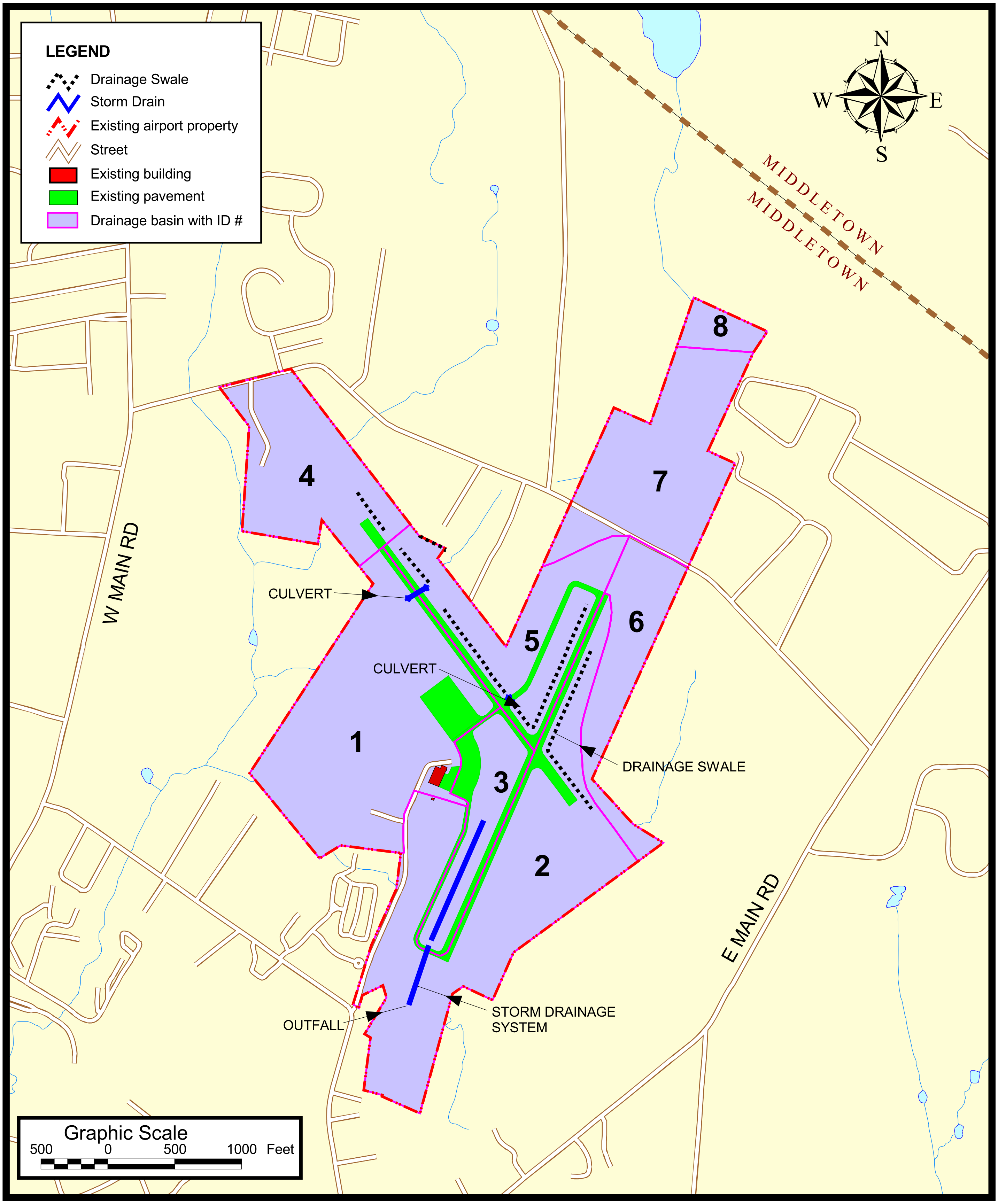
- Drainage Area 4 includes the western end of Runway 16/34 and outlying areas of the airfield, including the Potter League animal shelter facility. Stormwater in this area drains as sheet flow to the Northeast Branch Bailey Brook.

- Drainage Area 5 includes the north end of Runway 22 and the east-central part of Runway 16/34 and utilizes a series of grass swales to convey stormwater to the Northeast Branch Bailey Brook.

- Drainage Area 6 is located on the east-central portion of the airport property and stormwater in Drainage Area 6 discharges off-site as overland flow/infiltration.

- Drainage Area 7 includes an agricultural parcel north of Oliphant Lane and utilizes a series of grass swales to convey stormwater to the Northeast Branch Bailey Brook.

- Drainage Area 8 is a small parcel located at the northern end of the airport and stormwater in Drainage Area 8 discharges to a tributary of the Sisson Pond/Lawton Valley Reservoir, located north of the airport.



NEWPORT AIRPORT MASTER PLAN

The Louis Berger Group, Inc.

Figure 1.12: STORMWATER DRAINAGE PLAN

Rhode Island Airport Corporation

Source: RIGIS-2007

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1.4.7 Ground Water Resources

The slow permeability of the glacial till soil in Middletown contributes to a generally high seasonal water table (< three feet below the ground surface). The majority of Middletown and UUU contains groundwater resources known or presumed to be suitable for drinking without treatment (GA classification). According to the Rhode Island Groundwater Regulations (DEM, 2005), "pollutants shall not be in groundwater classified GA, except within an approved pollutant discharge zone or residual zone, in any concentration which will adversely affect the groundwater as a source of potable water or which will adversely affect other beneficial uses of the groundwater, to include but not be limited to recreational, agricultural and industrial uses and the preservation of fish and wildlife habitat through the maintenance of surface water quality."

The terminal/hangar building, the RIANG facility, and the Potter League animal shelter are connected to the municipal sanitary sewer system. The former airport maintenance building, currently leased by MMR, has an on-site septic system, consisting of a septic tank and cesspool.

The airport is not located within a sole-source aquifer or wellhead protection zone. There are no listed non-community wellhead protection areas in proximity to the airport based on information provided on the Rhode Island Geographic Information System (RIGIS) web site. Public water supply, provided by the Newport Water Division, is available to the area of the airport. Private water supply wells are also located in the airport vicinity; however, no record of specific well locations is kept by the Town. Crystal Spring Water Company, a private water bottling company located adjacent to Newport Airport on West Main Road reportedly owns a private well (Fuss & O'Neill, 1998).

1.4.8 Wetlands

Wetlands edge delineation for Newport Airport was prepared by Natural Resource Service, Inc. of Harrisville, Rhode Island in August 2005 and has been approved by DEM. Figure 1.13 shows wetland areas proximate to Newport Airport based on this delineation. Figure 4.4 also indicates the presence of wetland areas in the vicinity of the airport, as provided on the RIGIS web site.

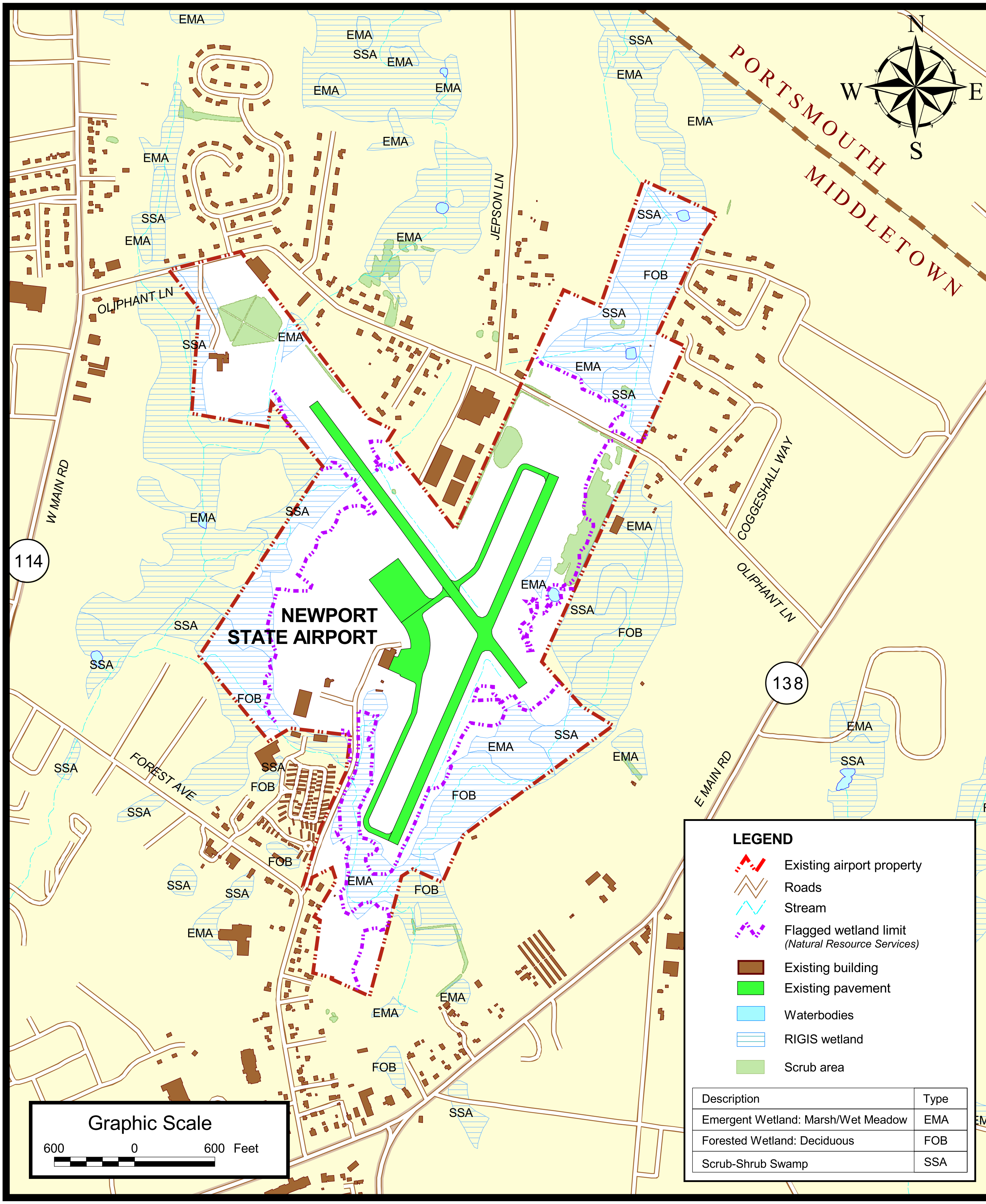
In 2001, an Environmental Assessment (EA) was prepared by Dufresne-Henry, Inc. of Portland, Maine on behalf of RIAC for the removal of airport obstructions. Based on information contained in that EA, wetlands exist along the perimeter of the airport and consist primarily of palustrine scrub-shrub, palustrine emergent, and forested wetland systems. The term palustrine is used under the U.S. Fish and Wildlife Service wetland classification system (Corwardin et al. 1979) to describe freshwater wetlands which are not bordering lakes or rivers. Dominant wetland vegetation includes multiflora rose (*Rosa multiflora*), swamp rose (*Rosa palutris*), pussywillow (*Salix discolor*), meadowsweet (*Spiraea latifolia*), soft rush (*Juncus effusus*), red maple (*Acer rubrum*), and gray birch (*Betula populifolia*) (Dufresne-Henry, 2001).

The 2005 wetlands delineation generally confirmed the findings of the 2001 EA. Wetlands were mapped along the north, south, east, and west perimeters of the airport. Wetland habitats are dominated by hydrophytic vegetation, contain hydric soils and exhibit groundwater at or near the surface for significant periods during the growing season.

Wetland habitats are regarded as sensitive since activities in and around these habitat types are generally regulated by Federal, State and local regulations. Environmental impact would result from:

- Direct loss of Federal- or State-protected plant or animal species;
- Disturbance, alteration, or loss of a preferred vegetation community type known to be used by a Federal- or State-protected plant or animal species;
- Disturbance, alteration, or loss of a unique or important vegetation community type; or
- Disturbance, alteration or loss of Federal- or State-protected wetland habitats.

The Rhode Island Freshwater Wetlands Act regulates a buffer (a.k.a. perimeter wetland) upland area adjacent to wetlands (including rivers and streams). DEM regulates a 50 foot perimeter wetland around wetlands (swamps, marshes, bogs, ponds); and 100- and 200-foot perimeter wetlands adjacent to rivers and streams depending on their width. Loss or disturbance of wetlands generally requires permits from DEM and the U.S. Army Corps of Engineers (USACE), as described in Section 1.4.15.



NEWPORT AIRPORT MASTER PLAN

The Louis Berger Group, Inc.

Figure 1.13:
WETLAND LOCATION MAP

Rhode Island Airport Corporation

Source: RIGIS-2007

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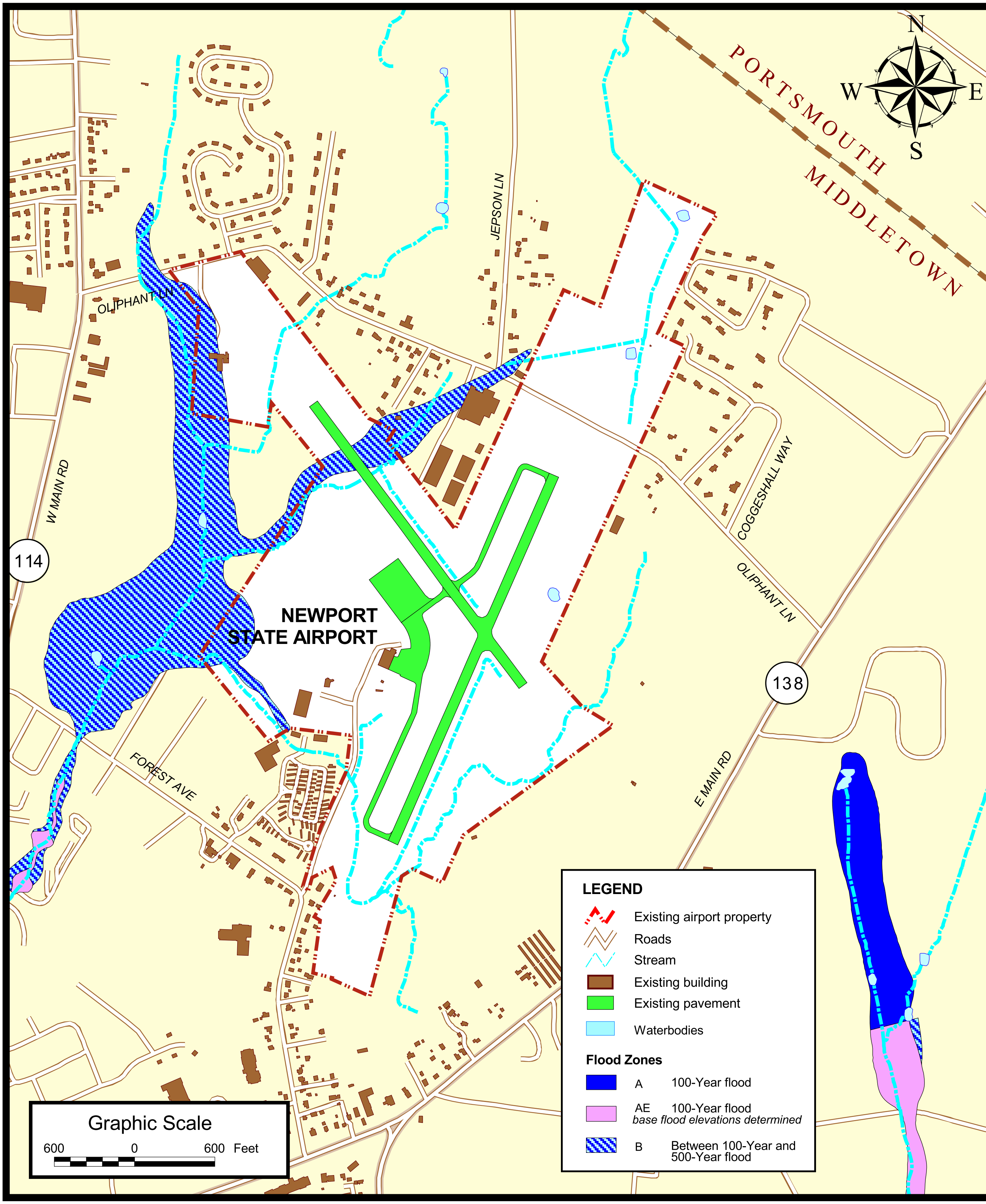
1.4.9 Floodplains

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for the Town of Middletown (1992), most of the airport is located outside of mapped floodplains as "Zone C". Areas of the airport along Bailey Brook and the Northeast Branch and East Branch of Bailey Brook are mapped as Zone B, within the 500-year flood zone. The 500-year flood is defined as an area that has a one in five hundred probability of occurring during a given year.

A building permit must be obtained through the Town of Middletown Building Inspector prior to any development in an Area of Special Flood Hazard, in accordance with Section 1003 of the Middletown Zoning Ordinances. Figure 1.14 shows floodplain boundaries proximate to UUU.



NEWPORT AIRPORT MASTER PLAN

The Louis Berger Group, Inc.

Figure 1.14: FLOOD ZONE LOCATION MAP

Rhode Island Airport Corporation

Source: RIGIS-2007

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1.4.10 Biotic Communities

Potential wildlife habitat at UUU consists mainly of grasslands along the runways and property perimeter. Vegetation in the runway safety areas and runway infield areas are mowed regularly and is dominated by various grasses and other herbaceous species. Areas of scrub vegetation are identified on Figure 4.4 as mapped by Natural Resource Service, Inc. (2005). Wetland vegetation is also present on portions of the airport property, mainly along the property perimeter. Wetlands are described in more detail in Section 4.7. No areas of forest habitat are present on airport property.

According to the U.S. Fish and Wildlife Service (FWS), no Federally-listed or proposed, threatened or endangered species are known to occur on airport grounds. Based on a letter provided by the FWS in response to an inquiry by LBG, preparation of a Biological Assessment or further consultation under Section 7 of the Endangered Species Act is not required. This letter is included as Appendix G.

The DEM has identified two species of concern located in the airport vicinity: the Baltimore butterfly (*Euphydryas phaeton*) and the northern leopard frog (*Rana pipiens*). In addition to these species of concern, other animals have been observed at Newport Airport according to airport personnel. These animals are noted because they are potentially hazardous to aircraft safety. These animals include birds, deer, fox, coyote, and raccoons. Approximately 70 species of birds are present in Middletown during breeding season and approximately 220 species during migration season (Town of Middletown, 2004).

Wildlife management programs in place at UUU are described in Piedmont Hawthorne's (now Landmark) document *Wildlife Control Policies, Procedures, and Training Manual for Hawthorne Aviation Rhode Island Airports*. This document includes procedures for reporting bird and wildlife strikes, wildlife control field practices, and requirements for completion of daily logs and monthly summaries. This document also identifies three main problem species specific to UUU; crows, gulls, and deer.

1.4.11 Parks, Recreation and Open Space

UUU is located within an area of mixed commercial, residential, and agricultural land use. There are many parks and recreation areas on Aquidneck Island. There are no parks within the immediate vicinity of Newport Airport.

1.4.12 Historical, Cultural and Archaeological Resources

Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106), requires the Federal Aviation Administration (FAA) to evaluate potential effects on properties listed or eligible for listing in the National Register of Historic Places (National Register) prior to an undertaking. An undertaking means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including, among other things, processes requiring a Federal permit, license, or approval. In this case, the undertaking is the Newport Airport Master Plan. Potential effects associated with improvements proposed in this Master Plan may include those resulting from ground disturbance, construction, or subsequent operation of the airport.

Historic properties are cultural resources listed or eligible for listing in the National Register. Historic properties represent things, structures, places, or archaeological sites that can be either Native American or Euro-American in origin. In most cases, cultural resources less than 50 years old are not considered eligible for the National Register. Cultural resources also have to have enough internal contextual integrity to be considered historic properties. For example, dilapidated structures or heavily disturbed archaeological sites may not have enough contextual integrity to be considered eligible.

Section 106 also requires that the FAA seek concurrence with the State Historic Preservation Officer (or SHPO; in this instance, the Rhode Island Historical Preservation and Heritage Commission or RIHPHC) on any finding involving effects or no effects to historic properties, and allow the Advisory Council on Historic Preservation (Council) an opportunity to comment on any finding of effects to historic properties. If Native American properties have been identified, Section 106 also requires that the FAA consult with interested Indian tribes that might attach religious or cultural significance to such properties. The Narragansett Indian Tribal Historic Preservation Office should be contacted prior to commencement of intended projects.

Ten properties in Middletown are listed on the National Register of Historic Places and none of these properties are in the vicinity of the airport. Berger LBG contacted the Rhode Island Historical Preservation & Heritage Commission (RIHPHC) to determine whether any historic property could be affected by any proposed undertakings at Newport Airport. Correspondence from the RIHPHC indicated that the airport is an area sensitive to environmental characteristics but that the property has not received an archaeological survey and there are no known sites recorded there. One region of archaeological sensitivity had been identified located adjacent to the east of the Runway 34 end as part of a previous Environmental Assessment (Dufresne-Henry, 2001), however no additional information regarding the nature of this sensitivity was included in the previous effort.

The RIHPHC also indicated that "as a property of the recent past" the airport may warrant a re-evaluation for historical significance". The airport air control tower has been listed as an historic/architecturally important building by the Town (Town of Middletown, 2004).

1.4.13 Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air in Code of Federal Regulations 40, Part 50, as "that portion of the atmosphere, external to buildings, to which the general public has access". In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Amendments (CAAA), the EPA has promulgated ambient air quality standards and regulations. The National Ambient Air Quality Standards (NAAQS) were enacted for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, the EPA has established NAAQS for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), ozone (O_3), nitrogen dioxide (NO_2), and lead (Pb).

There are two types of standards: primary and secondary. Primary standards are designed to protect sensitive segments of the population from adverse health effects, with an adequate margin of safety, which may result from exposure to criteria pollutants. Secondary standards are designed to protect human health and welfare and, therefore, in some cases, are more stringent than the primary standards. Human welfare is considered to include the natural environment (vegetation) and the manmade environment (physical structures). Areas that are below the standards are in "attainment," while those that equal or exceed the standards are in "non-attainment." All of Newport County is a non-attainment area for the 8-hour ozone standard, as are all other counties in Rhode Island.

Although the EPA has the ultimate responsibility for protecting air quality, each state and local government has the primary responsibility for air pollution prevention and control. The CAA requires that each state prepare and submit a plan (State Implementation Plan) describing how the state will attain and maintain air quality standards in non-attainment areas. In order for projects to comply with the CAA and the CAAA, they must conform to attainment plans documented in the State Implementation Plan. The agency responsible for implementing the State Implementation Plan in Rhode Island is the DEM, which maintains air monitoring sites.

The region surrounding UUU is largely residential and commercial. There are no obvious air pollution emission sources located in proximity to the airport with non-point air pollution from automobile and airplane exhaust most likely the main source of air pollution emissions in the area. It is not anticipated that these emissions are of a level that warrants concern.

Given that UUU is a general aviation airport with less than 180,000 annual general aviation operations through the forecast period, in accordance with FAA Order 5050.4B, *Airport Environmental Handbook* (Section 47.e.(5)(c)1a), an air quality assessment for long term impacts is not required for proposed projects that will not increase these passenger and operations numbers. The FAA thresholds are based on an understanding that relatively small airports with limited operations have been found to have little or no impact on air quality.

1.4.14 Hazardous Materials and Petroleum Products

Aircraft fueling operations at UUU are conducted by Landmark Aviation. Landmark Aviation operates two separate fuel storage areas as described in Section 3.3.2. A 12,000-gallon above ground storage tank (AST) located north of the terminal building adjacent to the security gate is used to store AVGas 100LL aviation fuel. This AST is equipped with secondary/overfill containment, spill prevention and safety measures as required by current State and Federal regulations. The installation is surrounded by crash barriers (bollards). Emergency spill response equipment such as Speedy-dry, absorbent pads, brooms, and shovels are stored in a shed adjacent to the AST.

Diesel fuel for the airport's emergency generator, housed in a building located south of the Bird's Eye View hangar, is stored in a 250-gallon AST. The tank is situated on the north side of the generator building. A 225-gallon diesel fuel AST with dispenser is located southeast of the generator building. This is used to fuel airport maintenance vehicles. Both tanks are equipped with secondary/overfill containment and spill prevention.

In addition to aircraft fueling operations, vehicle fuel, heating fuel, and other hazardous materials are stored at various locations. Chris Aircraft Services performs aircraft service and maintenance inside the hangar section of the terminal building. Miscellaneous aircraft maintenance supplies (paint, cleaning fluids, etc.) engine fluids (motor oil, hydraulic oil, gasoline, etc.), and waste materials are stored inside the hangar. Several 55-gallon drums containing lubricating oil, hydraulic oil, and waste oil are located in the hangar. The majority of these are within secondary containment. Waste oil generated at this location is disposed of off-site by a waste disposal contractor. Small quantities of gasoline and aircraft fuel are stored in 5-gallon containers. Individually packaged containers of motor oil and washing/cleaning fluid are maintained inside the hangar.

MMR currently leases the former airport maintenance building. MMR builds, repairs, and refurbishes boats and custom marine watercraft. Paint, wood, and other miscellaneous carpentry materials are stored inside the building and an adjacent storage trailer. Heating oil for the building is stored in a 275-gallon AST located outside on the east side of the building. The AST is equipped with secondary/overfill containment and spill prevention and safety measures as required by current State and Federal regulations.

Nine UST formerly located at UUU were removed in 1998. Five of the former UST were located within a former fuel farm south of the former maintenance building and east of the National Guard building and had been used to store AV gas, and Jet A fuel. Three of the former UST had been located in the field northwest of the former maintenance building and their former contents are unknown. One UST had been located at the generator shed south of the terminal building and had been used to store diesel fuel. A total of 3,600 cubic yards of contaminated soil associated with the former UST was excavated and transported off-site for disposal (Fuss & O'Neill, Inc., 1998).

A soil and groundwater investigation was conducted in the area down gradient of the former maintenance building by Fuss & O'Neill of East Providence, Rhode Island to determine the extent of residual petroleum contamination of soil following removal of the UST west of that building. Based on the results of that investigation, there is no residual soil or groundwater contamination in excess of DEM standards remaining from the former UST.

Military vehicles are fueled at the fuel dispenser inside the fenced parking area north of the RIANG building. Military vehicles are fueled twice per month, on average, inside the fenced parking area north of the building. A 250-gallon diesel fuel AST and fuel dispenser is located inside the fenced area. The double wall, steel AST, is equipped with secondary/overfill containment and spill prevention and safety measures as required by current State and Federal regulations. The installation is surrounded by crash barriers (bollards). Fuel spills or leaks during product transfer could result in potential stormwater exposure. Emergency spill response equipment such as Speedy-dry, absorbent pads, brooms, and shovels are stored in the RIANG building.

The Bird's Eye View helicopter touring business leases a hangar located between the generator building and the main hangar/terminal building. The main activities associated with this hangar are light maintenance and storage of aircraft. Located on the grass east of this hangar is a mobile fueling station used by Bird's Eye View to refuel their helicopter. This fueling station consists of a 100-gallon portable tank and fuel dispenser complete with secondary containment and a full spill kit.

Heating oil for the Potter League animal shelter's heating system is stored in a 1,000-gallon UST located in the loading/unloading area at the front of the building. A gasoline generator is housed in a storage shed adjacent to the building.

Potential hazardous building materials at the airport include fluorescent light ballasts, which may contain polychlorinated biphenyls. Asbestos-containing building materials may be located in piping insulation, floor finishes, roofing materials, and glazing products. Based on the age of airport buildings, lead paint may also be present.

Aircraft deicing is not performed at UUU. Snow removal equipment is stored in a garage building located west of the terminal building. Maintenance vehicles and equipment are stored in this building. All snow removal is conducted by Landmark Aviation personnel. Minor quantities of sand and salt are applied to roads and sidewalks. Low quantities of potassium acetate are used on the airport apron, taxiways, and runways when needed. The potassium acetate used for the runways is stored in a covered 55-gallon drum. Gasoline is stored in small (< 5 gallons) portable containers. One 55-gallon drum of waste oil and one of used absorbents are stored on spill pallets against the western wall of the building. Adjacent to these materials is a spill kit to handle any possible spills or leaks.

1.4.15 Environmental Permitting in Rhode Island

The DEM regulates activities that may affect the State's natural resources and environment through multiple permitting programs, as well as other environmental policies. The Federal and local governments also regulate activities that can affect the environment. Some of the permits that may be required for various potential projects are described in FAA AC 150-5070-6B, *Airport Master Plans* and include:

- Clean Water Act, Section 404 Dredge and Fill Permit;
- Air Quality Permit for on-site batch plants or other construction-related activities;
- Local government construction permits;
- Growth Management Permits;
- United States Fish and Wildlife Service, National Marine Fisheries Service opinions, or State Wildlife and Game Commission permits, if protected and endangered species could be impacted;
- Clean Water Act, National Pollution Discharge Elimination System Permits;

Many airport-related capital projects require Federal, State, or local environmental permits. A summary of some of the potential permitting requirements is provided here:

> <u>Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit</u>. Section 46-12-15(b) of the Rhode Island General Laws, as amended, prohibits the discharge of pollutants into Waters of the State. The only exceptions are discharges in compliance with the terms and conditions of a Rhode Island Pollutant Discharge Elimination System (RIPDES) Permit issued in accordance with State regulations.
>
> Rule 31 of the RIPDES Regulations, as amended on February 25, 2003, requires all discharges of stormwater associated with industrial activity to obtain a RIPDES permit. To be covered by the General Permit for Storm Water Discharge Associated with Construction Activity, applicants must complete a Notice of Intent Form. Provided all required information is submitted and it is determined that a general permit is appropriate for the site, a letter of authorization to discharge will be issued by the DEM.
>
> A Storm Water Pollution Prevention Plan (SWPPP) shall be developed for construction activities covered by the permit. The SWPPP shall identify potential sources of pollutants that may reasonably be expected to affect the quality of storm water discharges associated with the construction activity. In addition, the SWPPP shall describe and ensure the implementation of best management practices to be used to reduce or eliminate the pollutants in the storm water discharge at the site and assure compliance with the terms and conditions of the RIPDES permit.

Upon completion of projects completed under the RIPDES permit, the airport's Facility SWPPP for Industrial Activities shall be amended to reflect the changes/alterations resulting from the construction activities.

Rhode Island Wetlands Permit. Potential work in or adjacent to wetland areas of the airport would require permitting under the Freshwater Wetlands Program of DEM. Wetland permitting is also conducted by the USACE. Effective February 11, 1997, the New England Division of the USACE has issued a Programmatic General Permit (PGP) for the review of proposals in coastal and inland water and wetlands within the State of Rhode Island. This permit covers work and structures that are located in, or affect, navigable waters of the United States, and the discharge of dredges or fill material into the waters of the United States, including wetlands and streams (regulated by the Corps under Section 404). The PGP is intended to streamline the permitting process for such activities by eliminating the need to apply to both the USACE and the DEM Freshwater Wetlands Program. Thus any permit issued by the DEM under the PGP will also satisfy Federal wetlands permitting requirements. Mapping by the DEM and Rhode Island Coastal Resource Management Council (CRMC) indicate that wetlands at the Newport Airport are outside of the CRMC jurisdiction.

Minor Source Air Permit. A Minor Source Permit may be required from the DEM Office of Air Resources to address temporary siting and emissions from a temporary batch asphalt plant should one be necessary for potential airport projects. The submission requirements for a Minor Source Permit do not include substantial information on air quality impacts or current Best Available Control Technology as would be required for a Major Source Permit but Best Available Control Technology review and screening level air quality analysis should be performed to ascertain whether potential air impacts might be problematic. The production of such information is proposed to be the responsibility of the potential contractor and/or asphalt supplier.

1.4.16 Wild and Scenic Rivers

The Wild and Scenic Rivers Act (16 U.S.C. 1271 as amended) protects rivers designated for their wild and scenic values from activities which may adversely impact those values. There are no designated Wild and Scenic Rivers in Rhode Island (U.S. National Park Service, 2005), and therefore no designated rivers in Middletown or at Newport Airport.

1.4.17 Coastal Zone Management

The CRMC claims jurisdiction over projects within 200 feet of a coastal feature. The CRMC also claims jurisdiction over projects that affect freshwater wetlands that are contiguous with a coastal feature, and any project resulting in 20,000 square feet of impervious area located in a designated watershed of poorly flushed estuaries. Finally, CRMC technical staff reviews some specific projects due to their potential impact on coastal areas regardless of where in the state they are located (power plants, petroleum storage facilities of 2,400 barrel capacity or greater, chemical or petroleum processing, minerals extraction, desalination projects, etc.).

FAA Order 5050.4B *Airport Environmental Handbook* requires that Federal actions be consistent with the objectives and purposes of approved State coastal zone management programs, if in effect. Although

Newport Airport is located on Aquidneck Island, the airport is located in the middle of the widest portion of the Island and not in a coastal area.

1.4.18 Coastal Barriers

As stated in Section 47.3. (14) of FAA Order 5050.4B *Airport Environmental Handbook*, the Coastal Barriers Act of 1982 applies to some areas on the shores of the Atlantic Ocean. Protected coaster barriers may be present at certain locations on Aquidneck Island; however, Newport Airport is not located within a coastal zone area.

1.4.19 Farmland

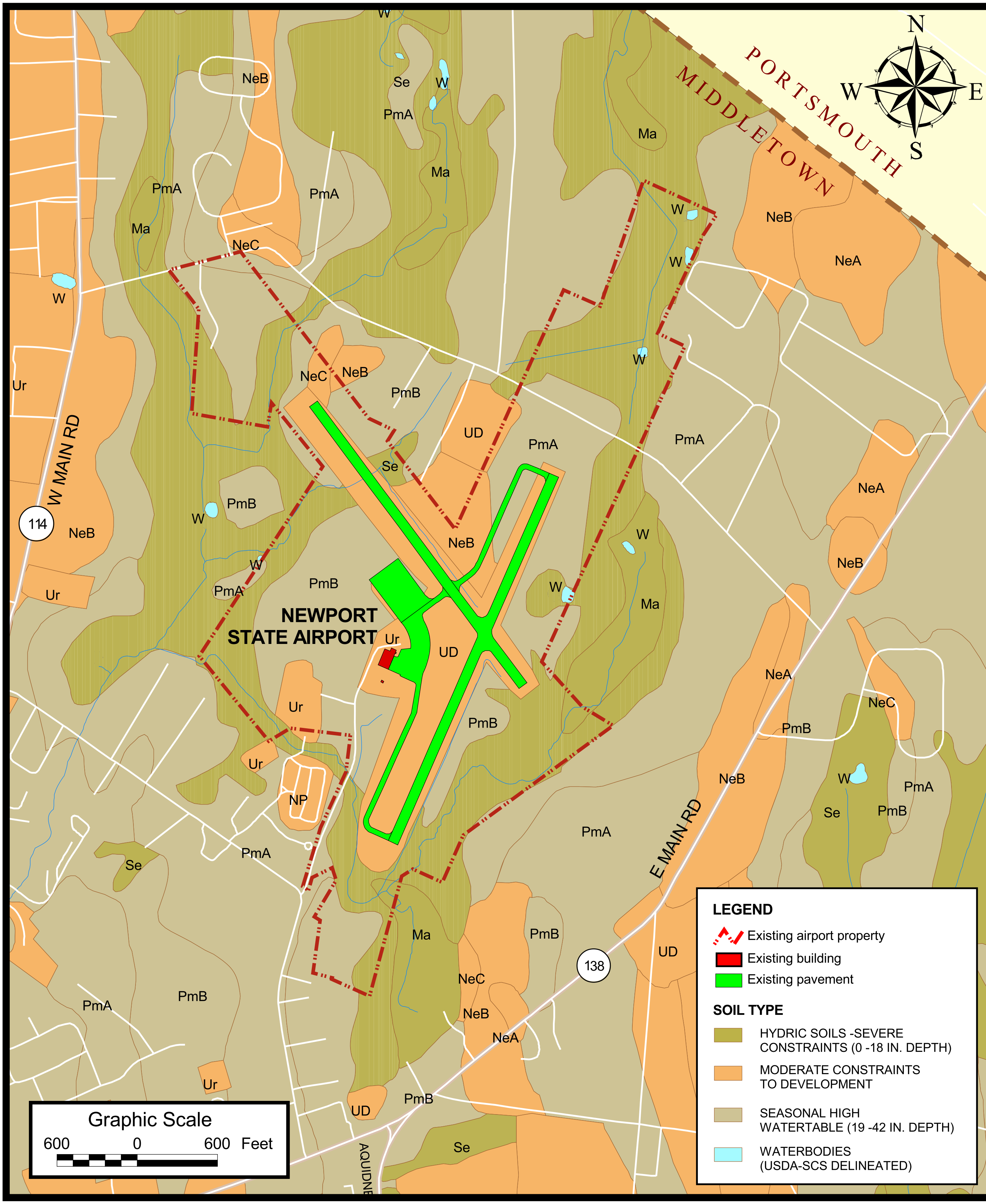
Soil types beneath the airport were mapped by the U.S. Department of Agriculture Soil Conservation Service (now known as the Natural Resources Conservation Service) and published in the *Soil Survey of Rhode Island* (1981), and are shown on Figure 1.15. As described in Section 1.4.4, primary natural soil types at UUU are Pittstown, Newport, and Stissing silt loams.

The majority of land within on the airport and within a 2-mile radius of the airport is suitable farmland, described as having moderate constraints to development. Hydric soils, located along waterways adjacent to the airport, are not considered suitable farmland soils. Water is present in these soils between 0 and 18 inches below the ground surface. Soils suitable for farmland have been identified throughout the State of Rhode Island by the NRCS and the Rhode Island Department of Administration, Division of Planning. Farmland is broken into the following categories by the Federal Farmland Protection Policy Act: prime farmland, unique farmland, and land of statewide or local importance.

Prime farmland exists within the airport area of influence and abuts boundaries of the airport runways. Prime farmland is defined by NRCS as land that has the best combination of physical and chemical characteristics for producing feed, forage, fiber, and oilseed crops, and is also available for these uses. Newport and Pittstown soils are classified as prime farmland.

Farmland of statewide importance is classified as lands that, generally, are nearly prime farmland and produce high economic yields of crops when treated and managed according to acceptable farming methods. Stissing soils are classified as soils of state-wide importance. The locations of these soils with respect to the proposed project areas are shown on Figure 1.15.

If it is determined that proposed projects may affect soils protected under the Federal Farmland Protection Act, it may be necessary to contact the U.S. Natural Resources Conservation Service (NRCS) for completion of a Farmland Conversion Impact Rating Form. Based on the impact rating score developed by the NRCS based on this Form, the NRCS may recommend consideration of alternate project sites. The need for completing this form is contingent on the local zoning within the proposed project area since prime farmland does not include land already in or committed to urban development. Areas zoned for commercial, industrial, or high-density residential use may be exempt from this requirement.



NEWPORT AIRPORT MASTER PLAN

Figure 1.15: SOIL TYPES

The Louis Berger Group, Inc.

Rhode Island Airport Corporation

Source: RIGIS-2007

riac_swppp_locus_newp.apr

1.4.20 Energy Supply and Natural Resources

FAA Order 5050.4B *Airport Environmental Handbook* notes that airport energy use typically falls into one of two categories:

- That which relates to stationary sources such as a terminal buildings, airfield lighting, etc.
- That which involves the movement of aircraft or ground vehicles.

The FAA Order 5050.4B states that use of natural resources may become an issue warranting discussion only if the airport requires use of unusual materials in short supply.

1.4.21 Light Emissions

The airport utilizes runway and taxiway lights and Runway 04/22 is outfitted with a Medium Approach Lighting System with Sequenced Flashers. The airport's runway and taxiway lights are available to pilots at night on an as needed basis by clicks of the pilot's radio microphone. In addition there is an airport beacon that is illuminated during night time and Instrument Flight Rules conditions. The airport is generally well-buffered from surrounding land uses by a green perimeter and light emissions from the airport are not considered a major nuisance to surrounding property owners.

1.4.22 Solid Waste

The airport's daily generation of solid wastes is relatively minor and well within the capabilities of waste haulers and disposal firms on Aquidneck Island. Trash is removed and disposed of by a waste disposal contractor on a regular basis. Outdoor trash dumpsters and recycling bins are maintained at individual airport facilities.

1.4.23 Public Lands

The U.S. Department of Transportation Act, Section 4(f) states that:

"the Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance or land of an historic site of national, state or local significance as determined by the officials having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such program or project includes all possible planning to minimize harm resulting from the use. If the proposed action involves the taking or other use of any Section 4(f) land, the initial assessment shall determine if the requirements of Section 4(f) are applicable."

Section 6(f) of the Land and Water Conservation Act (LWCA) prohibits recreational facilities funded under the LWCA from being converted to non-recreational use unless approval is received from the director of the National Park Service.

Based on a review of the existing land uses, it has been determined that there are no publicly owned parks, recreation areas or wildlife refuges in the immediate vicinity of the airport.

1.5 Inventory of Economic Conditions

This section provides information regarding the economic contribution the airport provides to the region. Airport financial data is provided to understand the current and most recent airport finances. This is reviewed to understand the airport's ability to undertake future capital improvements and its continued day-to-day operation. In addition, in 2007 RIAC completed a statewide economic impact of all airports in Rhode Island.

1.5.1 Airport Financial Data

The income statements for Newport indicate that the airport derives revenues primarily from landing fees, sales of jet and avgas fuel, aircraft tie-down fees, and other miscellaneous sales. The following table summarizes the net income for the airport:

Table 1.13
Net Income - Newport State Airport

Fiscal Year	Profit	Loss
2006	-	$44,898.
2005	-	$41,910.
2004	-	$72,348.
2003	-	$55,509.

Source: RIAC and Landmark Aviation

1.5.2 Airport Economic Impact

According to the economic impact study results, the total economic impact of the airport on the local economy totals 77 jobs with total earnings of $1,867,000. The following summarizes the impact UUU has in its local economy and surrounding communities:

- Total Impact: $3,278,200
- Direct Impact: $2,019,300
- Indirect Impact: $1,258,900

Chapter 2.0 – Airport Role and Forecasts

Forecasts are an essential step in the airport master process[1]. The forecasts reflect the projected levels of aviation demand at the airport. By developing a forecast, timely and cost effective improvements can be undertaken by the airport to serve the projected demand. Forecasts are an estimate of future activity levels and provide guidance that assists decision makers in making judgments for future airport development scenarios. It is important to understand that unforeseen changes in the aviation industry or economy can result in deviations between the forecast for a particular time period and actual events. The airport sponsor should be alerted to those changes and how those changes may affect the airport's service level and needed facilities. It is also a basis for reviewing the master planning on a timely basis, (recommended at least every 5-years), to remain current on the impact of changes.

In this Chapter, aviation forecasts are developed to reflect Newport State Airport's (UUU) operational activity levels in five, ten and twenty year periods. They are also prepared in terms of a base case, as well as a low range and high range forecast. This format helps understand the airport's needs under varying conditions and therefore is less sensitive to a specific change in an airport or industry condition. It is also effective where the historical data is more difficult to assemble for various reasons.

The forecast for UUU involved multiple processes. It includes: identification of the service area, analyzing the historical growth, and evaluating the relationship between the number of based aircraft and the level of operations (take-offs and landings), demographics, business trends within the area, and new and emerging technologies in general aviation (GA). All this is more fully explained in this chapter.

2.1 Forecast Methodologies and Data

In developing a forecast for general aviation airports, aircraft operations and based aircraft are the two key forecasts that guide the decisions as to the ultimate development needs of an airport. Furthermore, it should be understood that aviation forecasting is not an "exact science" so experienced aviation judgment and practical considerations will also influence the level of detail and effort required to establish reasonable forecast and the development decisions that result from them. The FAA Advisory Circular 150/5070-6B, Airport Master Plans, dated July 29, 2005, outlines the six standard steps in the forecasting process to include:

- Identify aviation activity measures;
- Review previous airport forecasts;
- Gather the various types of data;
- Select the forecasting methodology;
- Apply the forecast methods and evaluate the results; and
- Compare the forecast results with the Federal Aviation Administration's Terminal Area Forecast.

The FAA has outlined several acceptable forecasting methodologies and the selected methodology should be representative of the airport's unique characteristics and the validity of the historical data. Some common forecasting methodologies include:

[1] Reference: FAA Advisory Circular 150-5070-6B *Airport Master Plans,* July 29, 2005

- Regression analysis – A statistical technique that ties aviation demand to economic measures. Regression analysis should be restricted to relatively simple models with independent variables for which reliable forecasts are available.

- Trend analysis and extrapolation – Typically the historical pattern of an activity and projects this trend into the future. This approach is useful where unusual local conditions differentiate the study airport from other airports in the region.

- Market share analysis or ration analysis – This technique assumes a top-down relationship between national, regional, and local forecasts. Local forecasts are a market share percentage of regional forecasts, which are a market share percentage of national forecasts. Historical market shares are calculated and used as a basis for projecting future market shares.

- Smoothing – A statistical technique applied to historical data, given greater weight to the latest trend and conditions at the airport; it can be effective in generating short-term forecasts.

- Expert Judgment – This effort simply looks to utilize a combination of the methods presented above, but applies a level of expert judgment from local, regional and national aviation industry knowledge.

Choosing the appropriate forecasting methodology is as important as developing different forecasting scenarios to properly plan the future. Over the life of a forecast, unanticipated events (trend breakers like September 11, 2001, Severe Acute Respiratory Syndrome, Avian Flu, etc.) may take place that impact the anticipated activity levels at the airport. It is critical that the Airport, consistently review the developed forecast to determine how those unanticipated events impact the need for new or expanded facilities. For UUU, the master plan forecasts incorporate:

- Socioeconomic data associated with the State of Rhode Island;
- Historical operations and based aircraft data;
- Forecasts developed for the General Aviation Manufacturers Association (GAMA);
- Federal Aviation Administration Aerospace Forecasts FY 2006-2017;
- Terminal Area Forecasts (TAF); and
- Rhode Island State Airport System Plan (RISASP) forecast December 2004.

For airports with greater than 100,000 total annual operations, or 100 based aircraft the five and ten year forecast must be approved by FAA prior to proceeding to the Facility Requirements analysis. The forecasts developed for UUU do not attain those levels and therefore the FAA only reviewed the forecasts.

2.1.1 Airport Service Area

The market area served by UUU is designated in this report as the “airport service area”. The airport service area is defined by its proximity to other airports serving the needs of the general aviation community. Aviation demand corresponds with local and regional growth trends related to economic and demographic characteristics, geographic attributes, aviation related factors and other factors that may influence the demand for airport services. Aviation activity levels result from the interaction of demand and supply factors.

As one of six (6) active airports in the RIAC system, UUU provides general aviation services to the Aquidneck Island communities of Middletown, Newport, Portsmouth, Little Compton, Barrington, Bristol, Warren and Tiverton. It is the only airport on Aquidneck Island serving the surrounding communities. Other similar sized airports in the general vicinity include Quonset State Airport (RIAC) located 7 miles north, New Bedford Regional Airport located 17 miles northeast, Taunton Municipal Airport - King Field located 24 miles northeast and North Central State Airport (RIAC) located 25 miles to the northwest. Some key airport features of these airports are shown in **Table 2.1** below.

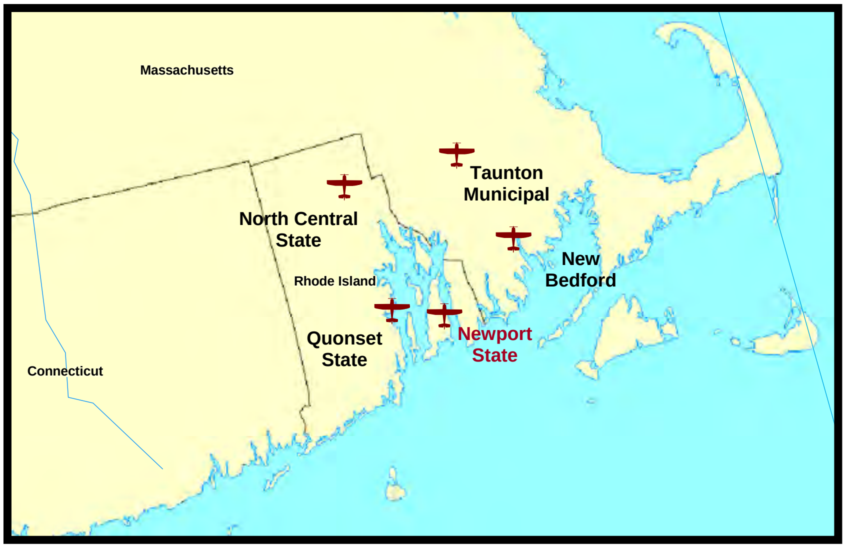
Table 2.1
Airports Surrounding the UUU Service Area

Name	Longest Runway (feet)	Instrument Approach Procedures	Based Aircraft	Annual Operations
Newport State Airport	2,999 x 75	4	40	21,461
Quonset State Airport	7,504 x 150	5	46	16,790
New Bedford Regional Airport	5,000 x 150	5	136	184,690
Taunton Municipal Airport - King Field	3,500 x 75	5	133	110,230
North Central State Airport	5,000 x 150	5	115	31,390

Source: FAA 5010 data and AirNAV – February 2006

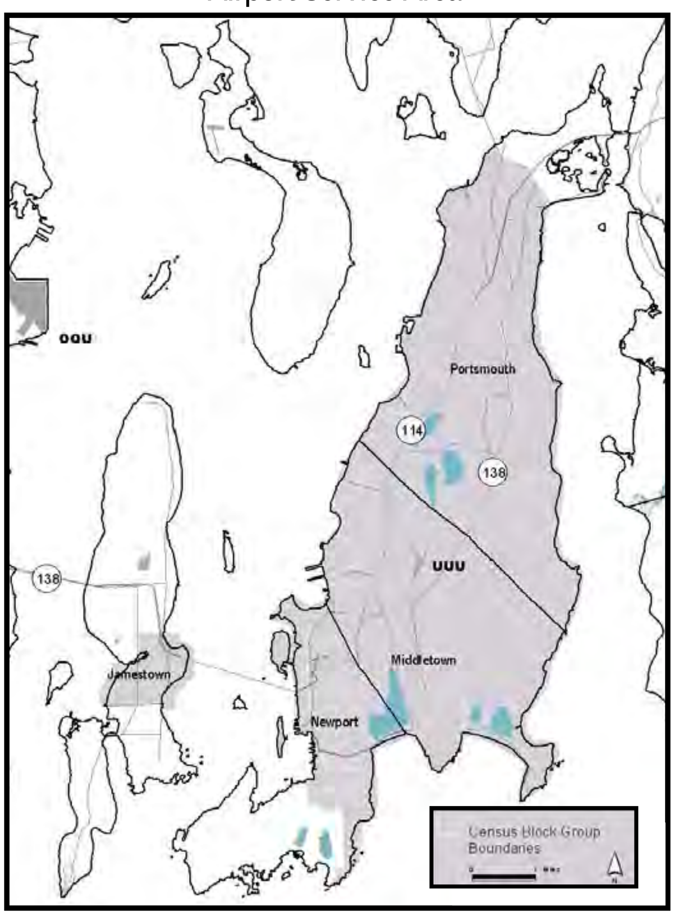
Figure 2.1 depicts airports surrounding the UUU service area and **Figure 2.2** represents Newport State Airport's service area.

Figure 2.1
Map of Airports Surrounding the UUU Service Area



Map Source: The Louis Berger Group, Inc.

Figure 2.2
Airport Service Area



Source: Rhode Island State Aviation System Plan (2004)

2.1.2 Socioeconomic Data

In this section, a discussion of relevant socioeconomic data will helped depict operational demand at UUU. Socioeconomic trends are often an important indicator of an airport's operational demand as a strong correlation exists between the economic activities of a market area and an airport's operational demand. The correlation is supported by information on population, employment and economic data in a particular area as well as information on business and locations of airport users. In general, if an area experiences rapid increases in population, employment and strong economic figures, this generally leads to greater operational demand for an airport. Thus, it can be beneficial to understand the region's socioeconomic data in order to anticipate airport growth.

2.1.2.1 Population

Rhode Island is comprised of Bristol, Kent, Newport, Providence and Washington Counties. Rhode Island's population is mainly concentrated in Providence and the surrounding suburbs while much of western Rhode Island is considered rural, with less than an average of 250 people living per square mile. Other population centers include Woonsocket, Warwick, and the Newport region. Newport State Airport's associated service area includes towns located in Kent, Bristol and Newport Counties.

Since the demand for airports is related to the socioeconomic and demographic characteristics of a particular region, population trends are often excellent indicators of airport growth. Thus, strong correlations exist between an area's population base and an airport's number of based aircraft and associated activity levels. The Rhode Island Department of Administration is forecasting rather negligible population growth amongst several of UUU's service area towns, as depicted in Table 1.2.

Table 1.2
Population Forecast - Newport Airport Service Area

City/Town	Actual	Forecast		
	2000	2010	2020	2025
Middletown	17,334	17,364	17,408	17,427
Newport	26,475	25,763	24,737	24,275
Portsmouth	17,149	17,889	18,954	19,434
Little Compton	3,593	3,723	3,910	3,994
Barrington	16,819	16,984	17,222	17,329
Bristol	22,469	23,068	23,930	24,319
Warren	11,360	11,544	11,809	11,929
Tiverton	15,260	15,704	16,342	16,630
Total	130,459	132,039	134,312	135,337
Avg. Annual % Change	-n/a-	0.12%	0.17%	0.08%
Rhode Island State Total	1,048,319	1,074,199	1,111,464	1,128,260
% of Bristol/Newport County	12.4%	12.3%	12.1%	11.9%

Source: Statewide Planning Program, Rhode Island Department of Administration, August 2004

It is anticipated that the population of Rhode Island will reach 1.12 million people by 2025, representing a 7.6% increase through the forecasting period. On average the State of Rhode Island's population base will increase 0.3% annually over the next twenty-five years; however the Town of Newport's population is forecasted to decrease 0.3% annually through the forecasting period. Although the Town of Newport's population is decreasing, surrounding towns within the UUU service area are forecasted to marginally increase.

1.2.2.2 Employment

The Rhode Island Department of Labor and Training recently issued the State's occupational outlook through 2014 and it is important to note that for this AMP, the Department's forecast was extrapolated to 2025 to provide consistency with other figures used in this forecasting section. **Table 2.3** depicts the extrapolated State of Rhode Island area employment forecast. The forecast's occupational projections were based on changes in industry employment and changes in the mix of occupations that industries use. Declines in occupational projections were attributed to decreasing industry employment and technological advances with the particular industry.

Table 2.3
Area Employment - State of Rhode Island

	2004	2006	2010	2015	2025
Total RI Employment[1]	518,145	529,203	551,792	581,234	612,246
% Change	-n/a-	2.13%	4.26%	5.33%	5.33%

[1]Employment figures extrapolated to 2025.

Source: Rhode Island Department of Labor and Training

The Department projected that the Rhode Island economy will generate 94,101 new jobs during the 2004-2025 forecasting period. The largest employment gains would occur in the health care and social assistance and accommodation and food services sectors, while the retail trade sector was forecasted to have the next largest increase. The largest employment decline is forecasted to occur in the manufacturing sector which follows a national trend. The loss of jobs will be spread across textile mills, fabricated metals and miscellaneous manufacturing businesses. Chemical manufacturing is one of the few industries within the manufacturing sector to expect an increase in employment.

On average, minimal employment growth is expected to occur within the State of Rhode Island as supported in **Table 2.3**. The average annual growth rate in employment for the State equates to less than 1% annually over the forecasting period. These figures parallel previous employment area forecasts for the region.

1.2.2.3 U.S. Economy

The FAA traditionally publishes an annual Aerospace Forecast that covers a 12-year period. The FAA uses economic forecasts developed by the Executive Office of the President, Office of Management and Budget (OMB) to project domestic aviation demand within the published forecast. OMB develops both short and long-term economic outlooks to support the forecast that is used for manpower and facility planning as well as for policy and regulatory analysis. OMB's long-term economic forecast was extrapolated to 2017 in order to better assess long-term growth. The

OMB long-term economic forecast calls for continued growth in the U.S. Gross Domestic Product (GDP) as depicted in Table 2.4.

The inflation rate (as measured by the CPI) is expected to rise on average 2.5% through the forecast period and the price of oil, as measured by the Refiner's Acquisition Cost, is expected to decrease by 1.1% annually from 2006 to 2010. Between 2010 and 2017, the cost of oil is expected to rise 1.5% annually.

Table 2.4
U.S. Economic Long-Term Forecast

Fiscal Year	Gross Domestic Product (Billions 2000$)	Consumer Price Index (1982-84=100)	Refiners Acquisition Cost Average (Dollars)
2000	9,762.8	170.74	26.70
2001	9,885.1	176.27	25.79
2002	10,002.4	178.86	21.98
2003	10,218.9	183.10	28.01
2004	10,657.0	187.34	33.65
2005	11,044.7	193.48	47.27
Forecast			
2006	11,418.5	199.93	54.34
2010	12,962.5	219.82	50.93
2015	15,051.1	248.57	54.35
2017	15,967.8	261.13	56.77
Avg. Annual Growth '05-'17	3.1%	2.5%	1.5%

Source: FAA, 2005-2016; Office of Management and Budget, November 2005. Extrapolated to 2017

2.1.3 General Aviation

General Aviation (GA) is one of two major categories of civil aviation. GA is defined as the operation of civilian aircraft for purposes other than commercial passenger transport, including personal, business and instructional flying. GA provides vital services to individuals, families, churches, hospitals, colleges, small businesses and ten of thousands of communities throughout America. In addition, GA also provides advantages to the personal and business traveler with direct access to over 5,000 airports. Due to GA's popularity, the majority of the world's air traffic is classified as GA operations. Specific trends related to GA activity are identified in terms of the number of manufacturer shipments, changes in active fleet mix and utilization of GA aircraft. It should be noted that the GA population could be served by the smallest piston aircraft to a large jet.

2.1.3.1 National, State and Local Trends

Prior to August of 1994, there was no time limitation on product liability for GA aircraft manufacturers. As a result, manufacturers were required to seek broader liability insurance policies, which led to increased insurance premiums and ultimately drove up the cost of new aircraft. Due to the high purchase price of aircraft, GA aircraft deliveries significantly decreased. In August of 1994, Congress enacted the General Aviation Revitalization Act, which established an 18-year Statute of Repose in the manufacture of all GA industry aircraft and their components, in terms of liability. This change has led to several advances in the development of fixed-wing aircraft including:

- New GA aircraft manufacturers entering the marketplace;
- Construction of new aircraft manufacturing facilities;
- Expansion of existing manufacturing facilities; and
- Increased expenditures on research and development of aircraft and avionics to make flying safer and easier to learn.

As a result, GA manufacturers experienced increased aircraft deliveries, flight safety, and popularity. The positive trends associated with the GA industry as a result of this Congressional Act are anticipated to last well into the future.

2.1.3.2 FAA Terminal Area Forecast

2.1.3.2.1 Terminal Area Forecast: State of Rhode Island

Each year the FAA updates and publishes a Terminal Area Forecast (TAF) to include air carrier, air taxi/commuter, general aviation, and military operations. The purpose of the TAF is to provide the aviation community with data that indicate aviation demand at U.S. Airports. The activity forecasts are prepared for all towered airports and include both itinerant and local operations. The TAF is available for all regions within the FAA, including a specific state or airport. Because UUU is a non-towered airport, the TAF only carries forward the last reported year's activity levels for the forecasted years. Therefore, the master plan forecast effort will utilize the TAF for the State of Rhode Island. This is a normal practice for airports similar to UUU.

The TAF for the State of Rhode Island indicates that the total aircraft operations for the State will increase by 13.4% from 2006 to 2025 as indicated in **Table 2.5**. The largest growing segment of aircraft operations occurs within the air carrier/air taxi and commuter operations. The TAF forecasts that this classification of aircraft operations will grow 28.1% from 2006 to 2025. The forecast also indicates that GA operations will increase 2.7% over that same time period. Overall, the TAF has forecasted GA operations to grow minimally within the Rhode Island.

Table 2.5
2006 FAA Terminal Area Forecast - State of Rhode Island

Year	Itinerant Operations					Local Operations			Total Operations	Total Inst. Operations
	Air Carrier	Air Taxi / Comm.	General Aviation	Military	Total	General Aviation	Military	Total		
2005	57,935	55,029	83,585	10,426	206,975	48,887	52	48,939	255,914	250,796
2006[1]	58,972	55,433	83,726	10,426	208,557	48,893	52	48,945	257,502	251,698
2010[1]	63,312	57,079	84,296	10,426	215,113	48,917	52	48,969	264,082	269,450
2020[1]	75,610	61,495	85,477	10,426	233,008	48,979	52	49,301	282,039	333,580
2025[1]	82,629	63,875	85,985	10,426	242,915	49,011	52	49,063	291,978	370,166

1Forecast Issued by the FAA in February 2006

Source: Federal Aviation Administration Terminal Area Forecast Summary

2.1.3.2.2 Aerospace Forecast FY 2006 – 2017: U.S. Active General Aviation and Air Taxi Forecast

The FAA Aerospace Forecast is another source of information that details a variety of forecasts for the aviation industry. The FAA develops forecasts in this document related to economic activity, commercial aviation, air cargo, commercial space transportation and general aviation to indicate aviation demand and activity. The FAA publishes this document to indicate industry trends and help guide the FAA to adjust policy accordingly. In this particular forecast, the FAA has included a new classification of aircraft titled "Sport Aircraft", which is not currently included in the FAA's registry counts. This classification was created in 2005 and the forecast assumes that registration of over 13,500 aircraft by 2017 will occur for the 12-year period. The FAA defines the sport aircraft classification as an aircraft with a maximum gross takeoff weight of less than 1,320 pounds for aircraft designed to operate from land; a maximum airspeed in level flight of 120 knots; either one or two seats; a fixed pitch or ground adjustable propeller; and a single reciprocating engine. An example of an aircraft in this classification of aircraft includes the Piper Cub.

As indicated in **Table 2.6**, the active general aviation fleet is forecasted to increase at an average annual rate of 1.4% over the next 12-years. The largest amount of growth will occur in the fixed wing turbo jet classification. The anticipated growth would effectively double the fleet (100.2%) over the forecasting period. Piston type aircraft (single/multi-engine) are anticipated to experience negligible growth; however turbine aircraft (fixed-wing and rotorcraft) are anticipated to increase by 4.9% annually over the forecasting period.

Table 2.6
FAA - U.S. Active General Aviation and Air Taxi Aircraft Forecast

	FIXED WING									
	PISTON		TURBINE		ROTOCRAFT					
Year	Single Engine	Multi-Engine	Turbo Prop	Turbo Jet	Piston	Turbine	Exper-imental	Sport Aircraft	Other	Total
2005*	144,530	17,481	8,030	8,628	2,760	4,835	22,300	-n/a-	6,027	214,591
2007	145,660	17,520	8,430	9,520	3,460	5,095	22,900	2,295	5,965	220,845
2012	148,005	17,605	9,430	13,165	4945	5,820	24,350	10,940	5,820	240,080
2017	149,670	17,690	10,430	17,270	6,025	6,660	25,730	13,625	5,675	252,775
AAG	0.3%	0.1%	2.2%	6.0%	6.7%	2.7%	1.2%	-n/a-	-0.5%	1.4%

* denotes estimation *Source: FAA Aerospace Forecasts, FY 2007-2017*

2.1.3.3 General Aviation Manufactures Association (GAMA)

GAMA tracks and reports total shipments and billings of general aviation aircraft. GAMA statistics comparing the first nine months of 2005 and 2006 indicate relatively strong growth in sales of all types of general aviation aircraft as indicated in **Table 2.7**. A number of factors contribute to increased general aviation aircraft shipments to include the general strength of the U.S. economy, recreational flight, fractional ownership arrangements, microjets, and corporate businesses utilizing general aviation aircraft.

Table 2.7
First Nine Months Shipments of Airplanes
Manufactured Worldwide

Aircraft Types	2005	2006	Change
Pistons	1,653	1,957	18.4%
Turboprops	228	256	12.3%
Business Jets	510	629	23.3%
Total Shipments	2,391	2,842	18.9%
Total Billings	$10.3B	$31.2B	28.6%

Source: GAMA press release October 27, 2006

The following table, Table 2.8, presents total general aviation aircraft shipments on an annual basis over a six year period. In review of historical aircraft deliveries, the strongest growth appears to be occurring in multi-engine piston aircraft followed by turbo jet, single engine piston and turbo prop aircraft. The growth in these segments can be attributed to business use of aircraft and their desire to operate safe, efficient and high performance aircraft. These type aircraft require airport facilities that are developed to a relatively high and demanding standard due to their operating requirements.

Table 2.8
Historical General Aviation Shipments

Year	PISTON		TURBINE		Total	% Change
	Single Engine	Multi-Engine	Turbo Prop	Turbo Jet		
2000	1,810	103	315	588	2,816	-n/a-
2001	1,644	147	421	782	2,994	6.3%
2002	1,446	130	280	676	2,532	(15.4%)
2003	1,825	71	272	518	2,686	6.1%
2004	1,999	52	321	591	2,963	10.3%
2005	2,326	139	365	750	3,580	20.8%

Source: 2000-2005 GAMA Shipment Reports

The statistics presented by GAMA illustrate the continued growth of the general aviation aircraft manufacturing industry and if 2006 aircraft shipments continue to outpace 2005 shipments; this would represent the fourth consecutive year of increased demand for general aviation aircraft.

2.1.3.4 Rhode Island State Airport System Plan

In review of the historical data (operations and based aircraft), several reasons exist that indicate a lack of confidence in the accuracy of the available data. Certainly the absence of an operational control tower has a dramatic impact on the accuracy of the total operational counts and the accounting for itinerant and local operations.

The Rhode Island State Airport System Plan (RI/ASP) was completed in December 2004 and Table 2.9 represents the forecasted GA operations for each GA airport within RIAC's system of airports. The RI/ASP forecasts an average annual growth rate of 1.3% for all GA operations over the forecast period. The existing and forecasted activity at UUU indicates that operations will increase at a rate of 1.29%, proportional to the overall operational growth forecasted for the RIAC GA airports. Out of the five GA airports operated by RIAC, the UUU forecasted growth is expected to be the fourth largest growth rate. In comparing the total number of operations at UUU to the State total through the forecast period, the percentage of operations that occur at Newport through the forecast period remain constant at 12.2%.

Table 2.9
Projection of General Aviation Operations - RISASP

Airport	2001	2006	2011	2021
Block Island	9,674	10,000	10,800	12,300
Newport	12,485	12,800	13,800	15,700
North Central	68,000	66,900	72,000	81,700
Quonset	7,927	8,200	8,800	10,00
Westerly	6,585	6,800	7,300	8,300
State Total (excluding T.F. Green)	101,671	104,700	112,700	128,000
UUU Operations as a % of Total	12.27%	12.22%	12.24%	12.26%
Percent Change	-n/a-	2.5%	7.8%	12.2%

Source: Rhode Island Airport System Plan Update, 2004

2.1.4 Summary of Growth Rates and Preferred Methodology

In review of the socioeconomic data, forecasted trends in the GA industry, and regional and local FAA forecasts, minimal growth is anticipated for the State of Rhode Island in employment, population, and GA activities on a local and regional level. The minimal forecasted growth is contrary to the growth forecasted for GA aircraft registration and deliveries throughout the United States. The growing demand for fixed wing turbine and multi-engine piston powered aircraft for use in business, corporate and recreational use is directly attributed to the health of the U.S. economy. This disparity may be linked to the fact that the growth in GA has not yet been seen in Rhode Island, and can be somewhat accounted for in the waiting list for aircraft space at the Airport.

As previously discussed, the key factors for developing a GA forecast include understanding the trends associated with an airport's based aircraft and local/itinerant operations. Limitations based on the accuracy of the operational data prevent the use regression analysis type forecasting methodologies. In addition, market share forecasts were not completed as a result of limited data and the lack of forecasts for the surrounding airports.

In consultation with RIAC, it was determined that the preferred forecasting methodology would be based on a trend analysis of based aircraft and operations, expert judgment in satisfying latent demand, an extensive evaluation of key factors that influence aviation activity at UUU, including existing airport conditions and services, and peak period aircraft operations.

The annual activity forecasts at UUU were derived from (1) the number of based aircraft, (2) an evaluation of the average number of operations per based aircraft, and (3) input from Airport users and RIAC staff.

2.2 Demand Factors

Future airport demand is driven by many factors, including the local and regional economy, competing airports, and new and emerging technologies. For the purposes of this Study, analyses of the following were performed to gain insight into the demand factors affecting UUU:

- Based aircraft owner survey;
- Review of business and military use of UUU; and
- Other outside influences.

2.2.1 Based Aircraft Owner Survey

An airport user survey was developed to identify user needs and concerns with respect to UUU's facilities. A copy of the survey can be found in Appendix F. The surveys were sent to based aircraft owners and airport business owners at UUU. A return rate of 51.6% was realized, based on 31 surveys sent and 16 returned. Of the surveys returned, 19% reported that they utilize their aircraft for business purposes, 50% for pleasure, and 31% utilized their aircraft for both business and pleasure flight activity.

The respondents were asked to identify any limitations at UUU and were allowed to identify multiple limitations in their survey response. The following table provides the top 5 limitations identified through the survey.

Table 2.10
Airport Survey Results: Airport Limitations

Limitation	Percent Response
Lack of Hangar Space	81%
Lack of Instrument Approaches	31%
Runway Length	25%
Poor Airside Pavement Conditions	25%
Unimproved Facilities	13%

As indicated in the inventory chapter, there is approximately 20 aircraft on a waiting list for either tie-down or hangar space at UUU. The survey results help to confirm there is insufficient aircraft parking space at UUU. Additional comments regarding limitations at the airport included the lack of an air traffic control tower and the location of the self-fueling station.

In addition to the limitations at UUU, respondents were asked to identify what they liked about the airport. Three areas were identified by respondents and are identified in Table 2.11:

Table 2.11
Airport Survey Results: Airport Positives

Positive	Percent Response
Airport Location	69%
Airport/Landmark Aviation Staff	56%
On-Site Maintenance Facility	25%

2.2.2 Business and Military Use Review

To determine the extent to which businesses and the military use the airport, discussions were held with Landmark staff. These discussions revealed that UUU has only occasional use by the military through touch-and-go operations by helicopter aircraft approximately 4-5 times per year. In addition, it was noted that the National Guard facility located on the Airport does not utilize UUU for aircraft operational activities.

Discussions were also held to determine the extent to which businesses (both local and non-local) utilize the airport. Airport staff reported that the only local business with an aircraft based at the airport was a local yacht company, and in terms of non-local business usage, there was a single air charter service out of Westerly State Airport that currently flies into UUU. Existing businesses at UUU plan on continuing their operations in the planning period.

A limited number of major businesses in the area were contacted to determine how they use UUU, and how that might change in the future. The sampling of businesses included in this survey consisted of businesses in the tourist, maritime, and real estate markets. Additionally, the Newport County Chamber of Commerce, Naval War College, and Raytheon/21st Century Systems were contacted. The sole respondent to the survey, Raytheon/21st Century Systems, stated that their aviation needs consisted solely of commercial service via T.F. Green Airport, and it was not anticipated that this need would change. Several additional attempts were made to other area businesses, but no responses were received by the Project Team.

Currently, there are no pending proposals regarding military or business use of UUU that would change its role from a general aviation airport that services mainly recreational and personal type users that will change during the forecast period.

2.2.3 Other Outside Influences

New aircraft technology can profoundly impact aviation operations. The new aircraft technology that is of greatest interest with regard to the UUU AMP is the introduction of the microjet. These new aircraft are currently being developed by several manufacturers and are small, relatively inexpensive to own and operate, and are designed to operate at airports with capabilities less than typical air carrier airports. One of these microjets is the Eclipse Aviation 500 Jet, shown below. This six-passenger aircraft uses state-of-the-art technology in its manufacture to provide enhanced performance and reduced operational costs when compared with conventional corporate jets.

Photo courtesy of Eclipse Aviation.

Microjets are still in their infancy. Of all the microjets currently in development, the Eclipse 500 is the first microjet certified by the FAA. It is anticipated that actual production of the Eclipse will begin in 2007, with initial deliveries later in the year and 2008. In some cases, these airplanes will replace older business jets of similar capacity, and in other cases, the microjets may replace older turboprop aircraft. While less expensive than other jets (assuming the current cost estimate is maintained), the close to $1 million price tag will generally limit potential owners to those who already fly jets or turboprops. Charter operators may use the airplane, but again this will generally be to replace the existing fleet.

2.3 Activity Forecasts

Activity forecasts of the master plan represent a range of annual aviation activity that UUU may experience through 2026. The forecasted activity levels are presented in five, ten and twenty year periods.

Operational forecasting provides the basis for evaluating the type of facilities needed to meet demand. By comparing the existing facilities at the airport with the facilities needed to meet future demand, timely and cost effective improvements can be planned. FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), dated December 4, 2000, says forecasts should be:

- Realistic;
- Based on the latest available data;
- Reflect the current conditions at the airport;
- Supported by information in the study; and
- Provide an adequate justification for the airport planning and development.

The forecasts presented in this section reflect an analysis conducted on historical and forecasted data representative of both the airport and various regional, state and local indicators. An analysis was conducted to determine the number of based aircraft, based aircraft type, the average number of operations per based aircraft, and determine the airport's total operations by type of operation (itinerant, local, military and air taxi). As previously indicated, a degree of uncertainty exists amongst the historical data and therefore certain forecasting techniques would prove to yield unrealistic figures. In lieu of the historical data deficiencies, a level of confidence can be placed on the specific historical data that was compiled by RIAC dating back to 1997. It is for these reasons that the forecast for UUU will be derived from historical data dating back to 1997 and considers other outside influences.

2.3.1 Historical Activity Review

Reviewing historical figures and examining the outside influences to an airport's forecast is critical to its validity. Certain trends, correlations and growth figures were obtained and applied to developing the forecast. In UUU's case, historical data such as based aircraft, total operations, population and employment figures, the U.S. economic outlook, the TAF for the State of Rhode Island, the GAMA forecast, and the current RISASP were examined. In review, the following are the average annual growth rates for the forecasted period:

- FAA TAF State of Rhode Island – GA Operations 0.1%
- Population 0.3%
- FAA TAF State of Rhode Island – All Operations..............0.7%
- Employment 0.8%
- Rhode Island State Airport System Plan 1.3%
- U.S. Economy 3.7%
- General Aviation Manufactures Associations......................5.6%

Historical UUU activities are reflected in **Tables 2.12.**

Table 2.12
Annual Historical Aircraft Operations, Based Aircraft, & Operations per Based Aircraft

Year	Total Operations	% Growth	Based Aircraft	% Growth	Ops Per Based Aircraft
1997	11,366	-	20	-	568
1998	13,533	19.1%	24	20.0%	564
1999	11,911	-12.0%	26	8.3%	458
2000	13,552	13.8%	26	0.0%	521
2001	12,485	-7.9%	27	3.8%	462
2002	16,155	29.4%	26	-3.7%	621
2003	18,582	15.0%	34	30.8%	547
2004	19,243	3.6%	34	0.0%	566
2005	18,813	-2.2%	40	17.6%	470
2006	21,461	14.1%	40	0.0%	537
Average Annual Growth:		8.9%		10%	

Sources: RIAC, Landmark Aviation and FAA Form 5010-1 Airport Master Records

2.3.2 Forecasting Scenarios

In developing the forecast for UUU, three different forecasting scenarios were developed. These scenarios present the airport's total based aircraft and total airport operations over the forecasting period (2011, 2016 and 2026). It should be noted that the realistic period is the short range period (2011). After that period the forecast should be reassessed to track against the medium and long rang projections. **It is important to note that development at UUU only occurs if the projection is realized and not because it is the forecasted year.**

Each forecasting scenario represents a different level of growth depicting a baseline, high, and a medium growth forecast. Each of the three scenarios indicates potential strategies for UUU to address the based aircraft waitlist estimated to exceed 20 aircraft. Once a preferred scenario is chosen, further analysis will be conducted to indicate the scenario's type of based aircraft to include single-or multi-engine, helicopters, and total operations will be further analyzed to include local, itinerant, military and air taxi. This will allow the master plan to develop facility requirements that properly addresses the forecasted growth.

- Forecast Scenario One – Baseline
  This scenario utilizes a judgment growth rate of 1.5% annually.

- Forecast Scenario Two – High Growth
  This scenario utilizes the trend analysis growth rates for based aircraft and operations of 3.97% and 3.63% respectively.

- Forecast Scenario Three – Medium Growth
  This scenario utilizes expert judgment and applies a "middle of the road" growth scenario from scenario one and two for based aircraft and operations of 2.47% and 2.13% respectively.

2.3.2.1 Forecast Scenario One - Baseline

Scenario One, represents the UUU baseline forecast. It continues growth without addressing the airport's based aircraft waitlist. The judgment was made that given UUU surpassing the RI/ASP 1.3% annual growth rate that a 1.5% average annual growth rate was a conservative estimate. It is indicative of the UUU total operational growth as compared to other forecasted growth rates in the region's employment, population and airport activity. It also includes consideration of the ten year average annual growth rate of 8.9% for operations and 10.0% for based aircraft. Therefore in this forecasting scenario, total operations and based aircraft were forecasted utilizing the average annual growth rate of 1.5%. Table 2.13 indicates that by not addressing the based aircraft waitlist and growth continues on the same rate, UUU is projected to reach 53 based aircraft and a total of 28,905 total operations by 2026.

Table 2.13
Forecasting Scenario One: Baseline

	Historical	Forecast		
Year:	2006	2011	2016	2026
Total Based Aircraft:	40	43	46	53
Total Airport Operations:	21,461	23,120	24,906	28,905

2.3.2.2 Forecast Scenario Two – High Growth

Scenario Two represents the high growth forecast. It addresses a significant amount of the based aircraft waitlist. This forecasting scenario indicates UUU is projected to reach 87 based aircraft and 43,703 total operations by 2026. In this forecast, trending was applied to both the UUU total local and itinerant operations, and based aircraft utilizing the "least squares" method, a trend analysis technique. The least squares method creates a predictive model and forecasts data in a linear trend to minimize error and yields a high degree of accuracy. Subsequent operational totals were derived based upon further calculations and the UUU historical operational averages. The average annual growth rate in this forecasting scenario was calculated at 3.63% for total operations and based aircraft grew at an average annual rate of 3.97%. Table 2.14 indicates the forecasted figures for this particular scenario.

Table 2.14
Forecasting Scenario Two: High Growth

Year:	Historical 2006	Forecast 2011	2016	2026
Based Aircraft:	40	52	63	87
Total Airport Operations:	21,461	27,126	32,431	43,703

2.3.2.3 Forecast Scenario Three – Medium Growth

Scenario Three is considered to be a medium growth forecast. It addresses a portion of the UUU based aircraft waitlist. This forecasting scenario was developed by taking the average annual growth rates for total operations and based aircraft from the baseline and high growth forecasting scenario's and developing average annual growth rates for total operations and based aircraft that were indicative of a medium growth scenario. Average annual growth rates for based aircraft and total operations were calculated at 2.47% and 2.13% respectively. This forecast scenario indicates that UUU is projected to reach 65 based aircraft and 32,713 total operations by 2026 as indicated in **Table 2.15.**

Table 2.15
Forecasting Scenario Three: Medium Growth

Year:	Historical 2006	Forecast 2011	2016	2026
Based Aircraft:	40	45	51	65
Total Airport Operations:	21,461	23,846	29,441	32,713

2.2.4 Based Aircraft and Operations Forecast Summary

Table 2.16 summarizes the three forecasting scenarios presented above.

Table 2.16
UUU Forecast Summary

Scenario		Historical 2006	Growth Rate	Forecast 2011	2016	2026
One - Baseline	Based Aircraft	40	1.50%	43	46	53
	Aircraft Operations	21,461	1.50%	23,120	24,906	28,905
Two - High	Based Aircraft		3.97%	52	63	87
	Aircraft Operations		3.63%	27,126	32,431	43,703
Three - Medium	Based Aircraft		2.47%	45	51	65
	Aircraft Operations		2.13%	23,846	29,441	32,713

2.3.4 Fleet Mix Forecast

The fleet mix of based aircraft was inventoried in the baseline conditions section of this master plan study. There is no indication that the fleet mix for Newport State Airport will change in the forecasting period. Table 2.17 shows the historical fleet mix from 2006 and applies these percentages to each of the forecast scenarios developed above.

Table 2.17
Based Aircraft Fleet Mix Forecast

Aircraft Type	5-Year Avg. Historical Fleet Mix	Scenario One - Baseline			Scenario Two - High			Scenario Three - Medium		
		2011	2016	2026	2011	2016	2026	2011	2016	2026
Single-Piston	80%	35	37	36	42	51	70	36	41	53
Multi-Piston	15%	6	7	7	8	9	13	7	8	10
Helicopter	5%	2	2	2	2	3	4	2	2	2
Total	100%	43	46	45	52	63	87	45	51	65

2.3.5 Peak Period Activity Levels

The peak period calculations are used to determine the capacity of the airport and its ability to handle that capacity. The peak period operations for Newport State Airport are derived for the peak month and the average day within the peak month. The busiest month, as is the case with most general aviation airports in the northeast, was identified as August. As can be seen in Table 2.18, the month of August, on average, yields 14% of the average annual operations at UUU. This is a typical scenario, given that many GA airports' operational activity is up during the summer months.

Table 2.18
10-Year Monthly Aircraft Operations at UUU

Month	10-Year Monthly Total	10-Year Percent Operations
January	6,777	4.47%
February	8,606	5.67%
March	8,472	5.58%
April	11,138	7.34%
May	13,389	8.83%
June	16,100	10.61%
July	19,463	12.83%
August	21,669	14.28%
September	16,707	11.01%
October	12,103	7.98%
November	9,836	6.48%
December	7,445	4.91%

Sources: Rhode Island Airport Corporation, Landmark Aviation and The Louis Berger Group, Inc.

The peak day is calculated by dividing the peak month's operations by the number of days within that month. Since August has been determined to be the peak month, the total operations for the month are divided by 31 days. Based on the 10-year average number of operations for August (2,167) the historical peak day is calculated to be 70 operations.

2.4 Airport Role

The Airport role for UUU is based on the type of aircraft using the facility and the aviation activity it services. In part it is also dependent by the role defined by in the RI/ASP. These factors are considered before the airport role is defined in the FAA National Plan of Integrated Airport System (NPIAS). Not to be discounted is the location of UUU on Aquidneck Island. It serves an important emergency relief role. UUU serves as a point of ingress and egress to the Island via air for necessary medical and life safety supply services.

2.4.1 Airport Classification

The FAA established the NPIAS as a result of the Airport and Airways Improvement Act of 1982. The plan identifies 3,431 airports that are significant to national air transportation, and therefore, eligible to receive grants under the FAA Airport Improvement Program (AIP). It is a assessment report to Congress on the airport system and the needs of eligible infrastructure development.

Within the NPIAS, airports are classified by their type of service, such as general aviation, commercial, and primary service. The NPIAS also defines each airport's role, that is, the routes and markets served by the facility Since Newport Airport has no regularly scheduled air service, the NPIAS only reports based aircraft numbers. The 2007-2011 NPIAS classifies UUU as a "General Aviation" airport. This is also consistent with the role assigned in the Rhode Island Airport System Plan, December 2004.

2.4.2 Services

The FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, recommends the applicable design parameters critical for airports to consider during the master planning process. It is based on an airport's classification and design aircraft, which in turn is related to current and future demand. Services and design features to be considered include the runway, taxiway, apron, service facilities and life safety systems of the airport.

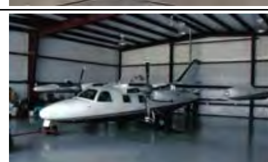
For the purposes of this study, service and life safety support facilities are defined as the terminal and hangar facilities, fuel farm, maintenance storage facilities, aircraft parking, and the emergency electrical vault.

2.4.3 Design Aircraft

As stated in Section 1, the Airport Reference Code (ARC) is related to the operational and physical characteristics of the aircraft operating at the field. Defining the ARC is a critical step in any airport master plan update because it drives the airfield requirements. The ARC influences the FAA design criteria for the design of runways, taxiways, aprons, aprons, and servicing facilities. They in turn will help define the constraints that may evolve during airport alternatives analysis that is conducted in the subsequent chapter of the AMP report.

In previous studies UUU has been identified as serving aircraft from Approach Category B and Design Group II (B-II). Based on discussions with Landmark Aviation, who operates the airport, the existing fleet reflects the aircraft that primarily utilizes the airport and it is their opinion that it will not change over the planning period. Table 2.19 identifies typical based and transient aircraft that use UUU and their associated ARC.

Table 2.19
Based and Transient Aircraft Types & ARC's

Aircraft Type	Example	ARC	Based/Transient
Cessna 172		A-I	Based/Transient
Piper Cherokee		A-I	Based/Transient
Beech Bonanza		A-I	Based/Transient
Beechcraft Baron		B-I	Based/Transient
Piper Navajo		B-I	Based/Transient
Mitsubishi Diamond		B-I	Transient
Beechcraft King Air		B-II	Transient
Piper Aztec		B-II	Transient
Cessna Caravan		B-II	Transient

The forecast analysis conducted in this chapter of the UUU airport master plan reaffirms the conclusion arrived at during the recent RI Airport System Plan dated December 2004 and the consensus of operators at the airport. We therefore conclude that the family of aircraft anticipated to be served by UUU during the forecast period is Approach Category B and Design Group II[2] or an ARC designation of B-II.

This means that the airport is designed to serve aircraft that have an approach speed of 91 knots or more, but less than 121 knots, and a wingspan of 49 feet or more, but less than 79 feet. Representative aircraft in this category can include anything from the Beech King Air C-90 to the Cessna 441 Conquest. Table 2.19 above identifies some of these aircraft.

The facility requirements section of this study will review the adequacies of the airport in serving B-II type aircraft.

[2] See FAA Advisory Circular 150/5300-13 Appendix 9 and 13

2.5 Summary of Recommended Forecast and Design Role

The recommended forecast is Scenario 2 – High Growth. This was agreed to after discussion between FAA, RIAC and LBG. It also considered the input from AAC at Meeting No. 3. It was chosen as a result of the existing waiting list for based aircraft space at UUU. In addition, by using the high growth scenario, the facility requirements and alternatives analysis completed later in this study, will provide a full build out for the planning period. As a reminder, expanded facilities will only be implemented when the demand exists.

The following **Table 2.20** is a summary of the recommended forecasts to be utilized as part of the next Chapter Facility Requirements.

Table 2.20
Summary of Recommended Forecasts

Forecast	2006	2011	2016	2026
Annual Operations	21,461	27,126	32,431	43,703
Local	17,169	21,701	25,945	34,962
Itinerant	4,292	5,425	6,486	8,741
Based Aircraft	40	52	63	87
Single-Engine	32	42	51	70
Multi-Engine	6	8	9	13
Helicopter	2	2	3	4

We also concluded that the family of aircraft anticipated to be served by UUU during the forecast period is Approach Category B and Design Group II[3] or an ARC designation of B-II

[3] See FAA Advisory Circular 150/5300-13 Appendix 9 and 13

Chapter 3.0 – Airport Facility Requirements

Determining airport facility requirements is the next essential step in the airport master planning process[1]. The purpose of this chapter, "*Airport Facility Requirements"* is to determine the needs of the airport based on the demand identified in *Chapter 2 – Airport Role and Forecasts*.

To the reader the title implies that these are the facilities "required" to maintain a viable and safe airport. It is true that in ideal world providing for the requirements to meet the projected demand is a reasonable expectation. On the other hand, the physical and/or financial resources available may not allow an airport to fully develop under the circumstances. Nonetheless, before the planning can take place to achieve what is "doable" it is important to understand the ultimate facility requirements scenario. To this end the *Facility Requirements* chapter compares the forecasts, to the latest airport industry standards and FAA design guidance[2]. The end result is a list of facility needs.

The assessment of facility requirements includes such major components as:

- Airfield pavement improvements (runway, taxiway and apron)
- Building improvements (terminal, hangar and maintenance)
- Support Equipment improvement (ARFF and snow removal trucks)
- Navigational equipment and lighting improvements
- Access improvements

Airport facility improvements are justified for several reasons:

- To meet the existing or forecasted demand of the facility. The term "demand" can refer to the level of activity (e.g. based aircraft) and type of activity (e.g. general aviation).
- To meet FAA design standards or criteria, including new or recently modified standards. Most relate to enhancing airport safety.
- To insure a well maintained facility.
- To enhance operational efficiency.

This Chapter determines what is required to potentially upgrade, expand, extend, abandon and/or otherwise modify existing facilities. The results of the analysis in this chapter produce the facility requirements which are an integral part of the subsequent evaluation in Chapter 4 – *Alternative Analysis*.

In summary this Chapter introduces a list of needs but it does not produce a plan.

[1] Reference: FAA Advisory Circular 150-5070-6B *Airport Master Plans,* July 29, 2005
[2] Reference: FAA Advisory Circular 150-5300-13C *Airport Design, March 2007*

3.1 Airport Runway and Taxiway System Analysis

In this section, the requirements of the airport runway and taxiway system are analyzed for their ability to meet the needs of users. The main objective is to provide a runway and taxiway system that meets FAA standards, and provides for a safe and efficient airfield. As is the case throughout this segment of the master plan process, facility requirements must be analyzed in detail before they are recommended as airport improvements on the approve Airport Layout Plan (ALP).

3.1.1 Airport Design Aircraft

To reiterate the definition of the Airport Reference Code (ARC); it is a FAA coding system used to relate airport design criteria to the operational and physical characteristics of the aircraft currently using or projected to use the airport. The critical aircraft is that aircraft with the most demanding (i.e. largest) critical dimensions and highest approach speed that consistently (at least 500 operations per year) uses the airport. Examples of aircraft that typically operate at Newport State Airport (UUU) and their ARC were identified in Chapter 2. UUU has an ARC of B-II.

The FAA airport design standards for a B-II category will be applied throughout this facility requirements section. These standards will be compared to the existing infrastructure (runways, taxiways, aircraft parking aprons and approach configurations) to determine where improvements need to be made.

3.1.2 Airport Design Standards

Airport design standards are used to properly size and locate airport facilities. There are three types of standards: Dimensional (e.g. required width and length of runways and taxiways); Clearance (e.g. required clearances between runways, taxiways, and other facilities); and operational (described below). These standards are identified and defined in FAA AC 150/5300-13, *Airport Design*.

3.1.3 Operational Safety Standards

The airport must provide a safe operating environment for aircraft. The FAA AC 150/5300-13, *Airport Design* establishes protection areas around the runways to help ensure such an environment. These areas are:

- Runway Safety Areas (RSA) – The RSA is a prepared surface that surrounds the runway (and extends a specified distance beyond it) that is clear of obstructions. Keeping the RSA clear helps minimize damage to aircraft in the event of an accident.
- Runway Protection Zone (RPZ) – The RPZ is a trapezoidal area located off each runway end. The RPZ should be clear of obstructions to the greatest extent possible, to enhance the protection of people and property on the ground and provide a clear approach surface.
- Object Free Area (OFA) – A ground area surrounding runways, taxiways and taxilanes which is clear of objects except for those whose location is required by function.
- Runway Visual Zone (RVZ) – The RVZ is an area maintained free and clear of obstructions for the purposes of providing an unobstructed view of aircraft arriving to/from the intersection of the two runways at UUU. This area is depicted on the Airport Layout Plan and the size is a function of the distance from the runway threshold to the intersection point of the two runways.

3.1.4 Airport Design Standards

The FAA's AC 150/5300-13, *Airport Design* defines the airfield dimensional standards associated with different aircraft classifications. Tables 1.1 and 1.2 summarize these standards for a B-II ARC. The dimensional and clearance standards for the airside areas are presented in Table 3.1. The operational safety standards are presented in Table 3.2.

Table 3.1
B-II Design Standards

Airfield Component		B-II Dimensions
	Runway Width	75'
Runway Centerline to:	Parallel Taxiway Centerline	240'
	Nearest Aircraft Parking Area	250'
	Taxiway Width	35'
Taxiway Centerline to:	Parallel Taxiway	105'
	Fixed or Movable Object	65.5'

Source: FAA AC 150/5300-13 Airport Design

Table 3.2
B-II Operational Safety Standards

Airfield Component		B-II Dimensions
Runway Safety Area (RSA)	Width	150'
	Length Beyond RY End	300'
Runway Protection Zone (RPZ)	Inner Width	500'
	Outer Width	700'
	Length	1,000'
Object Free Area	Width	500'
	Length Beyond RY End	300'

Source: FAA AC 150/5300-13 Airport Design

3.1.5 Airfield Capacity

The capacity analysis determines the potential of the airfield configuration to handle a determined capacity and if not the delays that arise from the absence of adequate capacity. It is defined in terms of "Annual Service Volume (ASV). The level of aircraft activity that can be accommodated at an airport is mainly a function of the runway configuration. The number, length, and orientation of the runways are important factors in determining an airport's operational capacity. The analysis of the runway and taxiway system at UUU was based upon methodologies in FAA AC 150/5060-5 *Airport Capacity and Delay* utilizing the results of the analysis conducted in the last master plan effort and the recently completed Rhode Island State Airport System Plan (RISASP).

Table 3.3 below identifies the Annual Service Volume (ASV) calculations conducted in the aforementioned studies.

Table 3.3
Previous ASV Calculations

Study	ASV Operations
1989 Airport Master Plan Study	200,000
2004 Rhode Island State Airport System Plan	200,000

Since the airport configuration has not changed since either of these studies was completed, this master plan effort will utilize the 200,000 ASV calculations. As a result of the projected demand for this master plan effort not exceeding 44,000 annual aircraft operations in the planning period, UUU demand to capacity ratio for the current and future is calculated in the following table.

Table 3.4
UUU Demand to Capacity Ratio

Year	Actual (2006) Forecasted (2026) Operations	ASV Operations	Demand to Capacity Ratio
2006	21,461	200,000	10.7%
2026	43,703	200,000	21.9%

The FAA utilizes a demand to capacity ratio of an airport's estimated ASV of approximately 60% to determine when an airport may experience operational delays. When an airport approaches this 60% target, plans should be conducted to increase an airport's capacity. As is shown in Table 1.4, UUU ratio is well below the 60% target throughout the planning period and airport capacity improvements such as new runways are not required. The taxiways that are under consideration are recommended to reduce the potential for runway incursions, although they may also improve capacity. The latter option will be a consideration in the facility requirements analysis.

3.1.6 Wind Coverage

FAA Advisory Circular (AC) 150/5300-13, *Airport Design*, states that an airport's runways should be oriented such that aircraft can take-off and land into the prevailing wind with minimal crosswind exposure.

The AC also states that a single runway, or a runway system, should provide 95% wind coverage. Thus, the goal is to achieve 95% coverage or better.

Wind coverage is calculated using a wind rose, which graphically depicts wind data collected from the National Oceanographic and Atmospheric Administration (NOAA). The wind rose is essentially a compass rose with graduated concentric circles representing wind speed. Each box in the wind rose represents a compass direction and, when filled, indicates the percentage of time wind travels in that direction at that speed.

Since prevailing wind patterns do not usually change, this master plan effort will utilize the existing wind data for UUU. The wind roses are computed based on the following three categories:

- Visual Flight Rules (VFR) – (ceiling 1,000' and visibility 3 miles)
- Instrument Flight Rules (IFR) – (ceiling less than 1,000' and visibility less than 3 miles)
- All Weather – VFR and IFR combined

Since aircraft characteristics and performance can vary, wind coverage data is presented for both 10 and 13 knots. The following tables present the percent of wind coverage for each runway and combined.

Table 3.5
10 Knot Wind Analysis – Percent Coverage

Runway Identifier	All Weather	VFR	IFR
04/22	89.7	89.6	92.5
16/34	86.8	88.3	76.0
Combined 04/22 and 16/34	98.4	98.4	97.7

Source: 1986 Master Plan and NOAA

Table 3.6
13 Knot Wind Analysis – Percent Coverage

Runway Identifier	All Weather	VFR	IFR
04/22	95.4	95.0	97.1
16/34	94.6	95.4	89.4
Combined 04/22 and 16/34	99.7	99.8	99.4

Source: 1986 Master Plan and NOAA

Based on this wind data, the current runway configuration at UUU provides enough wind coverage to meet the FAA guideline of 95% all weather wind coverage. For both runways at 10 knots there is 98.4% coverage, and for both runways at 13 knots there is 99.7% coverage. The VFR and IFR wind roses are depicted on the Airport Layout Plan.

3.1.7 Airfield Requirements

This section determines what improvements should be considered for the existing airfield system at UUU. The section first considered the appropriate runway length for UUU based on the existing and future role of the airport, runway and taxiway standard compliance, followed by an analysis of runway safety, protection and obstruction surfaces.

3.1.8 Runway Length Analysis

The runway length required is based on standards presented in FAA AC 150/5300-13, *Airport Design*, Chapter 3 and FAA AC 150/5325-4A, *Runway Length Requirements for Airport Design*. The recommended length for a primary runway at an airport is determined by considering either the family of airplanes having similar performance characteristics, or a specific aircraft requiring the longest runway. This need is based on the aircraft or family of aircraft that use the airport on a regular basis, where regular basis is typically defined as a minimum 500 itinerant operations per year. Additional factors considered include critical aircraft approach speed, its maximum certificated takeoff weight, useful load and length of haul, the airport's field elevation above sea level, the mean daily maximum temperature at the airfield, and typical runway surface conditions, such as wet and slippery.

The runway length analysis for UUU was performed using FAA Airport Design Computer Program 4.2D and procedures outlined in FAA AC 150/5300-13. The program includes an aircraft fleet profile designed to be representative of the small and large aircraft that comprise the general aviation aircraft fleet in the United States.

For UUU the program identified a recommended maximum runway length for the major aircraft (i.e., 100% of the aircraft fleet) as follows:

- 3,570 feet for small aircraft (less than 10 passenger seats)
- 4,120 feet for small aircraft (10 or more passenger seats).
- 5,330 feet will accommodate 100 percent of large aircraft (60,000 pounds or less) at 60 percent useful load. There are occasions however, when the payload of a specific aircraft may be higher than 60 percent, and may even approach the maximum practical payload of 90 percent.

The term *useful load* for this planning purpose refers to the difference between the maximum allowable structural gross weight and the operating empty weight of the aircraft in question. FAA guidelines require the selection of 60 percent or 90 percent useful load to be based on the length of haul and service needs of the critical design aircrafts, and note that the 60 percent useful load table is to be used for those airplanes operating with no more than a 60 percent useful load factor. This planning effort assumed that most aircraft will be operating at or near the 60 percent useful load factor.

Table 3.7 defines the runway length requirements developed using the FAA program and reflects runway lengths for small airplanes and large airplanes (with both 60 percent and 90 percent useful loads).

Using the "Airport Input Data" noted in Table 3.7 the runway length requirements produced by the FAA computer program, shows that the existing 2,999 feet length of the primary Runway 4-22 was adequate to accommodate up to 95% of the small aircraft fleet.

Table 3.7
Aircraft Runway Length Requirements

Airport Input Data	
Airport Elevation (MSL)	172 feet
Mean daily temperature of the hottest month	80.0 F degrees
Maximum difference in runway centerline elevation	24 feet
Length of haul for airplanes of more than 60,000 pounds	500 miles
Runway Length Recommended for Airport Design	
Small airplanes with less than 10 passenger seats:	
75% of these small airplanes	2,460 feet
95% of these small airplanes	**3,000 feet**
100% of these small airplanes	3,570 feet
Small airplanes with 10 or more passenger seats	4,120 feet
Large airplanes of 60,000 pounds or less:	
75% of these large airplanes at 60 percent useful load	4,840 feet
75% of these large airplanes at 90 percent useful load	6,270 feet
100% of these large airplanes at 60 percent useful load	5,330 feet
100% of these large airplanes at 90 percent useful load	7,760 feet
Airplanes of more than 60,000 pounds	5,070 feet

Source: FAA Airport Design Computer Program 4.2D.

As a result of the above findings, the runway length calculation from the FAA program for small aircraft was checked against the runway requirements for the Airport's family of critical aircraft (ARC B-II), as defined in Chapter 2, to determine if special circumstances would require additional runway length. The critical families of aircraft for runway length are piston aircraft including the Cessna 172 and Piper Navajo to the turboprop class including the Beech King Air. As discussed in Chapter 2, new small jet aircraft (i.e., micro-jet) are currently being developed by several manufacturers and are designed to operate at airports with capabilities less than typical air carrier airports. The Eclipse 500 micro jet will be used as a representative of this new type of aircraft for this runway length analysis.

Table 3.8
Runway Length Requirements – UUU Representative Aircraft

Aircraft	Approximate Runway Required[1]
Cessna 172Q Cutlass	1,690 feet
Piper PA-31-300 Navajo	1,950 feet
Piper PA-23 F Turbo Aztec	1,980 feet
Beechcraft 58 Baron	2,101 feet
Raytheon King Air C-90	2,261 feet
Eclipse 500 Micro Jet	2,342 feet
Cessna Caravan 208B	2,840 feet
[1] Runway length assumes clearing a 50 foot obstacle in standard weather conditions.	

Source: Manufacturer Data and
Rising Up Aviation Performance Database www.risingup.com/planespecs/

As Table 3.8 indicates all representative aircraft operating under standard conditions (sea level, 59.0°F, and barometric pressure of 29.92) can operate in and out of UUU with the current runway length. Poor weather and hotter temperatures will increase the runway length required and keep some of these aircraft from operating at the airport during these conditions.

In addition, the 2004 RI/ASP study completed a primary runway length objective analysis stating a runway length objective for UUU of 3,500 to 5,000 feet. Based on all of the facility requirements analysis, the alternatives analysis should consider the feasibility of lengthening Runway 4/22 to 3,570 feet to serve 100 percent of the small aircraft fleet. This will accommodate 100% of the small airplanes identified in FAA's program and shown in Table 3.7, and provide existing aircraft additional length on poor weather and hot days. The analysis should take into account that any lengthening would only accommodate a small amount of users. As a reminder of our introductory remarks to this chapter, this is an assessment of ideal needs not a plan of improvements. The alternative analysis needs to consider all the factors that would introduce the feasibility of such a plan and then make a recommendation to fully extend, partially extend or not extend.

The secondary, or crosswind, runway is intended to complement a primary runway where less than the recommended 95 percent wind coverage is provided for the airplanes forecast to use the airport on a regular basis. Based on the wind analysis for UUU, the existing secondary Runway 16-34 provides for the small aircraft that routinely operate at the Airport. The B-II category classification for the primary runway also applies to the crosswind runway. Based on FAA's guideline that a cross-wind runway length should be at least 80% of the primary runway, a minimum length of 2,460 feet should be provided. Runway 16/34 is currently 2,623 feet and meets the crosswind runway requirements.

3.1.9 Runway / Taxiway Width and Separation Standards

The Airport was designated a B-II in prior planning so much of the infrastructure has been designed and constructed to meet B-II standards. The existing runway and taxiway infrastructure and separation requirements meet or exceed the required standards. Future pavement rehabilitation projects and/or new construction will be built to the required standards.

Table 3.9
UUU Runway Design Standard Compliance

Airfield Component	B-II Dimensional Standards	Existing Condition	Meets Standard
Runway Width - 16/34 - 04/22	 75' 75'	 75' 75'	 Yes Yes
Runway Centerline to: - 04/22 to Taxiway A - 04/22 to Taxiway C - 16/34 to Aircraft Parking Apron	 240' 240' 250'	 250' 250' 250'	 Yes Yes Yes
Taxiway Width - Taxiway A - Taxiway B - Taxiway C	 35' 35' 35'	 40' 40' 40'	 Yes Yes Yes

Source: FAA AC 150/5300-13 Airport Design and Consultant Calculations

3.1.10 Runway / Taxiway Pavement Conditions

Table 3.10
UUU Runway / Taxiway Pavement Condition

Airfield Component	Rehabilitated	Comments
Runway 4/22	1990	Good Condition except for intersection of runways[3]
Runway 16/34	NA	Fair Condition – Frost Heaves on R/W 16 winter 2006
Runway Intersection	NA	Fair Condition – When rebuilding consideration must be given to minimize the airport closure time.
Taxiway A	2000	Good Condition – Consider realignment
Taxiway B	NA	Good Condition
Taxiway C	2007	Good Condition (Project under construction)

Additional Taxiway Needs – Runway 16/34 does not have a parallel taxiway. It is recommended that the alternatives analysis look at providing a full length parallel taxiway to Runway 16/34 and a stub taxiway to the aircraft parking apron. The primary objective of the additional taxiway is to reduce the amount of time aircraft "back taxiing" on the runway. The result is to reduce the potential for runway incursions and improve airport safety.

[3] Based on joint FAA and RIAC inspection July 2006

3.1.11 Runway Safety Areas (RSA)

The RSA is a prepared surface that is clear of obstructions, structures, roads, and parking areas. FAA equipment, if required by function is permitted on frangible mounts. All the RSA except for Runway 4 at UUU meet the 150 feet wide by 300 feet beyond the runway end standard required by the FAA.

Based on reports from Landmark, it has been observed that the Runway 4 RSA has a drainage issue. The concern is the water does not perk into the ground, thereby leaving standing water in the RSA. The concerns are:

- Standing water is a wildlife attractant in the runway approach path
- FAA access to maintain the Localizer equipment is restricted
- It does not meet the requirements of a properly graded RSA

The alternatives analysis will look at grading and drainage improvements necessary to eliminate the standing water in the Runway 4 RSA.

3.1.12 Object Free Area (OFA)

The Object Free Area (OFA) should be clear of objects except for whose location is required by function. The OFA for both runways is 500 feet wide and centered along runway the centerline. The OFA also extends 300 feet beyond the runway end. The OFA at UUU is free of objects and therefore meets FAA standards. The impact of any changes to the OFA as a result of airfield improvements will be considered in the alternatives analysis.

3.1.13 Runway Protection Zones (RPZ)

The RPZ should be clear of obstructions to the greatest extent possible, to enhance the approaches to runways as well as protect the people and property on the ground. The FAA Grant Assurances requires that the airport sponsor do all that is feasible and prudent to maintain a clear RPZ by purchasing the property or by acquiring avigation easements.

Runway 04 RPZ – This RPZ extends just to the south of the existing airport property line and includes approximately 10 residential homes within the RPZ.

Runway 22 RPZ – The Runway 22 RPZ is wholly contained within the existing airport property. This RPZ extends across Oliphant Lane and a tree obstruction removal project was completed in 2006.

Runway 16 RPZ – Except for a small northern portion of this RPZ, it is wholly contained within the existing airport property. The northwestern corner of the RPZ contains a commercial building and property.

Runway 34 RPZ – The Runway 34 RPZ is about 50 percent on airport property, with the remaining 50 percent over farmland to the southeast.

The alternatives analysis will consider the practicality of making improvement to the RPZ to meet the FAA requirements.

3.1.14 Part 77 Surfaces

The Part 77 surfaces are an integral part of maintaining a clear RPZ. An updated study is being completed by the Stantec Consulting Co. In addition to providing more current data on the obstruction conditions it will provide a report of recommendations to FAA asking them to make an Aeronautical Determination on the RIAC recommendations. The final documents will be incorporated in the AMP when they are complete. The report recommendations will be very cognizant of the neighborhood concerns that were expressed to RIAC during the last tree clearing program in 2005.

3.1.15 NAVAID, Visual Aids, and Instrument Approaches

A NAVAID is a communication or electronic facility providing either enroute information or approach guidance information to the airport during both good and poor weather conditions. As the name implies a visual aids provide a pilot with visual guidance to and from the airport. In conjunction with each other they provide the approach procedure defined by FAA in procedure charts. The NAVAID and Visual Aid equipment at UUU were discussed in Chapter 1 as a part of the inventory analysis. Instrument approaches are discussed to determine if any improvements can be made, such as a precision approach, lowering minimums, etc. These facilities are typically, but not always, constructed and maintained by FAA. To qualify for these facilities FAA has established standards.

3.1.15.1 NAVAID and Visual Aid

The NAVAID equipment at UUU includes the Automated Surface Observation System (ASOS) and Localizer (LOC). Both of which are maintained by the FAA. Visual Aids include Visual Approach Slope Indicators (VASI) and Runway End Identifier Lights (REIL). Runways 4, 16, and 22 have VASI, while Runway 22 also has REIL. These visual aids should be assessed when improvements are made to the corresponding runway they are serving.

3.1.15.2 Instrument Approaches

The advent of technology has been one of the most important contributing factors to the growth of the aviation industry. Much of the available civil aviation and aerospace technology has been derived and enhanced from the initial development of technological improvements for military purposes. As a result, many technologies are available to assist an airport operator in increasing the aircraft arrival rate during poor weather conditions.

Instrument approaches are generally designed such that an aircraft, in poor weather conditions, by means of a radio, Global Position System (GPS), or an internal navigation system and with no assistance from air traffic control, can navigate to and land safely at an airport. Approach procedures are classified into various categories to include a precision approach, precision Approach Procedure with Vertical guidance (APV) and non-precision approaches. A precision approach is an instrument approach that provides the pilot with both lateral and vertical guidance information. An APV approach is an instrument approach that provides the pilot both course and vertical path guidance information, but does not conform to ILS system performance standards. A non-precision approach provides the pilot with course information only. By moving towards greater levels of precision and approach lighting an airport can improve the margin of safety for the pilot under adverse weather conditions.

Several types of precision instrument approach technologies are available to airports. They include systems such as an Instrument Landing System (ILS), Microwave Landing System (MLS), GPS (with vertical navigation via Wide Area Augmentation System (WAAS)/Local Area Augmentation System (LAAS)). APV approach technologies include the WAAS based Localizer Performance with Vertical Guidance (LPV), Lateral Navigation/Vertical Navigation (LNAV/VNAV) and Barometric Vertical Navigation (Baro-VNAV) approaches. Non-precision approach technologies include the VHF Omni-directional Radio Range (VOR), Non-Directional Beacon (NDB), Localizer (LOC), LDA Simplified Directional Facility (SDF) or Radio Navigation (RNAV). All of these types of technologies have allowed the Federal Aviation Administration (FAA) to design a variety of approach procedures to help ensure the safety of aircraft during various phases of flight and poor weather conditions.

FAA funding for a new navaid and approach procedure is based upon demonstrating the associated need, practicality, safety benefits, and expected aviation activity at the airport. In developing a new approach procedure, the FAA considers the accuracy of the navigational aid, penetrations to the Part 77/TERPS airspace surfaces, an airport's landing surface (runway length, lighting, markings, design criteria, etc.), and other factors as outlined in the FAA's Advisory Circular 150/5300-13, *Airport Design*. It is important to note that the FAA indicates a significant reduction in minima (i.e. ¼ mile reduction in visibility and/or 50 foot reduction in decision altitude or minimum descent altitude) would constitute a new approach procedure.

Table 3.11 identifies UUU's instrument approaches, as well as the visibility minimums required for each approach.

Table 3.11
UUU Instrument Approaches

Runway	Instrument Approach	Visibility Minimums
16	Non-Precision (VOR/DME or GPS)	Category A or B Aircraft: 1 mile Category C Aircraft: 1 ½ miles
22	Non-Precision (Localizer)	Category A or B Aircraft: 1 mile Category C Aircraft: 1 ½ miles

Source: RIAC and Landmark Aviation

GPS and other GPS augmented technology (WAAS/LAAS) can ultimately provide the airport with the capability of establishing new instrument approaches at minimal cost since there is not a requirement for the installation and maintenance of costly ground-based transmission equipment. To accommodate these type approaches, the airport landing surface must meet specific standards as outlined in FAA AC 150/5300-13, *Airport Design*. The FAA requires that the airport must have a minimum runway length of 3,200 feet, but states that airports having runways as short as 2,400 feet could support an instrument approach if the lowest HAT is based on clearing a 200-foot obstacle within the final approach segment. The following tables indicate the necessary HAT, runway length, runway markings, approach lighting, and design criteria required to implement a new instrument approach.

Table 3.12
Approach Procedure with Vertical Guidance – Approach Requirements

Visibility Minimums	<3/4-statute mile	<1-statute mile	1-statute mile	>1-statute mile
Height Above Touchdown	250	300	350	400
TERPS Paragraph 251	34:1 clear	20:1 clear	20:1 clear or penetrations lighted for night minimums (see AC 70/7460-1)	
Precision Object Free Zone	Required	Recommended		
Airport Layout Plan	Must be on approved ALP			
Minimum Runway Length	4,200 ft. paved	3,200 ft. paved	3,200 ft.	
Runway Marking	Non-precision		Non-precision	
Runway Edge Lights	HIRL/MIRL		MIRL/LIRL	
Parallel Taxiway	Required		Required	
Approach Lights	Required – ODALS/MALS,SSALS		Recommended	
Runway Design Standard	APV OFZ Required			

Source: Federal Aviation Administration, Advisory Circular 150/5300-13, Chg 10, Airport Design, 9/29/06.

Table 3.13
Non-Precision Approach Requirements

Visibility Minimums	<3/4-statute mile	<1-statute mile	1-statute mile	>1-statute mile	Circling
Height Above Touchdown	300	340	400	450	Varies
TERPS Paragraph 251	34:1 clear	20:1 clear	20:1 clear or penetrations lighted for night minimums (see AC 70/7460-1)		
Airport Layout Plan	Required				Recommended
Minimum Runway Length	4,200 ft. paved	3,200 ft. paved	3,200 ft.		
Runway Marking	Precision	Non-precision			Visual (Basic)
Runway Edge Lights	HIRL/MIRL		MIRL/LIRL		MIRL/LIRL (Required only for night minima)
Parallel Taxiway	Required		Recommended		
Approach Lights	MALSR, SSALR, or ALSF Required	Required – ODALS/MALS ,SSALS, SALS	Recommended – ODALS/MALS,SSALS, SALS		Not Required
Runway Design Standard	< ¾-statute mile approach visibility	≥ ¾-statute mile approach visibility minimums			Not Required

Source: Federal Aviation Administration, Advisory Circular 150/5300-13, Chg 10, Airport Design, 9/29/06.

Table 3.14
UUU Approach Requirement Comparison

	APV	Standard Non-Precision Approach	Runway 16	Runway 22
Height Above Touchdown	350	400	518	528
Minimum Runway Length	3,200 ft. paved (2,400 ft. potential)	3,200 ft. paved (2,400 ft. potential)	2,623 ft. paved	2,999 ft. paved
TERPS Paragraph 251	20:1 clear or penetrations lighted for night minimums (see AC 70/7460-1)		20:1 existing	20:1 existing
Parallel Taxiway	Required	Recommended	No Parallel	Existing Parallel
Airport Layout Plan	Required		Pending Master Plan Approval	
Runway Marking	Non-precision	Non-precision	Non-precision	Non-precision
Runway Edge Lights	MIRL/LIRL	MIRL/LIRL	MIRL	MIRL/REIL
Approach Lights	Required – ODALS/MALS, SSALS	Recommended – ODALS/MALS, SSALS, SALS	None	None
Runway Design Standard	OFZ Required	≥ ¾-statute mile approach visibility minimums	Criteria Satisfied	Criteria Satisfied

Note: Table compares 1-statute mile visibility minimums for APV, NPA and Runways 16 and 22.

The more precise an approach system is the smaller the area in which obstacles must be considered and usually lower operating minimums can be established. Essentially, lower operating minimums are achieved by increasing precision of the navigational system.

In order for UUU to establish new approach procedures to either Runways 16 or 22, and achieve a reduction to the existing minima, the airport must enable a reduction of the existing HAT on Runway 16 from 518 feet to 350 feet and Runway 22 from 528 feet to 350 feet respectively to keep the same visibility minimum (1-statute mile). This can be achieved through the removal of controlling obstacles or the installation of navigational aids that offer greater precision. The airport also needs to ensure an approach slope of 20:1, have a total runway length of 3,200 feet or determine that the lowest achievable HAT is based on clearing a 200-foot obstacle within the final approach segment, upgrade the approach lighting system and ensure all runway design standards are met as outlined in FAA AC 150/5300-13, *Airport Design*. If the lowest HAT achievable is the currently published procedure and if it is not likely to remove any new obstructions then it is improbable that UUU can realize a reduction in minima through a new approach procedure. It is unknown at this time what the achievable minima for the airport would be by satisfying the criteria depicted in Tables 3.12 and 3.13. To make that determination, UUU would need to do the following:

- Obtain an accurate obstruction survey of the appropriate FAR Part 77/TERPS surfaces;
- Coordinate with the FAA Flight Procedures Office;
- Conduct appropriate obstruction removal;
- Upgrade the appropriate runway to meet indicated design standards and approach lighting; and
- Publish the new instrument approach.

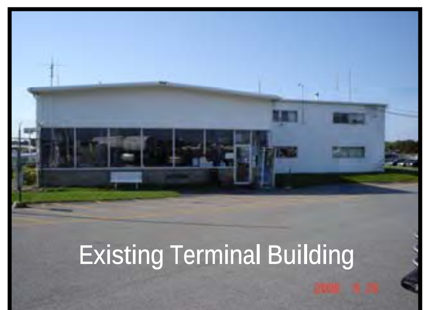
The final determination for the feasibility of implementing any new instrument approach procedure resides with the FAA Flight Procedures Office. The airport must coordinate with the FAA at the onset and the FAA will ultimately certify the new procedure.

3.2 General Aviation (GA) and Support Facilities Analysis

This analysis examines GA Support components such as; aircraft parking (apron), terminal/administrative, and hangar space. It will estimate the facility demand and compare it with existing facilities to determine future needs for:

- GA Terminal Building
- Apron and Hangar Space Requirements
- Fuel Storage Facilities
- Maintenance Equipment
- Airport Utilities

3.2.1 GA Terminal Building


Existing Terminal Building


Apron A


Apron B

The GA Terminal Building is attached to the north side of the conventional hangar. The terminal area encompasses approximately 3,500 square feet. This area houses Landmark Aviation and office space of all other businesses located at UUU. While the condition of the terminal facility was reported in fair to poor condition in the inventory section, there is no pressing demand to build a new terminal facility or increase the size of the facility in the near term. A new facility will be needed at some point later in the planning period. The space for potential development/redevelopment will be identified in the alternatives analysis.

The FAA has developed methods of estimating general aviation terminal requirements. The method, found in FAA A/C 150/5300-13, *Airport Design*, relates peak period activity to the size of functional areas within the building. Table 3.14 sets forth the recommended square footage requirements per pilot/passenger.

Table 3.14
General Aviation Terminal Building Area Requirements

Terminal Functional Areas	Area Per Peak Hour Pilot/Passenger
Waiting Lounge	15.0 sq. ft.
Management/Operations	3.0 sq. ft.
Public Conveniences	1.5 sq. ft.
Concession Area	5.0 sq. ft.
Circulation, Storage, HVAC	24.5 sq. ft.
Total	49.0 sq. ft.

Using the standards in the table above, the recommended terminal building size was determined and presented in Table 3.15. The peak hour was determined by taking the average of the peak month total, dividing it by 31 days, and using the generally accepted level of peak hour operations of 15% of the design day operations. The peak hour pilot/passengers were derived by assuming 1.5 passengers and pilots per peak period operation, which is a reasonable assumption for airports such as UUU.

Table 3.15
Recommended Terminal Building Area Requirements

Year	Peak Hour Operations	Peak Hour Pilot and Passengers	Terminal Building Area
2011	4	4	294 sq. ft.
2016	5	8	392 sq. ft.
2026	6	9	441 sq. ft.

As can be seen, the current terminal facility meets the facility objectives set forth by the FAA. However, during the development of the RIASP, community members noted that improvements were needed to the condition of the existing facility to provide a more positive "gateway" image to the airport. Upgrades were made to the facility by RIAC including new paint, carpet, and furniture.

3.2.2 Apron and Hangar Space Requirements

This section looks to define the future based and itinerant aircraft apron requirements for UUU. Since there is no hangar space that is currently used to store based and itinerant aircraft, this analysis will first assume that no new hangar space or t-hangar space will be built. This will allow the calculation of the total aircraft apron space required.

Apron and tie-down area requirements were developed for both based and itinerant aircraft at UUU. Currently, the aprons are divided into two areas:

- Apron A: This apron is primarily used by transient aircraft with 6 aircraft and 2 helicopter parking positions; and
- Apron B: This apron with 36 aircraft parking positions primarily used by based aircraft.

These aircraft parking aprons total approximately 12,888 square yards. As previously noted, the design aircraft for the airport terminal and apron areas correspond to Airplane Design Group II. Other assumptions to estimate general aviation facility requirements are:

- For planning purposes airplanes using tie-down (apron) spaces are assumed to require 2,700 square feet (300 sy) per based aircraft and 3,240 sq. ft. (360 sy) per itinerant aircraft. These estimates include area for taxiing.

- Using the results of the user survey, combined with the estimated waiting list for aircraft parking provided by Landmark and experience at other airports, the number of based aircraft that would use T-hangars was estimated.

3.2.3 Aircraft Apron Parking Requirements

The aircraft apron parking requirements for based and itinerant aircraft are calculated in the tables below. These numbers assume the high growth scenario in order to maximize the potential facilities required to meet this projected demand.

Table 3.16
Based Aircraft Apron Parking Requirements

Based Aircraft	2006	2011	2016	2026
Single-Engine	32	42	51	70
Requirements @ 300 sq. yds.	9,600	12,600	15,300	21,000
Multi-Engine	6	8	9	13
Requirements @ 300 sq. yds.	1,800	2,400	2,700	3,900
Helicopter	2	2	3	4
Requirements @ 360 sq. yds.	720	720	1,080	1,440
Total SY	12,120[1]	15,720	19,080	26,340
[1] In 2006, there is a based aircraft shortage of 3,232 sq. yds. (12,120-8,888 existing)				

Source: The Louis Berger Group, Inc. Calculations

To derive the itinerant aircraft apron parking requirements, the Average Day of the Peak Month was used. The forecast section determined the month to be August, averaging 14.28% of the annual operations over a ten year period. This percentage was applied to the existing and annual operations numbers and then divided by 31 to represent a Peak Day. Itinerant Peak Day operations were then assumed to be 20% of the operations, based on historical records. It was then assumed that approximately 50% of the Peak Day Itinerant traffic will need a parking space. The results are shown in the following table.

Table 3.17
Itinerant Aircraft Apron Parking Requirements

Year	Average Peak Day Itinerant Operations	Average Peak Day Itinerant Aircraft	Required Itinerant Apron
2006	20	10	3,600[1]
2011	24	12	4,320
2016	30	15	5,400
2026	39	20	7,200

[1] In 2006, there is an itinerant aircraft surplus of 400 sq. yds. (4,000 – 3,600 existing). The surplus is misleading because existing itinerant parking is being used for based aircraft.

Source: The Louis Berger Group, Inc. Calculations

Table 3.18
Based and Itinerant Aircraft Apron Parking Requirements

	2006	2011	2016	2026
Based Aircraft Apron	40	15,720	19,080	26,340
Itinerant Aircraft Apron	10	4,320	5,400	7,200
Sub-total	50	20,040	24,480	33,540
Existing Area	12,888	12,888	12,888	12,888
Surplus (Deficiency)	(2,832)	(7,152)	(11,592)	(20,652)

Source: The Louis Berger Group, Inc. Calculations

These aircraft apron requirements will be considered with aircraft hangar and t-hangar assumptions in the next section. In addition, the rehabilitation of Apron B will be needed in the near term.

3.2.4 Hangar Space Requirements

Hangar space requirements are mainly dictated by the aircraft owner's preference to store their aircraft. Additional requirements are based on the type of aircraft and number of based aircraft. Usually larger, more expensive aircraft are hangar stored. Currently, UUU has only two conventional type hangars. There are currently no t-hangars. The hangars are:

- A conventional hangar (approximately 8,500 square feet) located in the western quadrant of the airport; and

- A temporary hangar (approximately 1,400 square feet) just to the south of the conventional hangar.

Based on discussions with RIAC, Landmark, and based aircraft owner surveys conducted during the forecast effort of this master plan, the highest demand for aircraft storage is T-hangars. RIAC and Landmark have indicated that demand for conventional hangar space is lower and would be a second priority to t-hangar development.

With no current T-hangars at UUU, estimating demand for the T-hangars must be based on assumptions. As a result, the facility requirements will initially look at the requirements to develop two, 10-unit t-hangar complexes. Ultimately, development of t-hangars on the airport will reduce the amount of aircraft parking apron required. The reduction in apron space is shown below:

- 10 T-hangar Units – Reduce Based Aircraft Apron Space by 3,000 square yards.
- 20 T-hangar Units – Reduce Based Aircraft Apron Space by 6,000 square yards.

The alternatives analysis should look at the placement and development of both new aircraft apron space, along with the development of a T-hangar complex to meet existing demand levels. In addition, alternatives should also look at where additional conventional hangars could be built should the need arise during the planning period or RIAC is presented a proposal from an outside interest looking to develop a parcel on the airport.

3.2.5 Fuel Storage Facility

Fuel storage of 100LL aviation gasoline is maintained in a self-fueling 12,000 gallon tank centrally located between Apron A and Apron B. This tank is operated by Landmark Aviation. The fuel storage requirements for UUU are identified in the table below:

Table 3.19
Fuel Storage Requirements for UUU

	2006	2011	2016	2026
Operations	21,461	27,126	32,431	43,703
ADPM Operations	99	125	149	201
ADPM Fuel in gallons[1]	347	437	521	703

[1] A 3.5 gallon per operation figure was assumed.
ADPM = Average Day, Peak Month (Assumes 14.28% for Peak Month, divided by 31 days for August: See Forecast Chapter)

Source: The Louis Berger Group, Inc. Calculations

The existing tank capacity should be more than capable of accommodating future demand.

3.2.5 Maintenance Equipment and Storage

A Snow Removal Equipment (SRE) Building was constructed in 2004. This building is approximately 240 square feet and houses snow removal equipment and other maintenance equipment that is used to maintain the airport grounds. This building does not have restroom facilities or running water. The alternatives will look at bringing running water to this building in addition to the replacement or addition of any airport equipment needs.

3.2.6 Airport Utilities

As stated in Chapter 1, UUU has access to all appropriate utility services provided by National Grid. Currently, backup electrical power is only provided to the airfield lighting system and not the terminal and hangar facility. The alternatives chapter will look at what is needed to hook in to the backup generator for the terminal facilities.

3.2.7 Access Road and Automobile Parking Analysis

As noted in Chapter 1, UUU can be accessed via the Airport Access Road off of Forest Avenue. While the airport access is fairly direct from Routes 114 and 138, discussions with airport staff and users indicate that the signage could be enhanced. In addition, several airport users noted that cosmetic improvements to the access road are needed. The existing parking areas appear to be ample for current demand. Any future improvements to the terminal area should allow for the proper number of parking spaces to meet building code and provide enough spaces for the type of operation being conducted.

3.3 Summary of Airport Facility Requirements

The following table and bulleted list summarizes the requirements to be addressed as part of the Alternatives Analysis section of this master plan effort.

Table 3.16
Summary of Airport Facility Requirements

	2011	2016	2026
Based Aircraft Apron (Sq. Yds.)	15,720	19,080	26,340
Itinerant Aircraft Apron (Sq. Yds.)	4,320	5,400	7,200
Sub-total	20,040	24,480	33,540
Existing Area	12,888	12,888	12,888
Surplus (Deficiency)	(7,152)	(11,592)	(20,652)
With 10 T-hangars (reduction in based aircraft apron space)	3,000	3,000	3,000
Surplus (Deficiency) after 10 T-hangars	(4,152)	(8,592)	(17,652)
With 20 T-hangars (reduction in based aircraft apron space)	6,000	6,000	6,000
Surplus (Deficiency) after 20 T-hangars	(1,152)	(5,592)	(14,652)

Source: The Louis Berger Group, Inc. Calculations

Additional items to be analyzed in the Alternatives Analysis include (in no particular order):

- Lengthening of Runway 04/22
- Existing Runway and Taxiway Infrastructure Rehabilitation
    - Runway 04/22 Rehabilitation
    - Runway 16/34 Reconstruction
    - Runway Intersection
- Taxiway A Realignment
- Parallel Taxiway to Runway 16/34
- Runway 4 Runway Safety Area Drainage
- Runway Protection Zone Issues – All Runway Ends
- Obstruction Clearing as determined by independent Obstruction Study
- GA Terminal Building Facility
- Apron B Rehabilitation
- Expansion of Based Aircraft Apron
- Expansion of Itinerant Aircraft Apron
- T-Hangar Development
- Conventional Hangar Development
- Perimeter Fencing Improvements
- Airport Signage

Chapter 4.0 – Alternatives Analysis

Chapter 1 accumulated the baseline of existing airport data, Chapter 2 presented the outlook for the future in terms of operational activity, Chapter 3 defined the facilities that would be needed assuming you could provide them and now we have Chapter 4, "Alternative Analysis", which takes all the previous information and assesses what can be realistically provided.

In making that assessment, it considers the engineering feasibility, the environmental impacts, land use and the financial costs versus benefits of providing the airport with the operational and safety improvements. It is the difference between "requirements" and "reality". The objective is to create a realistic and achievable plan of improvements that can be depicted on the Airport Layout Plan (ALP) and ultimately implemented. This assessment uses the general descriptions provided below.

Engineering Feasibility: Ensures that the concepts can satisfy FAA design standards and are practical from an engineering, construction, and cost standpoint.

Operational Efficiency and Safety: How well it functions from an airport operations and safety standpoint.

Environmental Impacts: Each alternative is broadly evaluated to identify potentially damaging environmental impacts that must be assessed in detail in a subsequent environmental study. Key factors for consideration include potential wetland impacts, sensitive land use on Aquidneck Island, and wildlife management.

Land Use Impacts: Property acquisition or easement requirements and potential land use or zoning changes are identified.

The physical arrangement of future airport facilities is determined through an analysis of alternative airport layouts. The purpose is to identify how projected facility requirements can be developed and accommodated within the physical constraints of the airport environment.

In order to clearly identify each alternative, the alternatives are labeled as follows:

- Runway Alternatives – R1, R2, R3, etc.
- Taxiway Alternatives – T1, T2, T3, etc.
- Apron Area Alternatives – A1, A2, A3, etc.
- Terminal, Hangar, and Support Facility Alternatives – S1, S2, S3, etc.
- T-Hangar Alternatives – H1, H2, H3, etc.

4.1 Airport Runway System Alternatives

The first Airport Master Plan conducted in 1986 included an evaluation of a longer Runway 4-22. Although that master plan was never an approved document, the draft ALP from the 1986 AMP included an extension. More recently the 2004 RI/ASP conducted a survey and among the interests of some airport users was the need for a longer runway. In the final document, the ASP included an analysis which resulted in a performance goal recommendation to include a runway length ranging from 3,500 to 5,000 ft. As a result of both these prior efforts, the work scope for this AMP included a specific task to once again (a) evaluate the need for an extension, (b) determine what would be necessary to accomplish it and (c) decide whether it is feasible to achieve the additional runway length and at what cost.

Chapter 1, *Baseline Conditions* identified the primary Runway 4-22, as 2,999 feet long. The runway length analysis completed in Chapter 3 *Facility Requirements* concluded that extending Runway 4-22 from 2,999 feet to 3,570 feet should be evaluated since that length would enable the airport to accommodate 100 percent of the small airplane fleet at International Standard Atmosphere (ISA) conditions (Sea Level, Barometric Pressure of 29.92, and Air Temperature of 59F). The airport currently accommodates at least 95% of the small airplane fleet at ISA. The additional length would also provide limited flexibility to other aircraft which today are unable to use the airport under certain weather conditions.

The alternatives considered include:

R1: No-Build (Status Quo)
R2: Extend Runway 4-22 by 140 ft
R3: Extend Runway 4-22 by 571 ft.

These alternatives are shown in Figure 4.1

All the extensions that were evaluated are on the Runway 22 end. The planning team agreed that it was not practical to consider the Runway 4 end because of the significant impacts the development would have on the wetlands that border the existing Runway 4 safety area. In addition, the Localizer unit would also need to be relocated. The runway width is 75 ft. under all scenarios.

4.1.1 R1: No-Build (Status Quo)

- In the No-Build scenario the operational limitations to the family of B-II aircraft, requiring a length of more than 2,999 ft. when greater than standard conditions occur would continue to exist.
- Under standard conditions this would impact less than five percent of aircraft.

4.1.2 R2: Extend Runway 4-22 by 140 ft.

- This scenario would extend Runway 4-22 by 140’ to 3,139’. It is the maximum runway length that would:
    - Ensure a full safety area (150’ x 300’) at the Runway 22 end.
    - Remain within the airport boundaries, (up to Oliphant Lane).
    - Maintain the required FAR Part 77 clearances (15’) over Oliphant Lane.

4.1.3 R3: Extend Runway 4-22 by 571 ft.

- This scenario would extend Runway 4-22 by 571 ft. to 3,570'. This length would accommodate 100% of the B-II small aircraft fleet.
- This extension, with the full runway safety area would require:
  - Environmental mitigation of wetlands
  - Removal of tree obstructions to the north
  - Potential land acquisition
  - Pavement and fence removal
  - Grading and drainage improvements
  - Realignment of Oliphant Lane.

Among the potential environmental issues associated with construction of a runway extension to 3,570 feet is the need for additional clearing of trees and filling of wetlands on the north side of the existing Oliphant Lane alignment. The Runway 22 safety area would penetrate an area delineated as wetlands by Rhode Island Geographic Information Systems (RIGIS) and Natural Resources Services, Inc., which performed wetlands edge delineation on behalf of RIAC in 2005. In addition, a relocated Oliphant Lane that would need to loop to the north around the extended runway and safety area would further impact these wetlands and required tree clearing. Loss or disturbance of wetlands generally requires permits from the Rhode Island Department of Environmental Management (RIDEM) and U.S. Army Corps of Engineers. Mitigation for loss of wetlands would potentially be required under the terms of these permits.

The construction of an extended Runway 4-22 will increase the amount of impervious surface at UUU and result in greater volumes of stormwater runoff via overland flow. Increases in impervious area can result in degraded surface water quality. In general, higher levels of surface water pollutants (e.g. petroleum, metals, bacteria etc.) are associated with stormwater runoff from an increase in impervious surfaces.

The construction of the extended runway could also affect soils protected under the Farmland Protection Act. As such, it may be necessary to contact the U.S. Natural Resources Conservation Service for completion of a Farmland Conversion Impact Rating Form. Based on the impact rating score developed by the NRCS based on this Form, the NRCS may recommend consideration of alternate project sites.

The existing alignment of Oliphant Lane would penetrate the extended runway and would either need to be realigned around the extended runway or closed (dead end). The likelihood of closing or dead ending Oliphant Lane is highly unlikely as this road connects two main routes, Route 138 (E. Main Road) and Route 114 (W. Main Road).

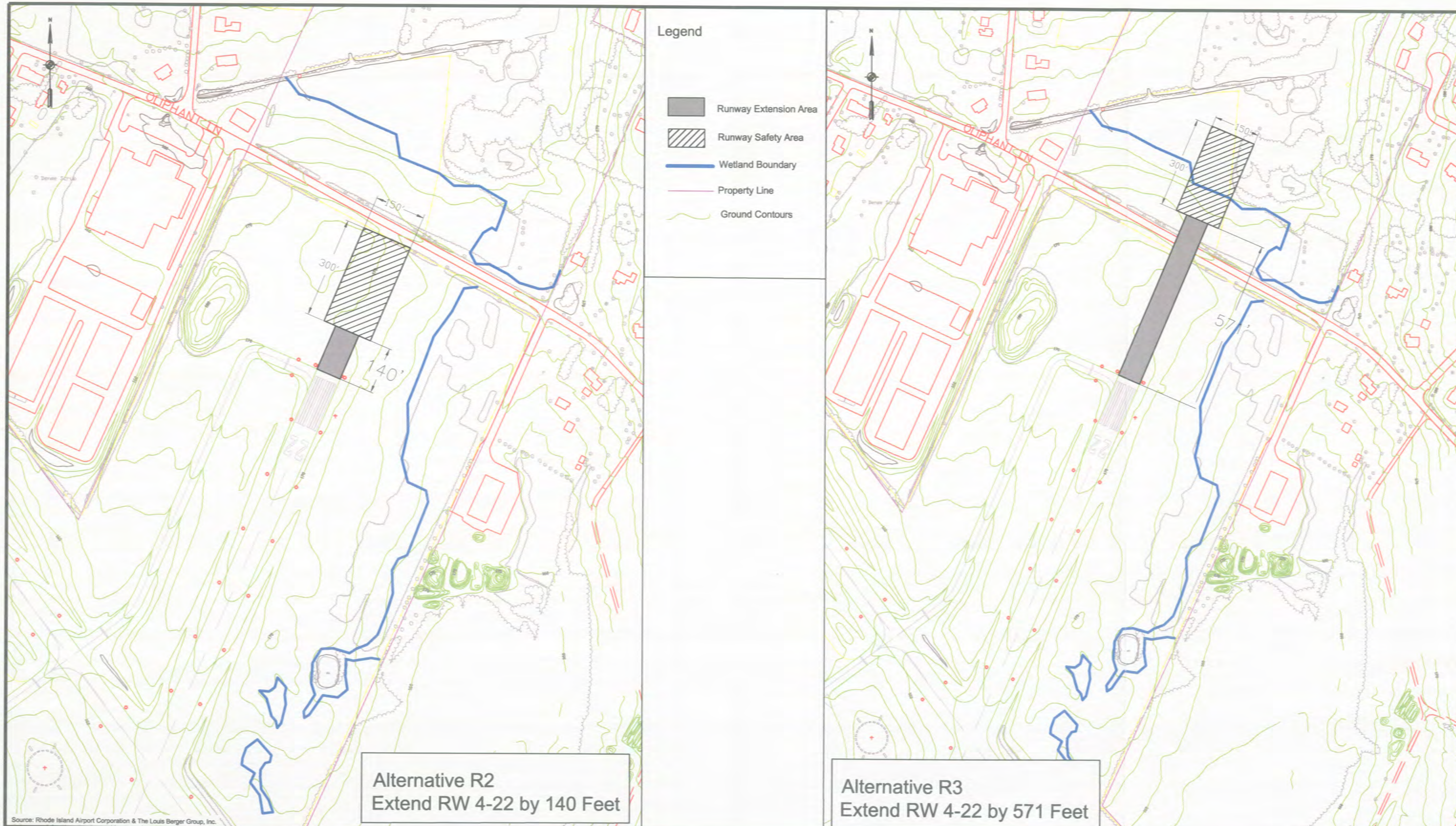
Further, the extension of the runway would be an ideal time to add an approach lighting system to Runway 4-22 to support poor weather approaches and obtain additional benefits to the extended runway, but would require further wetlands obstruction impacts, make the realignment of Oliphant Lane longer, and potentially require land acquisition depending upon the approach lighting system identified.

Table 4.1
Runway Alternatives Analysis

Analysis Factor	Impact
R1: No-Build (Status Quo)	
Engineering	Not applicable
Operational	Limited – Only accommodates up to 95% of the B-II aircraft fleet.
Environmental	None – no change.
Land Use	None – no change.
R2: Extend Runway 4-22 by 140 ft.	
Engineering	Limited grading.
Operational	Limited improvement to operational safety.
Environmental	Limited impact – could require additional obstruction removal.
Land Use	Limited impact – new threshold could move noise off airport property.
R3: Extend Runway 4-22 by 571 ft.	
Engineering	Significant – requires road relocation and realignment.
Operational	Significant – provides better airport access by more aircraft
Environmental	Significant – impact to wetland and obstruction removal.
Land Use	Limited – results in a potential noise impact to residences in the area.

4.1.4 Conclusion

- Alternative R3 – would result in the greatest operational benefit.
- Alternative R3 – would have the most negative impacts.
- Alternative R3 – the cost of providing a runway extension and roadway realignment to accommodate less than 5% of the aircraft who cannot now use the airport, makes this alternative a questionable option to pursue.
- Alternative R2 – cannot be justified by the minimal benefit that would result operationally. The existing runway length can accommodate the same B-II aircraft under standard conditions.
- When you consider the analysis for the two options to extend Runway 4-22 from purely engineering and operational perspective it is understandable why the 1986 AMP recommended an extension. It is also reasonable to accept the findings of the 2004 RI/ASP which suggests the performance of UUU, and therefore the RI airport system, can be improved. The longer runway has some engineering challenges but operationally it also brings the runway closer to the FAA "general utility" standards in lieu of the current "basic utility" standards thereby servicing all of the B-II aircraft under all conditions. But overcoming the engineering challenges has significant environmental consequences. The effort to conduct an Environmental Impact Statement is a lengthy and costly process. Ultimately the financial resources for mitigating the impacts and building an extension as proposed by R2 or R3 for a minimal (5%) benefit is significant. The investment at UUU to achieve a longer runway would be better served by making higher priority improvements at UUU or at other airports in the RI system. This is the point to conclude that the "facility requirements" analysis does not translate into a recommendation from the "alternative analysis".
- **Alternative R1 is the recommended alternative.**



The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**RUNWAY 4-22 RUNWAY EXTENSION ALTERNATIVES** Newport State Airport	December 2007	FIGURE 4.1

4.2 Airport Taxiway System: Parallel Taxiway Construction Alternatives

Parallel taxiways enhance safety by (a) permitting aircraft to enter and exit runways quickly and (b) reducing the need to taxi on the runway and therefore reducing the potential for runway incursions. A full taxiway system is more important where an airport is not served by an air traffic control tower. It also increases the operational efficiency of the airfield system.

Runway 4-22 is currently served by a full taxiway, but it does not have a parallel alignment. It is designated Taxiway A at the Runway 4 end, Taxiway B where the taxiway detours and crosses Runway 16-34 and Taxiway C at the Runway 22 end.

Runway 16-34 is not served by a parallel taxiway.

Alternatives to be considered include:

T1: No-Build (Status Quo)
T2: Realign Runway 4-22 taxiway to a true parallel taxiway
T3: Construct full parallel taxiway to Runway 16-34.

These alternatives are shown in Figure 4.2

4.2.1 T1: No Build (Status Quo)

- The no-build scenario will result in no safety enhancements.
- The objective to reduce aircraft runway occupancy time will not be achieved because back taxiing will continue on Runway 16-34.
- No changes will occur to the existing taxiway system.

4.2.2 T2: Realign Parallel Taxiway to Runway 4-22

- This alternative would realign the southern portion of Taxiway C, the northern portion of Taxiway A and construct a new parallel taxiway.
- It replaces Taxiway A at a point where the taxiway departs from a parallel alignment, and continues on a parallel alignment until it intersects Taxiway C at the point where that taxiway departs from a parallel alignment, replacing a portion of Taxiway C.
- Taxiway B would remain as a stub taxiway.
- The new 35 foot wide taxiway section would be designed to B-II standards.
- Alternative T2 would require:
  - Relocation of the Segmented Circle and Windsock
  - Removal of a portion of existing Taxiway C
  - Redesign of the existing transient aircraft apron where the proposed taxiway departs from the apron.

4.2.3 T3: Construct Parallel Taxiway to Runway 16-34

- A full parallel taxiway to Runway 16-34 results in taxiway access to both runways.
- It is a safety enhancement because it eliminates back taxiing on Runway 16-34.
- In addition, a midfield stub taxiway is included near the based aircraft apron.
- It provides better circulation of taxiing aircraft between the apron and parallel taxiway.
- It also allows some landing aircraft to exit the runway sooner.

- The taxiway would also intersect a realigned Taxiway A (if constructed).
- Designed to B-II standards, the taxiway, has a 35 feet width and a runway centerline to taxiway centerline separation of 240 feet.
- Alternative T3 would require:
  - Relocation of the Segmented Circle and Windsock
  - Design as a taxilane through the apron area (Existing and planned)
  - Removal of the abandoned apron pavement which extends to the runway side of the taxiway. (This helps offset/reduce impervious surface on the airport.)
  - A comprehensive environmental analysis. (It encroaches on a heavily forested area, wetland area and stream near the Runway 16 end. Potential environmental issues are discussed below.)

Among the potential environmental issues associated with construction of a new parallel taxiway is the need for clearing of trees and filling of wetlands. The Runway 16 end is located in an area immediately west of an area delineated as wetlands by Rhode Island Geographic Information Systems (RIGIS) and Natural Resources Services, Inc., which performed wetlands edge delineation on behalf of RIAC in 2005. The taxiway would be located within the forested wetlands and the wetland buffer zone near the Runway 34 end. The approximate area affected would be about 3.5 acres.

Loss or disturbance of wetlands generally requires permits from the Rhode Island Department of Environmental Management (RIDEM) and U.S. Army Corps of Engineers. Mitigation for loss of wetlands would potentially be required under the terms of these permits.

Areas within 200 feet of the centerline of a watercourse or the edge or bank of a surface water body area included as part of Zone 1 of the Town of Middletown (Town)'s Watershed Protection District. Use of Zone 1 is restricted to specific purposes. The construction of a new taxiway parallel to Runway 16-34 would likely require a special-use permit from the Middletown Zoning Board of Review, as the Northeast Branch Bailey Brook runs through a culvert beneath Runway 16 before flowing toward the wetland system to the west of the Runway 16 end.

A building permit must be obtained through the Town Building Inspector prior to any development in an Area of Special Flood Hazard. The portion of the Runway 16 end transected by Northeast Branch Bailey Brook lies within Flood Zone B (between the 100-year and 500-year flood), as mapped by the Federal Emergency Management Agency.

The construction of a new parallel taxiway will increase the amount of impervious surface at UUU and result in greater volumes of stormwater runoff via overland flow. Increases in impervious area can result in degraded surface water quality. In general, higher levels of surface water pollutants (e.g. petroleum, metals, bacteria etc.) are associated with stormwater runoff from an increase in impervious surfaces.

Bailey Brook, which transects UUU, is listed on the Rhode Island List of Impaired Waters (RIDEM, 2006) for biodiversity impacts and lead. A Draft Stormwater Pollution Prevention Plan (SWPPP) has been prepared by Berger for UUU and addresses RIAC operating procedures intended to control potential pollution discharges via stormwater at UUU. A SWPPP is also required for construction activities covered by the Rhode Island Discharge Elimination System (RIPDES) Permit. Modifications to the UUU SWPPP would be required prior to implementation of apron expansion as well as other construction activities proposed in this Chapter.

The construction of the new taxiway could also affect soils protected under the Farmland Protection Act. As such, it may be necessary to contact the U.S. Natural Resources Conservation Service for completion of a Farmland Conversion Impact Rating Form. Based on the impact rating score developed by the NRCS based on this Form, the NRCS may recommend consideration of alternate project sites.

Table 4.2
Taxiway Alternatives Analysis

Analysis Factor	Impact
T1: No-Build (Status Quo)	
Engineering	Not Applicable
Operational	No improvement to safety and efficiency.
Environmental	None – no change.
Land Use	None – no change.
T2: Realign Parallel Taxiway to Runway 4-22	
Engineering	Limited – requires some fill and grading around the existing segmented circle.
Operational	Limited - increases efficiency, keeps taxiing away from the transient apron.
Environmental	Limited – increases impervious surface.
Land Use	None – no change.
T3: Construct Parallel Taxiway to Runway 16-34	
Engineering	Significant – extensive fill and high cost.
Operational	Significant – safety and efficiency enhancements are provided.
Environmental	Significant – extensive fill in environmentally sensitive areas and requires mitigation and numerous permits. Cost exceeds $3 million and does not include environmental mitigation, potential need for ground water re-charge areas, permitting, and drainage in and around the Runway 16 end
Land Use	Significant – modification to environmentally sensitive area.

4.2.4 Conclusion

- There is minimal benefit to realign Taxiway "C".
- There is minimal benefit to realign Taxiway "A" at this time, but it should be considered when Taxiway "A" is rehabilitated in the future.
- A full parallel taxiway to Runway 16-34 has significant operational and safety benefits but it has significant environmental impacts.
    - The parallel taxiway to the Runway 16 end impacts on the wetland and forested areas
    - The parallel taxiway to the Runway 34 end also has wetland impacts.
- Construction of a partial parallel taxiway from the intersection of Runway 4-22 to the planned stub taxiway at the northwest end of the expanded based aircraft apron. The cost is approximately $1.6 million. (The cost of a full parallel taxiway is more than $3 million.)
- **Construction of a partial parallel taxiway is the recommended alternative.**

The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**PARALLEL TAXIWAY CONSTRUCTION ALTERNATIVES** Newport State Airport	December 2007	FIGURE 4.2

4.3 Apron Area Alternatives

Aircraft parking space is currently very limited and additional parking apron is a critical need. With apron space at capacity, the airport must resort to less desirable options such as parking in turf areas and using space designated for transient parking. More importantly, the east corner of the apron lies within the Runway Visual Zone (RVZ) which, according to FAA design standards, must remain clear of objects in order to provide a clear line of sight for aircraft traversing the runways.

The analysis considered the locations of the current based aircraft and transient aircraft aprons and how those locations meet future parking and operational needs. The space needs outlined in Chapter 3, *Facility Requirements* were used to size alternative apron expansions proposed to fulfill the anticipated aircraft parking deficiencies over the study period.

Alternatives considered include:

A1: No Build (Status Quo)
A2: Based Aircraft Apron Expansion
A3: Transient Aircraft Apron Expansion

These alternatives are shown in Figure 4.3

4.3.1 A1: No Build (Status Quo)

- It continues to the undesirable situation where the request for paved parking space is exceeded during high peak activity periods and turf areas must be utilized.
- It continues to use of transient parking space to meet based aircraft parking demand.
- It continues to have aircraft parked in the RVZ.
- It does not meet the original master planning objective to improve aircraft parking.

4.3.2 A2: Based Aircraft Apron Expansion

The existing based aircraft apron area is approximately 8,888 square yards (SY). The Facility Requirements chapter determined the based aircraft apron requirements were:

- Phase 1 - 15,720 SY for year 2011 (Deficiency 6,832 SY)
- Phase 2 - 19,080 SY for year 2016 (Deficiency 10,192 SY)
- Phase 3 - 26,340 SY for year 2026. (Deficiency 17,452 SY)

The apron dimensions needed to satisfy demand throughout the 20-year planning period is shown on Figure 4.3. The factors relevant to providing additional based aircraft apron space are:

- Potential areas for aircraft apron expansion exist to the northwest and southwest of the present apron.

- Expansion to the northwest is limited due to existing wetland areas.
- The grade in these areas fall off away from the existing pavement and fill will be required.
- Expansion to the northwest or southwest is impacted by the proposed parallel taxiway and/or taxilane.
- Parking aircraft closer to a taxiing area will result in quicker access to the airfield.
- If T-hangar development occurs the need for additional based aircraft parking space is reduced.
- Modifications to the UUU SWPPP would be required to expand aircraft apron areas.

4.3.3 A3: Transient Aircraft Apron Expansion

The existing transient aircraft parking area is approximately 4,000 SY. It is located to the east of the existing terminal/hangar area. The Facility Requirements chapter determined the transient aircraft apron requirements were:

- Phase 1 - 4,320 SY for year 2011 (Deficiency 320 SY); (added to Phase 2).

- Phase 2 - 5,400 SY for year 2016 (Deficiency 1,400 SY)

- Phase 3 - 7,200 SY for year 2026. (Deficiency 6,800 SY

The apron dimensions needed to satisfy demands throughout the 20-year planning period to expand is shown on Figure 4.3. The factors relevant to providing that aircraft apron space are:

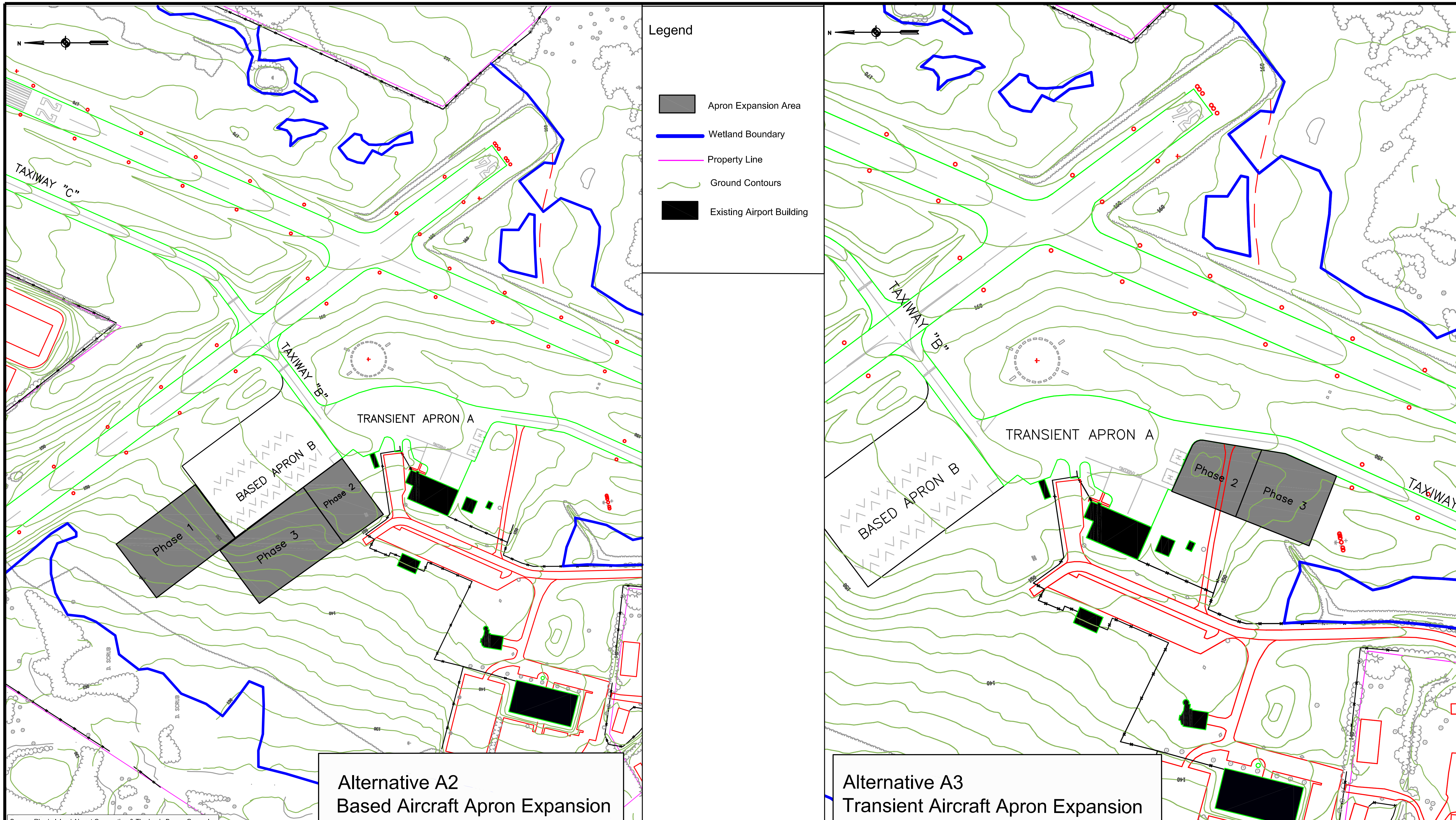
- Space is available to expand this apron to the southwest adjacent to Taxiway A.
- The operational effectiveness of this apron is impacted by
  - Activity to and from the hangar accessing the apron
  - The need to maintain a clear line of sight for the RVZ.
- The current deficiency (320 SY) is minimal therefore the current transient space is considered adequate until 2011. An IMPORTANT NOTE: The current transient parking space is used for based aircraft tenants therefore; based aircraft expansion is a priority and that would relieve the transient apron space.
- For 2016, the proposed expansion area is increased to provide what is considered a minimum area for expansion of approximately 3,200 SY.

Table 4.3
Apron Area Alternatives Analysis

Analysis Factor	Impact
A1: No-Build (Status Quo)	
Engineering	Not Applicable
Operational	Significant – provides no relief to the existing need for aircraft parking.
Environmental	None – no change.
Land Use	None – no change.
A2: Based Aircraft Apron Expansion	
Engineering	Limited – issues pertaining to for fill and grading requirements.
Operational	Significant – relieves congested parking issues and clears RVZ.
Environmental	Limited – increases impervious surface.
Land Use	None – no change.
A3: Transient Aircraft Apron Expansion	
Engineering	Limited – minor grading and drainage issues because it is constructed in close proximity to wetlands.
Operational	Significant – relieve congestion on transient apron and near terminal facility.
Environmental	Limited – increases impervious surface and is in close proximity to wetlands.
Land Use	None – no change.

4.3.4 Conclusion

- The locations of the existing based aircraft and transient aircraft parking aprons are effective and efficient.
- To meet the current and future aircraft parking needs, phased expansion of the based aircraft apron is needed during the planning period. Need will be coordinated with any T-hangar development.
- The initial expansion should be to the northwest of the current based aircraft apron.
- Subsequent phases should be constructed to the southwest of the existing apron to avoid conflicts with wetlands.
- Phased expansion of the transient apron is needed in the 10 year planning period.
- The proposed expansion should be to the southwest of the current transient apron.
- The rehabilitation and expansion of the based aircraft apron is the recommended based apron alternative.
- The expansion of the transient aircraft apron is the recommended transient apron alternative.



The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**APRON EXPANSION ALTERNATIVES** Newport State Airport	December 2007	FIGURE 4.3

4.4 Airport Terminal, Hangar and Support Facilities

Chapter 3, *Facility Requirements*, reviewed the hangar space needs and concluded that alternatives for siting both T-hangars and Terminal Facilities/Conventional Hangars should be evaluated. T-hangars are single-unit aircraft hangars, while conventional hangars are generally large multi-aircraft structures.

According to Chapter 1, *Baseline Conditions*, hangar space is currently limited to a building that functions as a Terminal/Hangar. The hangar is used by Chris Aircraft for maintenance purposes. There is also a temporary hangar adjacent to the main building which accommodates a single helicopter.

Alternatives considered include:

S1: No-Build (Status Quo)
S2: Construct New Conventional Hangar/GA Terminal South of Existing Facility
S3: Construct New Conventional Hangar Adjacent to SRE Facility

These alternatives are developed in detail below. These alternatives are shown in Figure 4.4

4.4.1 S1: No-Build (Status Quo)

- The existing conventional hangar and GA terminal are maintained
- They will continue to provide for all anticipated needs during the planning period.
- No development will take place and no changes will occur to existing facilities and the facilities will be constrained.

4.4.2 S2: Construct New Conventional Hangar/GA Terminal South of Existing Facility

- The location has direct access to the expanded terminal/transient aircraft parking apron, but it requires:
  - Expansion of the transient apron if it is not completed in a previous project.
  - Relocation of the electrical vault or incorporated into the new facility.
  - Relocation of the rotating beacon and the temporary hangar.
- The existing automobile parking area would serve this facility but would need to be evaluated for possible expansion.
- Project includes improvements to terminal area utilities and area security lighting.

4.4.3 S3: Construct New Conventional Hangar Adjacent to SRE Facility

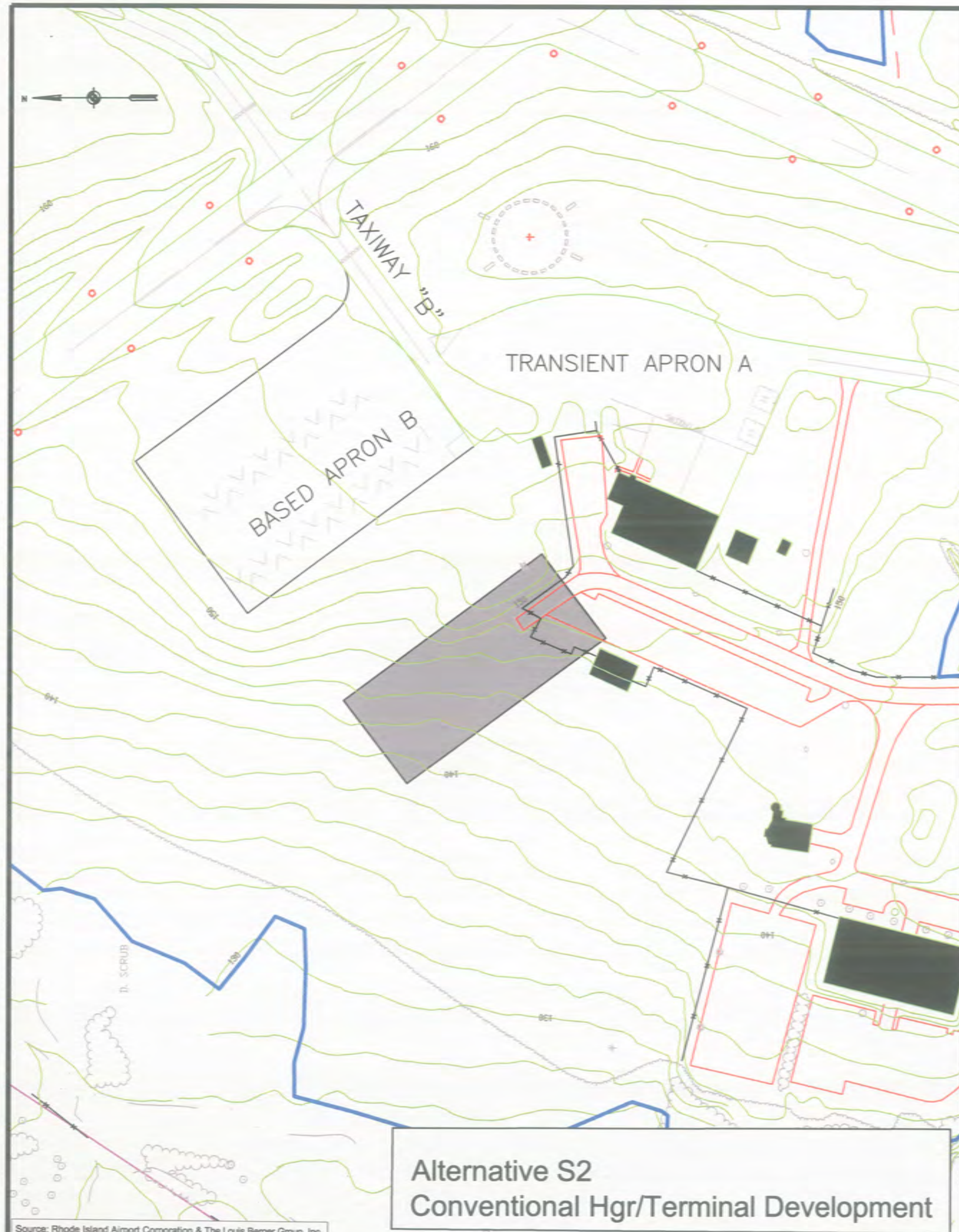
- The location requires an apron expansion if not expanded prior to the hangar being constructed, In this instance, the affected apron is the based aircraft parking apron.
- The existing automobile parking area would serve this facility, but would need to be evaluated/expanded based on the size of the improvements.
- Project includes improvements to terminal area utilities and area security lighting.

Table 4.4
Conventional Hangar and General Aviation Terminal Alternatives Analysis

Analysis Factor	Impact
S1: No-Build (Status Quo)	
Engineering	Not Applicable.
Operational	Limited – There may be space constraints in the long-term.
Environmental	None – no change.
Land Use	None – no change.
S2: Construct New Conventional Hangar/GA Terminal South of Existing Facility	
Engineering	Limited – issues pertain primarily to fill and grading requirements.
Operational	Significant – increases transient parking, provides updated facilities.
Environmental	Limited – increases impervious surface.
Land Use	None – no change.
S3: Construct New Conventional Hangar Adjacent to SRE Facility	
Engineering	Limited – Must design into grade change.
Operational	Significant – Provides facility in front of larger apron area.
Environmental	Limited – increases impervious surface.
Land Use	None – no change.

4.4.4 Conclusion

- Development to the sites proposed in Alternatives 2 and 3 would require evaluation at the time a proposal is received and the developer's objectives are known.
- These two areas are both preferred areas for the development of terminal and/or conventional hangar facilities.
- There is adequate are to expand the automobile parking to the south of the SRE.
- Alternative 2 is more suitable of the two locations for a new or expanded terminal facility as a result of its close proximity to the transient aircraft apron.
- The preferred alternative will identify these two areas as the preferred locations for terminal and conventional hangar facilities.
- As a result of there being existing capacity in the terminal building and a stronger request for t-hangar facilities, the No-Build (Status Quo) Alternative is recommended for the planning period or until such time as hangar/terminal development proposal is received and evaluated. Alternative 2 and 3 building areas will be identified on the ALP as a potential long-term, phase 3 project.

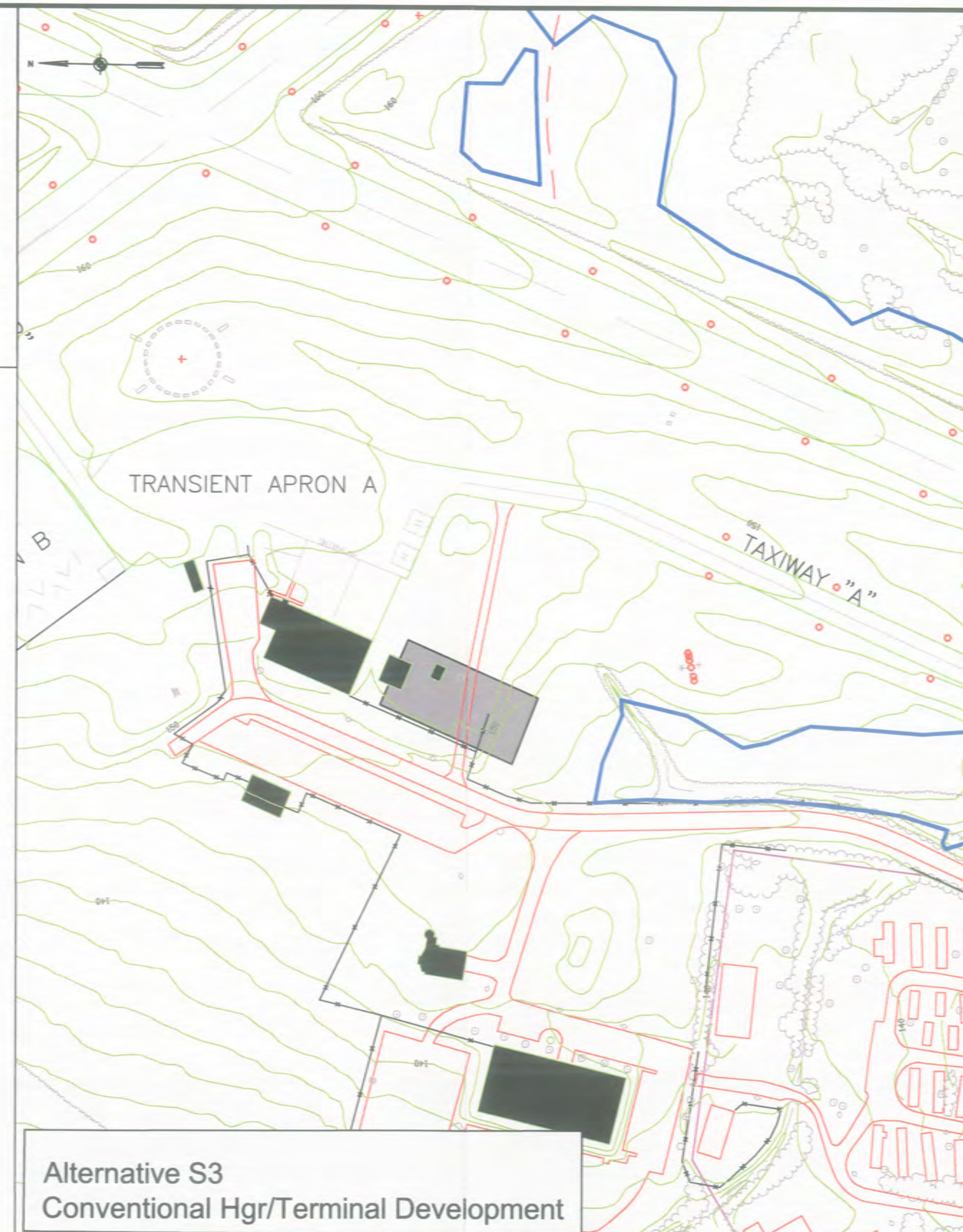


Alternative S2
Conventional Hgr/Terminal Development

Source: Rhode Island Airport Corporation & The Louis Berger Group, Inc.

Legend

- Terminal/Conventional Hangar Construction
- Wetland Boundary
- Property Line
- Ground Contours
- Existing Airport Building



Alternative S3
Conventional Hgr/Terminal Development

The Louis Berger Group, Inc.	Rhode Island Airport Corporation	Airport Terminal, Hangar, & Support Facilities Alternatives Newport State Airport	December 2007	FIGURE 4.4

4.5 T-Hangar Alternatives

The availability of T-Hangars at a general aviation airport is important to users who want to protect their aircraft from the weather elements and preserve the investment. This development is a revenue generator for the airport and attracts owners of high-end aircraft. The Facility Requirements chapter looked at the impacts of developing one or two 10-unit T-Hangar facilities at the airport. It noted that T-Hangar development would reduce the need for based aircraft apron tie down space. Leases to private investors to develop T-Hangars should include a provision that results in the hangar ultimately becoming airport property.

In siting T-Hangars, attention must be given to the level of site preparation required, availability of automobile access and parking, utilities and access to the taxiway system.

The alternatives investigated include:

H1 – No-Build (Status Quo)
H2 – Construct T-Hangar units west of Runway 22 with access from Oliphant Lane
H3 – Construct T-Hangar units southwest of the existing based aircraft parking apron with access from the airport's main access road.
H4 – Construct T-Hangar units east of Runway 22 with access from Oliphant Lane

These alternatives are shown in Figure 4.5

4.5.1 H1: No-Build (Status Quo)

- The No-Build scenario provides no space for hangars at the airport.
- Based aircraft will continue to use apron tie down spaces.
- An opportunity to increase airport revenue will be lost.

4.5.2 H2: Construct 2 -10 Unit T-Hangars at a location to the west of Runway 22

- T-Hangar units and associated paved taxi areas would be constructed to the west of the Runway 22 end (between Taxiway C and the Industrial Park).
- Because of the space limitations both units would be aligned along the same axis.
- This area is level and is ready for development with limited site preparation. Development includes:
  - A stub taxiway to access Taxiway C,
  - Automobile parking area, an access road from Oliphant Lane,
  - Extension of utilities and security improvements.
- Modifications to the UUU SWPPP would be required prior to constructing T-Hangars.
- Based on demand, consideration should be given to build one 10-unit set at a time, with the southern unit to come first.
- This area is compatible with current zoning/land use, located adjacent to the industrial park that is just west.
- Limited environmental impacts, mostly an increase in impervious surfaces, and is outside of airport delineated wetlands.

4.5.3 H3: Construct 2 -10 Unit T-Hangars at a location behind based aircraft Apron B

- T-Hangar units and associated paved taxi areas would be constructed behind, or southwest of based aircraft Apron “B”.
- The units would be placed one behind the other as shown on Figure 4.5.
- Taxiway access will be via the based aircraft apron and Taxiway “B”.
- The existing auto parking area must be expanded to accommodate the additional vehicles.
- Access is proposed via the existing airport access road.
- Development includes extension of utilities and security improvements.
- Modifications to the UUU SWPPP would be required prior to constructing T-Hangars.
- Development of t-hangars in any other areas in this location would impact wetlands or require significant fill making them cost prohibitive.

4.5.4 H4: Construct 2 -10 Unit T-Hangars at a location to the east of Runway 22

- T-Hangar units and associated paved taxi areas would be constructed to the east of the Runway 22 end.
- Because of the space limitations both units would be aligned along the same axis.
- Development includes
  - An extended taxiway to access Runway 22,
  - An automobile parking area and access road from Oliphant Lane,
  - Extension of utility lines and security improvements.
- Modifications to the UUU SWPPP would be required prior to constructing T-Hangars.
- Based on demand, consideration should be given to build one 10-unit set at a time, with the northern unit to come first.
- There would be significant impact to delineated wetlands, requiring mitigation measures ultimately making this area cost prohibitive.

Table 4.5
T-Hangar Alternative Analysis

Analysis Factor	Impact
H1: No-Build (Status Quo)	
Engineering	Not Applicable.
Operational	Significant – will not provide any covered aircraft parking.
Environmental	None – no change.
Land Use	None – no change.
H2: Construct 2 -10 Unit T-Hangars at a location to the west of Runway 22	
Engineering	Limited – area is clear and generally flat with exception of small dirt mound
Operational	Significant – would provide covered aircraft parking.
Environmental	Limited – increases impervious surface.
Land Use	None – compatible.
H3: Construct 2 -10 Unit T-Hangars at a location behind based aircraft Apron B	
Engineering	Significant – requires significant fill and grading to meet FAA standards for site and taxilane access. Costly option.
Operational	Significant – would provide covered aircraft parking, but limit future based apron and hangar expansion.
Environmental	Limited – increase of impervious surface.
Land Use	None – compatible.
H4: Construct 2 -10 Unit T-Hangars at a location to the east of Runway 22	
Engineering	Area is clear and generally flat, but would require design in wetlands.
Operational	Significant – would provide covered aircraft parking but requires runway crossing to access taxiway system.
Environmental	Significant – wetlands impacts and increase of impervious surface.
Land Use	None – compatible.

4.5.4 Conclusion

Alternative H2

- This area of the airport is essentially ready for development.
- It is readily accessible from Oliphant Lane.
- The airfield is accessed by constructing a short stub taxiway to parallel Taxiway C.
- Site preparation includes extension of utility lines, security lighting and security improvements.
- Unlike Alternative H3 it does not limit potential expansion of the aircraft parking apron.
- It splits airfield operations. It requires aircraft to taxi from this area and cross Runway 16-34 to access fuel facilities and the terminal area.

Alternative H3

- It would consolidate all airfield operations in the same area.
- It would limit based aircraft apron expansion.
- It would displace the current landing site of skydivers using the airport to an area to be determined during the design phase.

- It would require extensive fill and grading to meet FAA standards.
- The extensive fill required would make this site cost prohibitive for development.
- It would also block a future terminal and conventional hangar site for the future.

Alternative H4

- Because it is partially located on wetlands, this area of the airport would require further environmental study prior to development.
- It is readily accessible from Oliphant Lane.
- The airfield is accessed by constructing a new taxiway to connect to Runway 22.
- Site preparation includes extension of utility lines, security lighting and security
- Unlike Alternative H3 it does not limit potential expansion of the aircraft parking apron.
- It splits airfield operations. It requires aircraft to taxi from this area and cross two runways to access fuel facilities and the terminal area.

- Alternative H2, development on the west side of the Runway 22 end, is the preferred alternative. H3 and H4 will be further evaluated in the subsequent Environmental Assessment as secondary t-hangar locations.

The Louis Berger Group, Inc.	Rhode Island Airport Corporation	**T HANGAR DEVELOPMENT ALTERNATIVES** Newport State Airport	December 2007	FIGURE 4.5

4.6 Other Airside and Landside Issues

This section outlines airside and landside issues that were not identified in previous sections. Discussion of these other issues is needed to prepare cost estimates and prioritize projects for the Capital Improvement Plan (CIP) and the AMP overall.

4.6.1 Airport Drainage Runway Safety Area (RSA) for Runway 4

Drainage is a persistent problem at UUU in part because of the natural landscape, but also due to development that has occurred off airport property.

For instance, the RSA for Runway 4 and the area beyond has standing water during periods of heavy rain. The East Branch Bailey Brook flows northwesterly past the Runway 4 end and is associated with wetland systems at the southern end of the airport property. According to airport management standing water is a persistent condition and it is due to poor drainage of soils in the area south of the Runway 4.

A drainage study is recommended for the entire airport due to continual drainage problems owing to limited grades, the presence of stream crossings and lack of positive drainage (piping and structures). This drainage study would be a follow-on study after the completion of the Environmental Assessment and would determine the cause of drainage problems and develop recommendations for improvements that will result in positive drainage for the area.

4.6.2 Obstructions Analysis and Removal

An obstruction study was completed by Stantec Engineering Co. in 2007. The results of that study identifies obstructions and recommends actions necessary to provide clear approaches to each runway end which may include obstruction removal, marking, lighting and land and/or easement acquisition. The recommendations are subject to an FAA Airspace Determination which is also provided in the Appendix of this master plan.

A copy of RIAC's request for airspace determination and FAA's response is included in Appendix E of this document.

4.6.3 Runway and Taxiway Rehabilitation

The Facility Requirements chapter included the results of an airfield pavement condition survey. It rated the Runway 16-34 pavement, including the runway intersection, as "fair" and mentioned that a frost heave condition occurred to the Runway 16-34 pavement during the winter of 2006/2007. This event resulted in a period of closure for that runway. The Runway 4-22 pavement was rated "good" except for the runway intersection. The taxiway pavements were rated "good" except for Taxiway C and that pavement will receive full depth rehabilitation in Summer 2007.

Runway and taxiway pavement conditions should continue to be monitored and an annual maintenance program should be continued to include repairs and crack filling.

Runway 16-34, including the intersection, should be programmed to receive rehabilitation during the early planning period, within 5 to 10 years. Work should be designed to B-II standards. Rehabilitation of the runway intersection will involve periods of airport closure and therefore will require careful planning and coordination to minimize the impacts on operations.

Runway 4-22 should be programmed for rehabilitation in the later years of the planning period, 10 to 20 years.

With the existing reconstruction of Taxiway C and the good condition of Taxiway A and B, aside from new development, the taxiways will not require any rehabilitation, other than general pavement maintenance.

All lighting and NAVAIDs associated with airfield pavement should be rehabilitated or replaced when those pavements are improved.

4.6.4 Apron Rehabilitation

The airport’s two aircraft parking aprons were evaluated during a 2006 pavement inspection. Apron A, the transient apron, was rated “excellent,” but the pavement for Apron B, the based aircraft parking apron, received a “poor” rating, which represents the worst condition of the airport’s airfield pavements.

During the inspection there was evidence of major cracking, grass growing through cracks and frost heave of tie down anchors. This pavement should be rehabilitated during the planning period, either as a stand alone project or as part of an apron expansion project.

4.6.5 Water Line Improvements

Water service capacity is currently limited as noted when the recent Snow Removal Equipment Building was constructed without water service and restrooms. Expansion of facilities or future construction will require extension of water service and increased capacities.

In addition, construction of high pressure water lines and hydrants would provide a level of fire safety needed to protect facilities, aircraft and equipment.

4.6.6 Electrical Backup Generator

Currently, backup power is only provided to the airfield lighting circuits and not the terminal/hangar facility or other buildings. A generator hook up could be provided to service any or all of the other facilities. The generator would require periodic maintenance and testing. This improvement should be considered when terminal area improvements are made.

4.6.7 Perimeter Fencing

The existing perimeter fencing is intermittent with some locations where there is no fencing, but dense trees and brush. The fencing is also not uniform with varying heights and types of fence. An inventory was conducted during the base line conditions portion of this project. When appropriate with other projects advanced during the planning period, fencing improvements should be considered to add or replace fencing to provide 8 feet high chain link fence with 1 foot barbed wire extensions. The following locations are major areas where fencing should be improved.

- Airport Entrance Area: There is approximately 1,400 linear feet of six foot fence that runs along the airport access road and should be upgraded. At $30 per linear foot installed, the approximate cost is $42,000.

- Northwest Corner/Industrial Park Area: There is approximately 3,800 linear feet of six foot fence that runs along the industrial park and along Runway 16 north to Oliphant Lane and should be replaced. At $30 per linear foot installed, the approximate cost is $114,000.

- Northeast Corner/Stone Plant: There is approximately 2,100 linear feet of six foot fence that runs along the northeast corner of the airport at Oliphant Lane south toward the Runway 34 end and should be replaced. At $30 per linear foot installed, the approximate cost is $63,000.

Improvements to these three major areas amount to approximately $219,000. These fencing improvements will increase the level of security which has become a major concern at general aviation airports. At the same time, access control should be evaluated and recommendations made to install card reader or other access controls if needed. These improvements will also help to control wildlife migration such as deer on the airport by raising the fence height in these areas.

4.6.8 Maintenance Equipment

Based on the inventory of equipment conducted at the onset of this planning study and discussions with Landmark staff, there does not appear to be any equipment deficiencies at this time. An allocation for replacement of maintenance equipment in the long-term should be identified in the implementation plan.

4.6.9 Access Road and Automobile Parking

The facility requirements section states that a need exists to provide cosmetic improvements to the existing access road as well as signage improvements. Parking should be evaluated based upon current and future anticipated employees, tenants and visitors. Parking lot expansion may be required during the planning period depending upon the timing and location of future development. Airport signage should be evaluated.

4.7 Airport Performance

As a part of RIAC's recently completed update of their Airport System Plan (RI/ASP), a methodology was developed to assess each airport's performance, or how well an airport is able to meet the aviation needs of the state within its specified role. In this study, UUU was identified as a General Aviation Business Airport, which was defined in the RI/ASP as an airport that should primarily be able to support the intrastate needs of general aviation and be positioned to meet the needs of all businesses and personal use single- and twin-engine piston style aircraft. Figure 4.6 below outlines the facility and service objectives for General Aviation Business Airports.

Figure 4.6
Facility and Service Objectives, General Aviation Business Airports

Airside Facilities	**General Aviation Business Airports**
Aircraft Design Group	B category aircraft
Primary Runway Length	Greater than 3,500 feet and less than 5,000 feet
Crosswind Runway Length	80% of Primary Runway Length
Primary Runway Width	75 feet
Crosswind Runway Width	Dictated by ARC
Taxiway	Full Parallel
Approach	Non-Precision
Lighting	MIRL and LITL
Visual Aids	Rotating Beacon; Lighted Wind Cone/Segmented Circle; REILS; VGSI (PAPIs on primary runway); MALSR Approach Lighting
Weather	ASOS or AWOS
Landside Facilities	
Hangars Based	50% of based fleet
Hangars Transient	25% of overnight aircraft
Apron	50% of based; 75% of peak month avg. daily arrivals
Terminal/Administration	1,000 square feet General Aviation 1,000 square feet Commercial (WST only)
Operations/Maintenance Hangar	5,000 square feet
Auto Parking	Equal to the number of based aircraft
Services	
FBO	Enhanced or Basic Service
Maintenance	Full or Limited Service
Fuel	Jet A and 100LL
Terminal/Pilot	Phone, Restrooms, Flight Planning/Lounge
Ground Transportation Services	On-site courtesy car
Security	Fencing, Controlled Access, Security Lighting
Utilities	All
Food	Vending/Catering

Source: Rhode Island Airport System Plan

Based upon these objectives, a RI/ASP analysis was completed that summarized the ability of each airport to fulfill their role within the system, including Newport. This analysis identified these facility and service objectives as goals that the airport should attempt to achieve as they plan future development to meet future airport needs. Figure 4.7 identifies Newport's facilities and their ability to meet their facility and service objectives.

Figure 4.7
System Plan Recommendations for UUU

● Does Meet Objective
○ Does Not Meet Objective
NA Not Applicable

Benchmarks	Newport - Existing Conditions	Newport - Future Conditions	Recommendations
Performance Measures			
Economic			
Revenues Exceed Operating Expenses (excl. Admin)	●	●	
Revenues Exceed Operating Expenses (incl. Admin)	○	○	Revenues and expenses will be balanced by incorporating the airport financials as part of the system costs.
Capable of Supporting and Promoting Aviation Activity:			
Maintenance Services (FBO)	●	●	
Fuel Services	●	●	
Food Services	○	●	Enhanced user amenities are included in the Recommended Facility and Service Improvements.
Airport Capacity			
Runway System Capacity	●	●	
Hangar Aircraft Storage /1	○	●	Hangar storage is being evaluated as part of the Master Plan.
Aircraft Apron /1	○	●	Aircraft apron areas are being evaluated as part of the Master Plan.
Terminal/Administration Building	○	●	Terminal expansion is being evaluated as part of the Master Plan.
Air Accessibility			
Precision Approach	NA	NA	
Non-precision approach	●	●	
On-site weather reporting capabilities	●	●	
Primary Runway Length	○	●	An extended primary runway is not recommended but is currently being re-evaluated in the Master Plan.
Crosswind Runway Length	●	●	
Ground Accessibility			
Access Road Functionally Classified	●	●	
Auto Parking	●	●	
Scheduled Transit Service	NA	NA	
On-site Ground Transportation	○	●	A courtesy car service is included in the Recommended Facility and Service Improvements.
Compatibility Planning			
Integrated Noise Model Mapping	NA	NA	
Local Comprehensive Plan	●	●	
Height Zoning (FAR Part 77 Surfaces)	●	●	Adequate height zoning exists.
Airport Hazard Zoning	○	●	RIAC will identify Airport Hazard Areas and the community will adopt Airport Hazard Zoning consistent with RIGL 1-3, Airport Zoning Act.
Compatibility Zoning	○	●	RIAC will coordinate with local governments to define Airport Influence Areas and adopt compatible aeronautical and community related land uses, building codes, performance standards, and other such controls.
Current Master Plan or ALP	○	●	A Master Plan is currently being conducted.
Environmental Compliance			
Spill Prevention Control Countermeasures (SPCC) Plan	●	●	
Underground Storage Tank(UST) Requirements	●	●	
Wildlife Management Plan	●	●	
Stormwater Pollution Prevention Plan (SWPPP)	●	●	
Underground Injection Control (UIC) Requirements	●	●	
Hazardous Materials Requirements	●	●	
Air Quality: On Airport	NA	NA	
Air Quality: Off Airport	●	●	
Vegetation Management Plan (VMP)	○	●	A VMP is currently underway.
FAA Airport Standards			
Airport Reference Code	●	●	
Runway / Taxiway Separation	●	●	
"Good" Pavement Condition	○	●	The Master Plan is evaluating all pavement conditions and a reconstruction program will be recommended.
Runway Safety Area (RSA)	●	●	
Primary Surfaces	○	●	The primary surfaces are part of the VMP clearing plan and subject to a FAA Aeronautical determination.
Runway Protection Zone (undeveloped or airport land)	○	●	The RPZs are part of the VMP clearing plan and subject to a FAA Aeronautical determination.
Runway Objective Free Area (ROFA)	○	●	The ROFAs are part of the VMP clearing plan and subject to a FAA Aeronautical determination.
Unobstructed Approaches	○	●	The unobstructed approaches are part of the VMP clearing plan and subject to a FAA Aeronautical determination.
Security	○	●	Security enhancements are included in the Recommended Facility and Service Improvements.

Note: The performance assessment outlined in this plan was used to develop a set of recommendations in Chapter 640.07 Implementation Plan. Please note that not every deficiency translates directly to a recommendation in the Implementation Plan.

Source: Rhode Island Airport System Plan, Figure 640-05, Recommendations for UUU Airport

All recommendations in this Master Plan should be coordinated with the State's Guide Plan.

4.8 Airport Alternatives Matrix

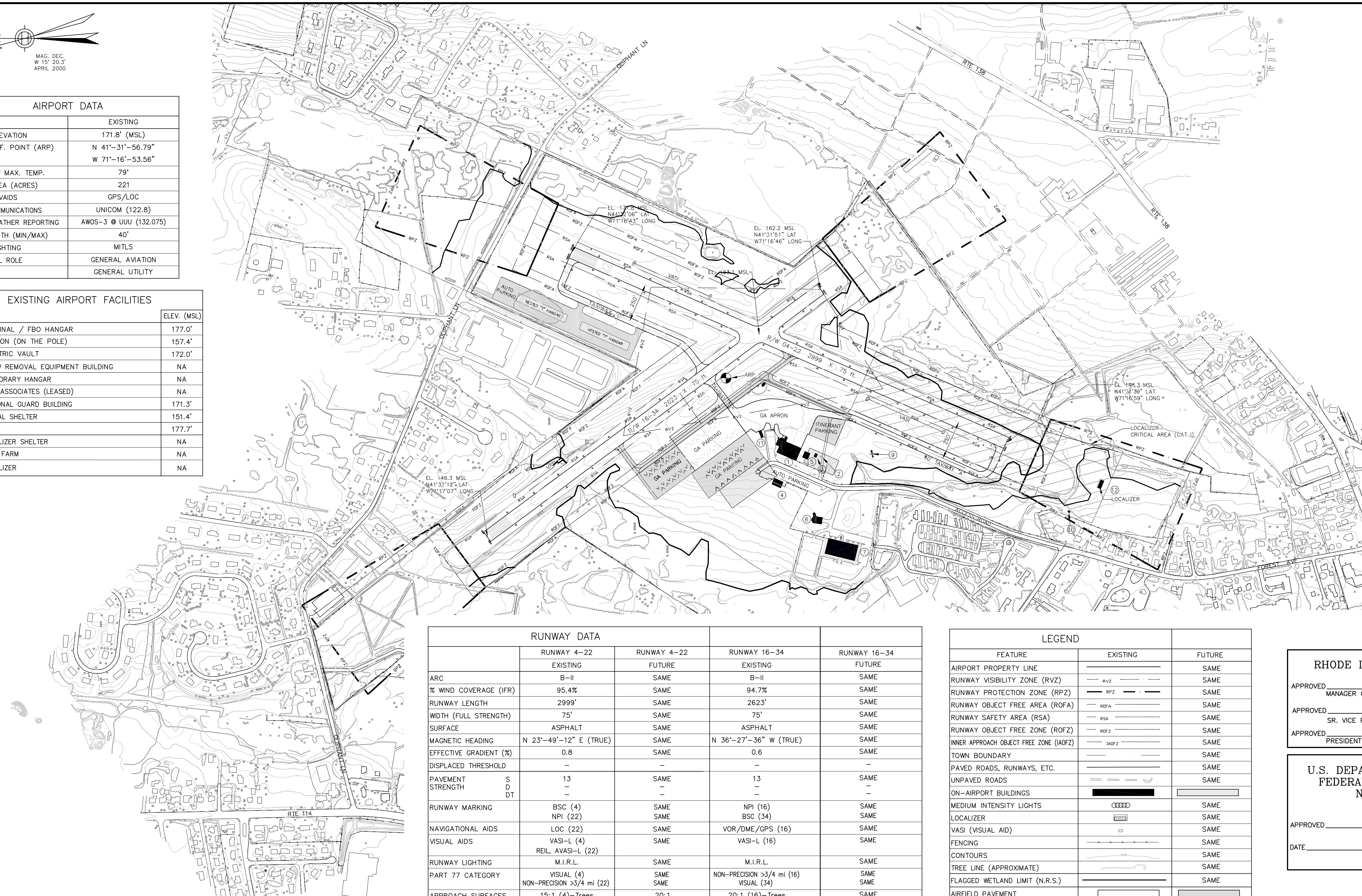
The following matrix identifies each of the airport alternatives identified throughout this Section, with the preferred alternative clearly indicated for each category. This is a condensed summary of the alternatives identified in each category above.

Table 4.6
Alternatives Analysis Summary Matrix

Category	Alternatives	Preferred Alternative
Runways	R1: No-Build/Status Quo	R1: No-Build/Status Quo
	R2: Extend Runway 4-22 by 140 ft	
	R3: Extend Runway 4-22 by 501 ft.	
Taxiways	T1: No-Build/Status Quo	T3: Construct Parallel Partial Taxiway to Runway 16-34.
	T2: Realign Parallel Taxiway to Runway 4-22	
	T3: Construct Parallel Partial Taxiway to Runway 16-34.	
Aprons	A1: No Build/Status Quo	First: A2: Based Aircraft Apron Expansion
	A2: Based Aircraft Apron Expansion	
	A3: Transient Aircraft Apron Expansion	Second: A3: Transient Aircraft Apron Expansion
Terminal, Hangar, & Support Facilities	S1: No-Build-Status Quo	S1: No-Build-Status Quo
	S2: Construct New Conventional Hangar/GA Terminal South of Existing Facility	
	S3: Construct New Conventional Hangar Adjacent to SRE Facility	
T-Hangars	H1: No-Build/Status Quo	H2: Construct T-Hangar units W of RW 22; Secondary is H4.
	H2: Construct T-Hangar units W of RW 22	
	H3: Construct T-Hangar units SW of the existing based aircraft parking apron	
	H4: Construct T-Hangar units E of RW 22	
Other Airside & Landside Issues	Drainage Study & Improvements	
	Obstruction Analysis & Removal	
	Pavement Rehabilitations	
	Perimeter Fencing Improvements	
	Utility Improvements	

4.9 Preferred Alternatives and Conceptual Layout Plan

Figure 4.8 on the following page shows the preferred alternatives and conceptual layout plan.



AIRPORT DATA

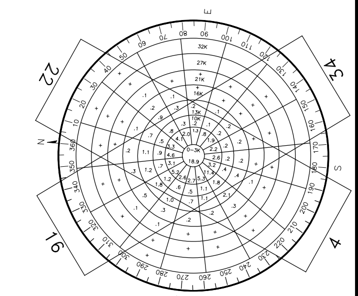
	EXISTING
AIRPORT ELEVATION	171.8' (MSL)
AIRPORT REF. POINT (ARP)	N 41°-31'-56.79" W 71°-16'-53.56"
MEAN DAILY MAX. TEMP.	79°
AIRPORT AREA (ACRES)	221
AIRPORT NAVAIDS	GPS/LOC
AIRPORT COMMUNICATIONS	UNICOM (122.8)
AIRPORT WEATHER REPORTING	AWOS-3 @ UUU (132.075)
TAXIWAY WIDTH (MIN/MAX)	40'
TAXIWAY LIGHTING	MITLS
OPERATIONAL ROLE	GENERAL AVIATION
FAA ROLE	GENERAL UTILITY

EXISTING AIRPORT FACILITIES

NO.		ELEV. (MSL)
1	TERMINAL / FBO HANGAR	177.0'
2	BEACON (ON THE POLE)	157.4'
3	ELECTRIC VAULT	172.0'
4	SNOW REMOVAL EQUIPMENT BUILDING	NA
5	TEMPORARY HANGAR	NA
6	MMR ASSOCIATES (LEASED)	NA
7	NATIONAL GUARD BUILDING	171.3'
8	ANIMAL SHELTER	151.4'
9	ASOS	177.7'
10	LOCALIZER SHELTER	NA
11	FUEL FARM	NA
12	LOCALIZER	NA

VFR WIND COVERAGE

(15 MPH ALLOWABLE CROSS WIND)



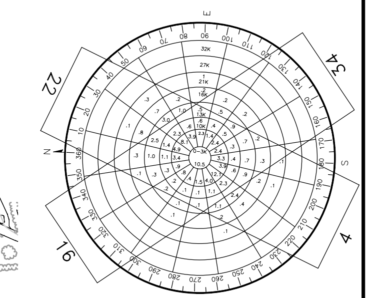
CROSSWIND COVERAGE (10 knots)
RUNWAY 4/22 89.7%
RUNWAY 16/34 86.8%
BOTH 90.4%

CROSSWIND COVERAGE (13 knots)
RUNWAY 4/22 95.4%
RUNWAY 16/34 94.6%
BOTH 99.7%

CALM=6.9% 1-3 KNOTS 4.8%

IFR WIND COVERAGE

(15 MPH ALLOWABLE CROSS WIND)



CROSSWIND COVERAGE (10 knots)
RUNWAY 4/22 92.5%
RUNWAY 16/34 76.0%
BOTH 97.7%

CROSSWIND COVERAGE (13 knots)
RUNWAY 4/22 97.1%
RUNWAY 16/34 89.4%
BOTH 99.4%

CALM=6.9% 1-3 KNOTS 4.0%

WIND ROSES

LOCATION: NEW BEDFORD
SOURCE: NATIONAL CLIMATIC DATA CENTER
PERIOD: JANUARY 1962 – DECEMBER 1971

RUNWAY DATA

	RUNWAY 4-22 EXISTING	RUNWAY 4-22 FUTURE	RUNWAY 16-34 EXISTING	RUNWAY 16-34 FUTURE
ARC	B-II	SAME	B-II	SAME
% WIND COVERAGE (IFR)	95.4%	SAME	94.7%	SAME
RUNWAY LENGTH	2999'	SAME	2623'	SAME
WIDTH (FULL STRENGTH)	75'	SAME	75'	SAME
SURFACE	ASPHALT	SAME	ASPHALT	SAME
MAGNETIC HEADING	N 23°-49'-12" E (TRUE)	SAME	N 36°-27'-36" W (TRUE)	SAME
EFFECTIVE GRADIENT (%)	0.8	SAME	0.6	SAME
DISPLACED THRESHOLD	–	–	–	–
PAVEMENT STRENGTH S / D / DT	13 / – / –	SAME / – / –	13 / – / –	SAME / – / –
RUNWAY MARKING	BSC (4) NPI (22)	SAME SAME	NPI (16) BSC (34)	SAME SAME
NAVIGATIONAL AIDS	LOC (22)	SAME	VOR/DME/GPS (16)	SAME
VISUAL AIDS	VASI-L (4) REIL, AVASI-L (22)	SAME	VASI-L (16)	SAME
RUNWAY LIGHTING	M.I.R.L.	SAME	M.I.R.L.	SAME
PART 77 CATEGORY	VISUAL (4) NON-PRECISION >3/4 mi (22)	SAME SAME	NON-PRECISION >3/4 mi (16) VISUAL (34)	SAME SAME
APPROACH SURFACES	15:1 (4)-Trees 21:1 (22)-Trees	20:1 SAME	20:1 (16)-Trees 18:1 (34)-Trees	SAME 20:1
RSA DIMENSIONS WIDTH (W)	150'	SAME	150'	SAME
RSA DIMENSIONS LENGTH (L) BEYOND RW END	300'	SAME	300'	SAME
ROFA DIMENSIONS WIDTH (W)	500'	SAME	500'	SAME
ROFA DIMENSIONS LENGTH (L) BEYOND RW END	300'	SAME	300'	SAME
RPZ DIMENSIONS INNER (W1)	500'	SAME	500'	SAME
RPZ DIMENSIONS OUTER (W2)	700'	SAME	700'	SAME
RPZ DIMENSIONS LENGTH (L)	1000'	SAME	1000'	SAME
RPZ DIMENSIONS DIST (D) BEYOND RW END	200'	SAME	200'	SAME

LEGEND

FEATURE	EXISTING	FUTURE
AIRPORT PROPERTY LINE		SAME
RUNWAY VISIBILITY ZONE (RVZ)	RVZ	SAME
RUNWAY PROTECTION ZONE (RPZ)	RPZ	SAME
RUNWAY OBJECT FREE AREA (ROFA)	ROFA	SAME
RUNWAY SAFETY AREA (RSA)	RSA	SAME
RUNWAY OBJECT FREE ZONE (ROFZ)	ROFZ	SAME
INNER APPROACH OBJECT FREE ZONE (IAOFZ)	IAOFZ	SAME
TOWN BOUNDARY		SAME
PAVED ROADS, RUNWAYS, ETC.		SAME
UNPAVED ROADS		SAME
ON-AIRPORT BUILDINGS		
MEDIUM INTENSITY LIGHTS		SAME
LOCALIZER		SAME
VASI (VISUAL AID)		SAME
FENCING		SAME
CONTOURS		SAME
TREE LINE (APPROXIMATE)		SAME
FLAGGED WETLAND LIMIT (N.R.S.)		SAME
AIRFIELD PAVEMENT		
AIRFIELD PAVEMENT TO BE REMOVED	N/A	

NON-CONFORMING FAA STANDARDS

Runway Visibility Zone (RVZ): Phase I Based Apron Expansion will Correct Non-Conforming RVZ.

RHODE ISLAND AIRPORT CORPORATION

APPROVED ______________________ DATE ________
MANAGER OF PLANNING

APPROVED ______________________ DATE ________
SR. VICE PRESIDENT OF PLANNING, ENGINEERING & ENVIRONMENT

APPROVED ______________________ DATE ________
PRESIDENT AND CEO

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION NEW ENGLAND REGION

APPROVED ______________________ AIRPORTS DIVISION

DATE ______________________

NOTES:
1. AERIAL PHOTOGRAMMETRIC BASE FROM DUFRESNE-HENRY (1996)
2. AIRPORT PROPERTY LINE DIGITIZED FROM EXHIBIT-A BY RIAC (2001).
3. FENCE LINE FIELD VERIFIED WHEREABLE. LOCATION ON MAP MAY NOT BE EXACT.
4. TEMPORARY HANGAR, SNOW REMOVAL EQUIPMENT BUILDING AND FUELING ARE RECTIFIED WITH OCTOBER 2004 AERIAL PHOTO. LOCATIONS ARE APPROXIMATE AND HAVE NOT BEEN SURVEYED.

The Louis Berger Group, Inc. | Rhode Island Airport Corporation | **Preferred Alternative & Conceptual Airport Layout Plan** Newport State Airport | December 2007 | FIGURE 4.8

Chapter 5.0 – Environmental Review

The purpose of this Chapter is to conduct a general assessment of the environmental effects of the preferred alternative and to define the potential extent of future environmental analyses that is needed to implement the airfield improvements shown on the ALP.

This environmental review, while not a formal Environmental Assessment (EA), will consider the environmental elements described in FAA Advisory Circular 150/5070-6B, FAA Order 5050.4B, Airport Environmental Handbook, and relevant Rhode Island environmental regulations and procedures. Unless otherwise identified as "Categorically Exempt" an EA will be necessary for the projects on the ALP that are anticipated to be implemented in the short-term (5 year) planning period. An EA will be conducted for those projects identified in the short-term planning period (Phase 1). An EA will include opportunity for public comment and will define any "Categorically Exempt" improvements as defined by FAA Order 5050.4B, as well as identify any possible mitigation measures or modifications to the ALP to avoid, minimize or mitigate environmental impacts, should any exist.

This Chapter includes the following sections:

- Section 5.1 – Noise Impacts
- Section 5.2 – Land Use
- Section 5.3 – Air Quality
- Section 5.4 – Water Quality
- Section 5.5 – U.S. Department of Transportation Act Section 4(f) Lands
- Section 5.6 – Historic, Architectural, Archaeological, and Cultural Resources
- Section 5.7 – Biotic Communities
- Section 5.8 – Threatened or Endangered Species of Flora and Fauna
- Section 5.9 – Wetlands
- Section 5.10 – Floodplains
- Section 5.11 – Coastal Zone Management
- Section 5.12 – Coastal Barriers
- Section 5.13 – Wild and Scenic Rivers
- Section 5.14 – Farmland
- Section 5.15 – Energy Supply and Natural Resources
- Section 5.16 – Light Emissions
- Section 5.17 – Solid Waste Impact
- Section 5.18 – Environmental Justice
- Section 5.19 – Summary

5.1 Noise Impacts

Generally, aircraft noise is often one of the most significant environmental issues associated with airports because of the potential it has to disrupt communities adjacent to airports. Because this issue is so important, the FAA has developed standard noise models to analyze the effects of aircraft noise. To address and alleviate noise problems where they exist around an airport various measures are available to address these problems.

With respect to UUU, the projects proposed in this master plan are not designed to generate any changes in the type, size or number of aircraft operating to or from the Airport. A review of any potential noise impacts will be included as part of the subsequent (EA) process.

During construction, short term increases in noise levels associated with standard construction activities will occur in the project areas during standard daylight working hours due to the use of equipment that may include bulldozers, loaders, and dump trucks. Increased noise levels are only expected on a temporary basis, and are not expected to occur beyond the project's completion.

5.2 Land Use

All projects are located on Airport property and are consistent with aviation uses. These projects will not have land use ramifications, such as disruption of communities or relocation, beyond the Airport boundaries. Some minor changes in traffic patterns may occur as a result of constructing new T-hangars that would be accessible via Oliphant Lane on the north end of the Airport. Any increase in traffic volume along Oliphant Lane is expected to be minimal, on the order of a dozen additional vehicles per day. Consequently, no potential adverse effect is anticipated.

Projects associated with the preferred alternative are not expected to conflict with the height restrictions specified in the Middletown Airport Height Restrictions Ordinance. Areas of the preferred alternative lie within Zone 1 of the Middletown Watershed Protection District, as described in Section 5.4.

5.3 Air Quality

As stated in Chapter 1 of the Airport Master Plan, an air quality assessment for long term impacts is not required for proposed projects that will not increase the current UUU passenger and operations numbers. The FAA thresholds are based on an understanding that small airports with the limited operations (existing and projected) like UUU have been found to have essentially no impact on air quality.

The proposed projects would pose no permanent impact to air quality. A temporary effect would potentially occur as a result of use of fresh asphalt necessary for construction of realigned taxiways and expanded parking areas. Additional construction vehicle traffic and activity would also have a temporary impact on air quality resulting from fugitive dust emissions as well as short-term emission of air pollutants originating as the by-product of construction equipment fuel combustion during the construction and demolition phases. Air pollutant emissions would be minimized by the relatively short duration of the proposed projects and the limited amount of earth disturbance associated with the demolition phases of the projects. In addition, air quality impacts are not expected to extend beyond the immediate vicinity of each project area and no impacts are expected following completion of the projects.

The appropriate mitigation measures identified in FAA AC 1505370-10, *Standards for Specifying Construction at Airports*, should be followed during the proposed projects. In addition, FAA specifications included in *Temporary Air and Water Pollution, Soil Erosion, and Siltation Control* should be included in the project contract documents to ensure that construction impacts to air quality be minimized.

5.4 Water Quality

Any new development, such as the construction of a terminal building will require that water runoff be properly collected and treated. As such, any new development projects at UUU requires consultation with federal, state, and local agencies with respect to water quality. The coordination process requires that a description of the proposed development be sent to the appropriate agencies requesting a determination of water quality impacts.

5.4.1 Surface Water

Section 401 of the Federal Clean Water Act (1972) requires applicants for Federal permits for projects that result in a discharge to waters (including wetlands) of the State of Rhode Island to obtain a State Water Quality Certification (WQC). Projects that fall under the U.S. Army Corps of Engineers (USACOE) Programmatic General Permit (PGP) and require a RI Department of Environmental Management (DEM) Freshwater Wetlands Act (FWA) permit receive the WQC through the PGP review process. For projects that require a so-called individual permit from the USACOE and a DEM FWA permit, the WQC will be issued through the FWA review process.

Applicable activities that likely will require a WQC include those involving any filling of wetlands and/or the waters of the State of Rhode Island. Applicable activities that likely will require a State Water Quality Certification (WQC) include those involving any filling of wetlands and/or the waters of the State of Rhode Island. These potentially include Phase I of the based aircraft apron expansion, which would have a western edge about 150 feet east of wetlands associated with Bailey Brook. The access path from the Runway 16 end to this proposed apron expansion would be within about 50 feet of the wetland edge. The Phase 3 portion of the transient aircraft apron expansion is located less than 50 feet east of the delineated wetlands edge. The locations of wetlands in this area are shown on Figure 5.1. Potential impacts of the preferred alternative on wetlands are discussed further in Section 5.9. Since erosion controls will be maintained throughout the duration of the proposed projects, adverse impacts to surface water are not expected to occur during or following completion of the proposed projects.

Any potential development within Zone 1 of the Middletown Watershed Protection District must be granted a special-use permit from the Middletown Zoning Board of Review. This zoning and permitting requirement does not apply on State property, including Newport Airport. However, the proposed projects will be implemented in a manner intended to minimize impacts on water quality. Zone 1 includes areas of the Newport Airport within 200 feet of Bailey Brook and its tributaries and areas of Stissing soils. Areas of the preferred alternative that lie within Zone 1 include ramps to the partial parallel taxiways, and the Phase 3 portion of the transient aircraft apron expansion, which lie within the 200-foot buffer zone from streams. These areas are shown on Figure 5.2.

A drainage study is recommended for the entire airport as part of the preferred alternative. This is especially important at the Runway 4 end, which continues to experience drainage problems due to limited grades, the presence of stream crossings, and lack of positive drainage (piping and structures). This drainage problem creates a safety hazard, attracting birds and other wildlife.

5.4.2 Ground Water

The current septic system located adjacent to the former airport terminal building is not in conflict with the proposed projects. The proposed projects will result in a minor increase in the amount of disturbed lands to approximately 8.06 acres. Proper erosion controls will be maintained throughout the duration of the proposed projects and therefore the proposed projects will not result in the discharge of water or pollutants to groundwater.

The estimated changes in areas of impervious surface at the Newport Airport are not expected to impact the quality and quantity of water providing recharge to the Crystal Spring Water Company, a private water bottling company located adjacent to Newport Airport on West Main Road. The final design of the proposed airport projects must take groundwater protection into account and ensure that all state and local groundwater protection regulations are followed or exceeded.

5.4.3 Drinking Water

Newport Airport lies within the watershed of the primary drinking water source for Aquidneck Island. However, the potential effects of the proposed projects on drinking water supply are expected to be minimal. No road salt or other deicing agents are used on paved areas of UUU and there would be no change in the use of petroleum or other chemicals in paved areas or other areas of UUU related to the proposed projects. Increased impervious surface at Newport Airport could result in less direct recharge to the underlying aquifer. Based on the lack of significant adverse effects to surface water and groundwater described in Sections 5.4.1 and 5.4.2, no significant adverse impacts to drinking water on the Airport property or on Aquidneck Island are anticipated as a result of the proposed preferred alternative projects.

5.4.4 Stormwater

Construction projects that disturb one acre or more of land and where stormwater runoff drains to waters of the United States are required to seek coverage under a Rhode Island Pollutant Discharge Elimination System (RIPDES) permit. To receive coverage under the permit, an applicant must complete and certify a Notice of Intent (NOI) and implement a Storm Water Pollution Prevention Plan (SWPPP) to control sedimentation and erosion during construction. Upon completion of the project, the applicant must complete and submit a one-page Notice of Termination (NOT) certifying that disturbed soils at the construction site are stabilized, temporary erosion and sediment control measures have been removed and all stormwater discharges associated with the construction activity have been eliminated.

Airport operations are regulated by the EPA under the National Pollutant Discharge Elimination System (NPDES) authorized by Section 402 of the Clean Water Act. The NPDES permit program controls water pollution by regulating “point sources,” i.e., pipes, man-made ditches and so on, that discharge pollutants into waters of the United States. The State of Rhode Island is authorized by the EPA to administer this program within Rhode Island, and the DEM Office of Water Resources is the administering authority within Rhode Island. Accordingly, consistent with this authority, RIDEM has issued its own general permit for industrial activity. Specific activities at Newport Airport subject to NPDES include aircraft maintenance, cleaning and deicing activities, among others.

Original development of the Airport property and the subsequent construction of additional facilities and support structures altered the site's natural hydrology by installation of runways, buildings, parking areas, etc. Slight additional alterations to stormwater flow at the Airport will result from the preferred alternative, including increasing the amount of impervious surface by:

- Construction of a partial parallel taxiway from Runway 4-22 to the planned stub taxiway at the northwest end of the expanded based aircraft apron;
- Realignment of Taxiway "A";
- Expansion of the based and transient aircraft aprons; and
- Construction of two new T-hangars to the west of Runway 22.

Construction of these features would require construction of new storm drainage best management practices and modification of the UUU SWPPP. The total area of new impervious surface would be approximately 8.06 acres if the preferred alternative were implemented.

5.5 U.S. Department of Transportation Act Section 4(f) Land

No adverse impacts to Section 4(f)/6(f) properties (publicly owned parks, recreation areas or wildlife refuges) are anticipated as a result of the preferred alternative and, therefore, no measures to mitigate potential impacts resulting from the proposed action appear warranted.

5.6 Historic, Architectural, Archaeological, and Cultural Resources

Preliminary review of the available material suggests that there is a low to moderate probability of encountering archaeological resources in the undisturbed portions of the project area. One region of archaeological sensitivity had been identified located adjacent to the east of the Runway 34 end as part of a previous Environmental Assessment (Dufresne-Henry, 2001). The specific nature of this sensitive area was not specified in that document. There are no proposed activities among the preferred alternative in this area.

The RIHPHC also indicated that "as a property of the recent past" the airport may warrant a re-evaluation for historical significance". The airport air control tower has been listed as a historic/architecturally important building by the Town (Town of Middletown, 2004).

Effects on cultural resources within the Airport can result from project-related activities such as facility operations, modifications to project facilities, or other project-related ground-disturbing activities. The type and level of effects on cultural resources can vary widely, depending upon the setting, size, and visibility of the resource, as well as whether there is public knowledge about the location of the resource.

A field inspection of the UUU facility prior to implementation of the preferred alternative will involve a walkover, photographic documentation of the existing conditions at the Airport including all buildings, and a review of documentation available at the facility regarding the land-use history at the facility (e.g., cut and fill areas, documented depth of disturbance, etc.) and development through time.

Following the site visit and a review of the findings, research will be conducted at the RIHPHC and the Rhode Island Historical Society (RIHS) to develop historic and prehistoric contexts of the UUU vicinity.

After compiling and interpreting the field inspection and background research findings, Berger will meet with the RIHPHC to discuss potential cultural resource impacts and possible mitigation alternatives. Project work will be coordinated with the local Narragansett Indian tribe, as needed.

5.7 Biotic Communities

The Airport consists of previously cleared and developed lands, runways, roads, and support structures. The majority of the vegetation found within the developed area of the Airport consists of mowed grasslands. Although there are natural habitats including managed grasslands and wetlands within and surrounding the airport property, the proposed projects would be largely confined to developed areas of the Airport, thereby avoiding large impacts on natural areas.

Wildlife species that congregate around the Airport are typically highly mobile and may be temporarily displaced or disturbed during construction and demolition activities. However, potential impacts to biotic communities are not expected to be adverse.

The obstruction analysis identified obstructions and recommended actions. A copy of the report is included in Appendix E.

5.8 Threatened or Endangered Species of Flora and Fauna

According to the U.S. Fish and Wildlife Service (FWS), no Federally-listed or proposed, threatened or endangered species are known to occur on airport grounds. Based on a letter provided by the FWS in response to an inquiry by Berger, preparation of a Biological Assessment or further consultation under Section 7 of the Endangered Species Act is not required. A copy of the letter is included in Appendix G

The DEM has identified two species of concern located in the airport vicinity: the Baltimore butterfly (Euphydryas phaeton) and the northern leopard frog (Rana pipiens). The proposed projects would be largely confined to developed areas of the Airport, thereby avoiding large impacts on these species.

5.9 Wetlands

Work in wetland areas in Rhode Island is regulated by the DEM's *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act* (1998). Under those regulations, a proposed project or activity which may alter freshwater wetlands requires a permit from DEM. Altering or filling of wetlands is administered on the federal level by the U.S. Environmental Protection Agency and U.S. Army Corps of Engineers.

Based on information contained in the 2001 EA, wetlands exist along the perimeter of the airport and consist primarily of palustrine scrub-shrub, palustrine emergent, and forested wetland systems. A 2005 wetlands delineation generally confirmed the findings of the 2001 EA. Wetlands were mapped along the perimeter of the airport as shown in Figure 5.1.

As stated in Chapter 4, Phase I of the based aircraft apron expansion would have a western edge about 150 feet east of wetlands associated with Bailey Brook and the ramp from the Runway 16 end to this apron would be located about 50 feet east of the delineated wetlands. Phase 3 of the transient aircraft apron expansion is located less than 50 feet east of wetlands associated with the East Branch Bailey Brook. The proposed partial parallel taxiway to Runway 4-22 is located approximately 190 feet east and 470 feet west of wetland boundaries. The locations of wetlands in this area are shown on Figure 5.1. The southern portion of the potential new terminal/hangar building would be located within the wetland area mapped by Rhode Island Geographic Information Systems, but outside of the updated flagged wetland limit performed by Natural Resource Services (200%). Other than the potential new terminal/hangar building, none of the preferred alternative would be located directly within areas of delineated wetlands.

DEM regulates a 50 foot perimeter wetland (i.e. buffer zone) around wetlands (swamps, marshes, bogs, ponds); and 100- and 200-foot riverbank wetlands (i.e. buffer zone) adjacent to rivers and streams depending on their width. When the mean channel width is less than ten feet, the riverbank wetland is 100 feet. When the mean channel width is ten feet or more, the riverbank wetland is 200 feet. Bailey Brook is generally less than ten feet wide in the area of the Airport. Based on these criteria, the Phase I portion of the based aircraft apron expansion, the Phase 3 portion of the transient aircraft apron expansion, and the potential new terminal/hangar building would be located partially within a wetland buffer zone.

5.10 Floodplains

Areas of the Airport along Bailey Brook and the Northeast Branch and East Branch of Bailey Brook are mapped as Zone B, within the 500-year flood zone. A building permit must be obtained through the Town of Middletown Building Inspector prior to any development in an Area of Special Flood Hazard, in accordance with Section 1003 of the Middletown Zoning Ordinances. However, the airport as State property is exempt from this permitting requirement and the preferred alternative does not include any activities within the mapped flood zone.

The addition of about 8 acres of new impervious area as part of the preferred alternative could have potential effects on the occurrence and frequency of flooding on both the airport property and downstream. Flooding in Bailey Brook downstream of the airport has lead to road closures and property damage on a fairly regular basis, according to Town officials. An evaluation of the effects of additional impervious area on flooding would be conducted as part of the drainage study recommended for the entire airport as part of the preferred alternative.

5.11 Coastal Zone Management

The Rhode Island Coastal Resources Management Council (CRMC) does not have jurisdiction over activities at Newport Airport since no coastal features are located within 200 feet of the Airport and none of the project elements appear to fall under CRMC review. The preferred alternative is not expected to have a significant effect on the coastal environment.

5.12 Coastal Barriers

Since Newport Airport is not located within a coastal zone area, the preferred alternative is therefore exempt from review under the Coastal Barriers Resource Act of 1982 (PL. 97-348) which prohibits most federally financed projects from occurring within the Coastal Barriers Resource System along the Atlantic or Gulf coasts. The proposed projects are not expected to have a significant effect on coastal barriers.

5.13 Wild and Scenic Rivers

Since there are no rivers, including rivers designated by The Wild and Scenic Rivers Act, in Rhode Island or the Airport vicinity, the preferred alternative will not have any significant effect on Wild and Scenic Rivers.

5.14 Farmland

The Federal Farmland Protection Act is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assists in ensuring that Federal programs are administered to be compatible with state and local government, and private programs and policies to protect farmland.

Farmland is broken into the following categories by the Federal Farmland Protection Policy Act: prime farmland, unique farmland, and land of statewide or local importance. Prime farmland (Newport and Pittstown soils) exists within the Airport property and abuts boundaries of the runways. Stissing soils, present on the Airport, are classified as soils of state-wide importance. The locations of these soils with respect to the proposed project areas are shown on Figure 5.3.

If it is determined that the preferred alternative may affect soils protected under the Federal Farmland Protection Act, it may be necessary to contact the U.S. Natural Resources Conservation Service (NRCS) for completion of a Farmland Conversion Impact Rating Form. Based on the impact rating score developed by the NRCS based on this Form, the NRCS may recommend consideration of alternate project sites. The need for completing this form is contingent on the local zoning within the proposed project area since prime farmland does not include land already in or committed to urban development. Areas zoned for commercial, industrial, or high-density residential use may be exempt from this requirement.

5.15 Energy Supply and Natural Resources

The use of energy to support the preferred alternative would largely involve the use of additional fuels in construction and demolition machinery. The proposed airport improvement program does not require use of unusual materials in short supply; therefore, energy supplies and natural resources are not affected by the proposed airport improvement program.

5.16 Light Emissions

There are no significant changes to airport lighting associated with the preferred alternative. In the development of the preferred alternative, special care should be taken to ensure that light emissions do not impact adjacent properties. Overall, no significant impacts are anticipated.

5.17 Solid Waste Impact

Waste disposal during project implementation will be managed separately from normal airport solid waste management operations. The preferred alternative will not significantly increase long term solid waste volumes; therefore, solid wastes are not expected to be affected by the proposed airport improvement program.

5.18 Environmental Justice

The development on the Airport has few if any off-airport impacts. In addition, there are no known areas of minority and low-income residents in the airport vicinity. Therefore, the principles are environmental justice are not triggered here.

5.19 Summary

The recommended projects for the five year planning period do not appear to have a significant impact on the surrounding community or environment. There will be a need, however, to complete coordination with federal, state, and local agencies when the recommended projects are initially designed. This coordination can be done as part of the follow-on Environmental Assessment that should address the following. A summary of the recommendations identified in this analysis are as follows:

- Activities in or adjacent to wetland areas will require a State Water Quality Certification (WQC) and DEM permit;
- A drainage study is recommended for the entire airport as part of the preferred alternative, especially the Runway 4 end, including an assessment of off-airport flooding impacts;
- Prior to construction activities, the UUU SWPPP should be modified to control sedimentation and erosion during construction;
- A field inspection and research at the RIHPHC and RIHS should be conducted to identify potential cultural resources sites within the project vicinity prior to implementation of the preferred alternative; and
- If it is determined that the preferred alternative may affect soils protected under the Federal Farmland Protection Act, it may be necessary to contact the NRCS for completion of a Farmland Conversion Impact Rating Form.

Chapter 6.0 – Airport Layout Plan

This Chapter presents the Airport Layout Plan (ALP) and associated drawings for Newport State Airport (UUU). The ALP drawing set depicts, graphically, the development of the airport proposed over the twenty-year planning period. Although the planning process is dynamic in nature, the ALP is intended to serve as the framework for future development and growth for UUU.

The Airport Master Plan, along with the ALP, must be supplemented by an annual evaluation of airport needs, upon which scheduling and project development presented in the ALP occurs. Updating the ALP and the Master Plan should occur every five to ten years to identify the progress of airport development, identify trends in aviation, and developing recommendations that will address the needs of the airport.

6.1 Airport Layout Plan Drawing Set

The ALP drawing set contains several sheets depicting the existing facilities, planned development, and other pertinent information concerning the airport. The ALP drawing set contains the following drawings:

- Sheet 1 - Title Sheet
- Sheet 2 - Existing Airport Facilities
- Sheet 3 - Airport Layout Plan
- Sheet 4 - FAR Part 77 Imaginary Surfaces
- Sheet 5 - Terminal Area Plan
- Sheet 6 - Airport Zoning Plan

These sheets are discussed in detail in the following Sections. A full set of sheets is presented at the end of this Chapter.

6.2 Title Sheet

The Title Sheet is the introductory sheet of the drawing set. Basic information about the airport is shown on this sheet including an index to the drawing sheets, location map, vicinity map, and relevant text. The Title Sheet is identified as Sheet 1 and is depicted at the end of this Chapter.

6.3 Existing Airport Facilities Plan

The Existing Airport Facilities Plan depicts the existing facilities of the airport at the time of this Master Plan. The purpose of the drawing is to show the existing layout and act as a reference for future development shown in the Airport Layout Plan. Information provided on this drawing includes data tables, airfield facilities, surrounding transportation infrastructures, off airport buildings, and relevant topography. The Existing Airport Facilities Plan is identified as Sheet 2 and is located at the end of this Chapter.

6.4 Airport Layout Plan

The Airport Layout Plan depicts the proposed projects identified in Chapter 4, *Alternatives Analysis*. The projects shown are for the full 20-year planning period. It should be noted that implementation of these projects will be phased, based on facility priorities, as follows: Phase I: 2006 – 2011, Phase II: 2011 – 2016, and Phase III 2016 – 2026.

Table 6.1 presents the projects identified on the ALP by Airside and Landside project categorization.

Table 6.1
Preferred Alternative Projects

Airside Projects
Environmental Assessment & Drainage Evaluation
Drainage Evaluation and Improvements
Rehabilitation Runway 16-34 & Intersection
Rehabilitation & Expansion of Based Aircraft Apron
Obstruction Easement and/or Removal
Construction of Partial Parallel Taxiway to Runway 16-34
Rehabilitation Runway 4-22
Expansion of Transient Aircraft Apron
T-Hangars
Perimeter Fencing Improvements
Realignment/Rehabilitation of Taxiway A
Landside/Miscellaneous Projects
New Terminal & Conventional Hangar Facility
Terminal Area Improvements
Purchase Updated Aircraft Rescue & Fire Fighting (ARFF) Equipment
Purchase Updated Snow Removal Equipment (SRE)
Airport Layout Plan Update
Pavement Maintenance

Additional information shown on the ALP includes data blocks identifying existing and proposed facilities; VFR and IFR wind roses; existing buildings; revision blocks; and signature blocks for the FAA and RIAC. Topography, local road infrastructure, and surrounding buildings are also shown on this drawing. The ALP is identified as Sheet 3 at the end of this Chapter.

6.5 FAR Part 77 Surfaces Plan

This drawing shows the full FAR Part 77 Imaginary Surfaces on a USGS Quadmap. This drawing includes a plan view of all 14 CFR Part 77 surfaces. The FAR Part 77 Surfaces Plan is identified as Sheet 4 at the end of this Chapter

In agreement with RIAC, Runway Plans and Profiles were not completed as a part of this effort. Obstruction information was conducted under a separate study and is included by way of reference. This can be found in Appendix E and will not be part of the ALP set.

6.6 Terminal Area Plan

The Terminal Area Plan shows the location and configuration of existing and proposed buildings and paved areas in the terminal area of the airport, including hangars and parking lots. The contents of the Terminal

Area Plan include a large scale plan view of the area; building data table; legend table; and title and revision blocks. Additionally, the Terminal Area Drawing identifies each building's height if available and any existing or planned obstruction markings. The Terminal Area Plan is identified as Sheet 5 at the end of this Chapter.

6.7 Airport Zoning Plan

The Airport Zoning Plan, identified as Sheet 6 at the end of this Section, shows existing and proposed zoning around the airport. This drawing provides RIAC with a plan for zoning, and provides guidance to local authorities for establishing zoning. Traditionally, a land use map is used; however the land use map on file is outdated. Therefore, in agreement with the Airport Advisory Committee, the zoning map depicted was used instead. This drawing is based on the zoning map of the Town of Middletown and includes a title block and revision block.

Chapter 7.0 – Implementation Plan

The purpose of this Chapter is to develop a schedule and priority of projects identified in the Airport Master Plan, as well as the implications on the financial resources of RIAC. The Implementation Plan provides order-of-magnitude cost estimates for each project and identifies the potential levels of funding from the Federal Aviation Administration (FAA), RIAC, and other sources. The goal for the Implementation Plan is to ensure that the airport is properly maintained, safety improvements are provided, and new infrastructure development is consistent with the ALP.

The legislation that currently authorizes the FAA to issue Airport Improvement Program (AIP) grants for airport eligible projects expired September 30, 2007. The new legislation submitted by the FAA is currently being debated in Congress and it is too speculative to determine the outcome of the new legislation that will ultimately be passed by Congress and approved by the President. For the purpose of this Chapter it is assumed that the existing AIP requirements and funding sources will continue. Moreover, since the projects are identified in terms of priority they still are an accurate reflection of need regardless of funding requirements and availability.

All planning projects identified in this Chapter will include a commitment to ongoing public participation as a part of their scope of work. These planning projects include the proposed Environmental Assessment identified in Phase I, any future compatibility planning as identified in the Statewide System Plan, and any obstruction easements or removals identified in the obstruction analysis.

This Chapter includes the following sections:

- Section 7.1 – Capital Improvement Program
- Section 7.2 – Financial Plan

7.1 Capital Improvement Program

The schedule for the Development Program is based on a twenty year planning period separated into three phases:

- Phase I (2006-2011) – Short Term
- Phase II (2012-2016) – Mid Term
- Phase III (2017- 2026) – Long Term

The short term projects identified in the Airport Master Plan constitutes what is commonly referred to by FAA as the Airport Capital Improvement Plan (ACIP). The medium range projects are those more appropriately identified for inclusion in the FAA National Plan of Integrated Airport System (NPIAS). The 10-year outlook in the NPIAS report to Congress develops national airport needs on a broader scale. Finally, the last phase of development is a general range of projects for the 10 to 20-year period and obviously much more speculative. Both the mid-term and long term projects provide the airport owner and FAA with an outlook of future needs. But as they move into the near term horizon they need to be re-assessed as demand changes or funding sources are better defined.

Order-of-magnitude cost estimates were developed for each of the projects identified in the UUU Master Plan. For eligible projects the FAA Airport Improvement Program (AIP) can fund up to 95% of the cost. The balance of cost is usually provided by the airport Sponsor, in this case RIAC. Typically, new hangars are funded by private investment because they are not eligible for FAA AIP funds. Regardless of the funding source, the development must be consistent with the ALP and is therefore subject to FAA and RIAC review.

It should be noted that the development program is based on the assumption that UUU's activity level will grow consistent with the forecasts and that the facilities will be developed to meet the demand. If activity does not meet forecasted demand the implementation of the project schedule should be re-evaluated and modified as necessary.

A discussion of each phase follows and identifies the projects, priority and the estimated cost.

7.1.1 Phase I Development

Table 7.1 presents the Phase I projects and their associated costs.

Table 7.1
Phase I Estimated Project Costs and Priority

Priority	Project Description	Estimated Cost (2007 dollars)
1	Environmental Assessment	$150,000
2	Drainage Evaluation Study	65,000
3	Drainage Improvements	660,000
4	Rehabilitation & Expansion of Based Aircraft Apron and Lighting	1,500,000
5	Rehabilitation of Runway 16-34, Intersection, Lighting & PAPI	2,500,000
6	Obstruction Easements (off-airport)[1]	1,600,000
7	Construction of Partial Parallel Taxiway to Runway 16-34	1,675,000
8	10-Unit T-Hangars	600,000
	Phase I Total	$8,750,000

[1] To be determined pending an action plan by RIAC and public coordination.

The primary goal of Phase I is to rehabilitate the existing pavement and lighting and provide new infrastructure to meet an existing demand. The significant aspects of each project are:

1. **Environmental Assessment** – This project will provide the required environmental assessment (EA) for the capital projects associated with Phase I of the Master Plan and CIP. The EA will conform to the FAA Environmental Handbook.

2. **Drainage Evaluation Study** – This project will provide a more detailed evaluation of the airport drainage system in coordination with the Town of Middletown to determine the effects of both on and off airport projects, their effect on the drainage of the airport, and provide recommendations to improve drainage.

3. **Drainage Improvements** – Based upon the recommendations of the Drainage Evaluation Study, this project would mitigate existing drainage issues through a coordinated effort between RIAC and the Town of Middletown.

4. **Rehabilitation & Expansion of Based Aircraft Apron** – This project would reconstruct a deteriorating apron pavement and provide additional new pavement to meet an existing demand. In addition, it would provide ramp security lighting for the based aircraft apron. This project will help to relieve the use of existing transient parking spaces for based aircraft provide space for existing based aircraft while the existing based apron is rehabilitated.

5. **Rehabilitation of Runway 16-34 and Intersection** – This project would reconstruct a deteriorating runway pavement and the intersection with Runway 4-22. It would also replace the existing runway lighting system. Additionally, the drainage and grading of the runway would be improved. The runway and intersection would be designed to meet current FAA standards. Finally, this project would look to upgrade the visual approach aids from a VASI to a PAPI.

6. **Obstruction Easements (Off-Airport)** – To be determined pending an action plan by RIAC and public coordination.

7. **Construction of Partial Parallel Taxiway to Runway 16-34** – This construction project would provide access to both ends of Runway 16-34 and improve the safety of the airport by minimizing the amount of time aircraft would be required to “back taxi” on the runway. This project would include the construction of new pavement, installation of a new taxiway lighting and signage system.

8. **10-Unit T-Hangars** – This project would be by private development. Nonetheless it is still subject to an EA be prepared and an environmental finding by FAA.

7.1.2 Phase II Development

Table 7.2 presents the Phase II projects and their associated costs.

Table 7.2
Phase II Estimated Project Costs and Priority

Priority	Project Description	Estimated Cost (2007 dollars)
9	Rehabilitation of Runway 4-22 and Lighting	$2,700,000
10	Obstruction Removal (off-airport)[1]	600,000
11	Expand Transient Apron (Phase 1 & 2)	400,000
12	Perimeter Fencing Improvements	250,000
13	10-Unit T-Hangars	600,000
14	Airport Layout Plan Update	150,000
	Phase II Total	$4,700,000

[1] To be determined pending an action plan by RIAC and public coordination.

The primary goal of Phase II is to continue rehabilitating existing runway pavement, improve airport perimeter protection for wildlife and security, provide new infrastructure to meet a potential demand and reassess/update the planning requirements. The significant aspects of each project are:

9. **Rehabilitation of Runway 14-22 (excluding intersection)** - This project would rehabilitate the runway pavement, replace the runway lighting and improve the runway drainage.

10. **Obstruction Removal (Off-Airport) –** To be determined pending an action plan by RIAC and public coordination.

11. **Expansion of Transient Aircraft Apron –** Provides space for the projected demand for transient aircraft parking, and the expansion of the based aircraft apron. This project will include improved drainage, new pavement, and tie-down.

12. **Perimeter Fencing Improvements –** This project includes improvements to the fencing in the airport entrance area, northwest corner/industrial area, and northeast corner/stone plant area to bring all fencing to a height of 8 feet with barbed wire extensions. An alternative to this project is to upgrade fencing at the time of individual projects in the vicinity of the fenced area needing improvement.

13. **10-Unit T-Hangars –** Subject to the demand and success of the Phase I T-Hangar project RIAC would solicit for private development of an additional set of 10 T-Hangars.

14. **Airport Layout Plan Update –** This project would provide an update to this Master Plan.

7.1.3 Phase III Development

Table 7.3 presents the Phase III projects and their associated costs.

Table 7.3
Phase III Estimated Project Costs and Priority

Priority	Project Description	Estimated Cost (2007 dollars)
15	Expansion of Based Aircraft Apron (Phase 2 and 3)	$1,570,000
16	New Terminal Area Facility, Utility and Electrical Vault Improvements	4,500,000
17	Realignment/Rehabilitation of Taxiway A	965,000
18	Purchase of Updated Snow Removal Equipment (SRE)	250,000
	Phase III Total	$7,285,000

15. **Expansion of Based Aircraft Apron (Phase 2 and 3)** - This project would provide additional new pavement to meet potential demand. In addition, it would provide ramp security lighting for the based aircraft apron.

16. **New Terminal Area Facility, Utility and Electrical Vault Improvements –** This project would provide new terminal area facilities to replace the existing terminal/FBO building. When these

improvements are implemented, utilities in the terminal area should be evaluated and improved based on the overall demands any new facility will require. Finally, electrical vault improvements should be improved and/or integrated into these improvements.

17. Realignment/Rehabilitation of Taxiway A – This project would rehabilitate the existing Taxiway A reducing it to a 35 foot width while also realigning the northerly portion of the taxiway to improve the efficiency of the taxiway system near the intersection of the runways while removing taxiing aircraft from the transient apron improving operational safety.

18. Purchase of Updated Snow Removal Equipment (SRE) – This would replace the existing snow removal equipment that is required to keep the airfield open during winter weather operations.

7.2 Financial Plan

This section describes the funding sources available to RIAC to cover the cost of proposed projects. Table 7.4 on the following page summarizes the Airport CIP presented in Section 7.1. The summary includes the total cost of the proposed projects (FAA RIAC, and others). The Airport Improvement Program (AIP) is the primary source of funding for airport projects at Newport State Airport. The AIP funds available to Newport are broken down into the following categories:[1]

- **Apportionment** – A defined amount of funding provided to each State based on the area and population. It is to be used for general aviation airports in the state based on need and priority.
- **Non-Primary Entitlement** – A funding amount allocated to general aviation airports currently set at a maximum $150,000 per airport.
- **Discretionary** – Awarded at the discretion of the FAA to those airport projects which meet strict priority criteria established by the FAA on a nationwide basis.

Other funding sources available to RIAC include General Airport Revenue Bonds; Short and Long Term Borrowing; and Operating Proceeds.

Table 7.4
Summary of Estimated Project Costs

#	Project Description	Est. Total	FAA[2]	RIAC	Other
1	Environmental Assessment	$150,000	$142,500	$7,500	$0
2	Drainage Evaluation Study	65,000	61,750	3,250	0
3	Drainage Improvements	660,000	627,000	33,000	0
4	Rehabilitation & Expansion of Based Aircraft Apron and Lighting	1,600,000	1,520,000	80,000	0
5	Rehabilitation of Runway 16-34, Intersection, Lighting & PAPI	2,500,000	2,375,000	125,000	0
6	Obstruction Easements (off-airport)[3]	1,600,000	1,520,000	80,000	-
7	Construction of Partial Parallel Taxiway to Runway 16- 34	1,675,000	1,591,250	83,750	0
8	10-Unit T-Hangars	600,000	0	0	$600,000
	Phase I Total	$8,750,000	$8,312,500	$437,500	$600,000
9	Rehabilitation of Runway 4-22 and Lighting	$2,700,000	$2,565,000	$135,000	$0
10	Obstruction Removal (off-airport)[3]	600,000	570,000	30,000	-
11	Expand Transient Apron (Phase 1 & 2)	400,000	380,000	20,000	0
12	Perimeter Fencing Improvements	250,000	237,500	12,500	0
13	10-Unit T-Hangars	600,000	0	0	600,000
14	Airport Layout Plan Update	150,000	142,500	7,500	0
	Phase II Total	$4,700,000	$4,465,000	$205,000	$600,000
15	Expansion of Based Aircraft Apron (Phase 2 and 3)	$1,570,000	$1,491,500	$78,500	$0
16	New Terminal Area Facility, Utility and Electrical Vault Improve.	4,500,000	0	4,500,000	0
17	Realignment/Rehabilitation of Taxiway A	965,000	916,750	48,250	0
18	Purchase of Updated Snow Removal Equipment (SRE)	250,000	237,500	12,500	0
	Phase III Total	$7,285,000	$2,645,750	$4,639,250	$0
	Phase I, II and III Total	$20,735,000	$15,423,250	$5,281,750	$1,200,000

[1] Additional discussion of FAA AIP Funds (Entitlement, Apportionment, Discretionary, etc.) will be provided if Reauthorization is finalized before this master plan is completed.
[2] The final FAA funding of projects will be determined after coordination of the Newport Airport CIP with FAA. It is also affected by the funding considerations for the other RIAC GA airports.
[3] To be determined pending an action plan by RIAC and public coordination.