CHAPTER 5

ALTERNATIVES EVALUATION PROCEDURES

500. Introduction

This section introduces the alternatives evaluation procedures that will be used during the actual alternatives evaluation effort, which will occur during the next phase of this Study.
The procedures have been formulated with input from the Community Airport Committee, the Virginia Department of Aviation (DOAV), and FAA.

A. Alternatives To Be Evaluated

Three (3) alternatives have been formulated to undergo future evaluation, as described below.

Alternative A – "Status Quo".

This alternative assumes that the existing Williamsburg - Jamestown Airport would continue to operate as a privately owned public-use airport facility in compliance with current DOAV Licensing and Minimum Design Standards. This alternative also considers that all conditions in the current Special Use Permit (SUP) would remain in effect.

Alternative B – "Local Acquisition".

This alternative considers the possibility that the existing Williamsburg – Jamestown Airport might be acquired by a public sponsor, and improved (where practicable) to meet FAA Design Standards. Local acquisition could potentially increase the stability of the existing Airport facility, and enhance the possibility of future FAA Funding Grants to help implement Airport improvements. This alternative also considers that any conditions in the current SUP which were found objectionable by FAA (and a barrier to potential funding) would be reevaluated by James City County through direct discussions with FAA.

Alternative C – "Develop New Airport".

This alternative will investigate the possibility of establishing a new airport that might better meet the anticipated airport facility needs associated with the

previously defined Williamsburg – Jamestown Primary General Aviation Service Area.

It is important to note that no specific potential site will be identified as part of this Study.

B. Selected Evaluation Criteria

Twenty Seven (27) evaluation criteria have been selected for use during the alternatives evaluation effort, as defined below in Exhibit 5-1.

Exhibit 5-1
Listing and Explanation Of Evaluation Criteria To Be Used In The Alternatives Evaluation Effort.

Known Environmental Factors Category

1. Compatible Land Use
   This criterion provides for the ability to conduct a general assessment of each alternative's ability to support compatible land use between the airport facility and the surrounding community. This will be accomplished by considering the ability to preserve and fully protect all safety areas and protection zones as associated with each alternative. Since the 65Ldn and higher noise levels are also normally contained within the safety areas and protection zones, potential noise impacts will also have been considered. Applicable information found in The Virginia Department of Aviation's compatible land use guide will also be considered.

2. Potential Recreation / Wildlife / Historic Area Impacts
   This criterion will consider potential impacts to publicly owned recreation areas, wildlife areas, and historic areas as associated with each alternative. Number of acres of potential impact will be used to assess this factor.

3. Wetlands
   This criterion will consider potential impacts to known wetland areas. Existing and available wetland mapping will be used to perform this analysis for each alternative. Number of acres of potential impact will be used to assess this factor.

4. Floodplains
   This criterion will consider potential impacts to known floodplain areas. Existing and available floodplain mapping will be used to perform this analysis for each alternative. Number of acres of potential impact will be used to assess this factor.

5. Proximity To Land Fill / Wildlife Hazards
   Active sanitary land fills and other geographical features can attract wildlife activity (such as bird activity) that can pose a hazard to aircraft operations. As such, this criterion will consider the potential for wildlife hazards as associated with each alternative.

6. Land Acquisition
   This criterion will consider the amount of land acquisition that would be needed to support the implementation of each alternative. Acres of needed land acquisition will be used to assess this factor.

Engineering Factors Category

7. Special Engineering Factors
   Engineering contingencies (such as unstable soil types) can influence the implementation ability of an alternative. As such, this criterion will consider and list significant engineering factors as related to each alternative.

8. Utility / Pipeline Relocation
   This criterion will consider the amount of utility / pipeline relocation that would be needed to support the implementation of each alternative. Linear feet of needed relocation will be used to assess this factor.

9. Building / Structure Removal
   This criterion will consider the amount of building / structure removal that would be needed to support the implementation of each alternative. Number of structures needing removal will be used to assess this factor.

10. Topography Factors
    Topographical features (such as ground contour elevation changes) can influence the implementation ability of an alternative. As such, this criterion will consider and list significant topography factors as related to each alternative.

Surface Transportation Factors Category

11. Road / Rail Relocation
    This criterion will consider the amount of road / rail line relocation that would be needed to support the implementation of each alternative. Linear feet of needed relocation will be used to assess this factor.

12. New Roadway Requirements
    This criterion will consider the amount of new roadway development that would be needed to support the implementation of each alternative. Linear

feet of needed new roadway development will be used to assess this factor.

13. Highway Congestion Factor

Potential alternative implementation could change airport user driving patterns and subject users to added highway congestion. As such, this criterion will consider the potential of users being subjected to known" highly congested" highway areas.

14. User Driving Time

Potential alternative implementation could influence user driving time from origination areas to the airport facility. As such, this criterion will consider changes to estimated average user driving minutes as associated with each alternative.

Operational Factors Category

15. Ability To Meet Design Standards

This criterion will assess each alternative's ability to meet appropriate airport design standards. Commonwealth of Virginia standards will be used for the "Status Quo" alternative, and FAA design standards will be used for all other alternatives. The following design standards will be considered:

- *Runway length*
- *Runway Width*
- *Runway Safety Area Width*
- *Runway Safety Area Length Prior to Landing Threshold*
- *Runway Safety Area Length Beyond Runway End*
- *Obstacle Free Zone Width and Length*
- *Runway Object Free Area Width*
- *Runway Object Free Area Length Beyond RW End*
- *Runway Protection Zone*
- *Runway Centerline to Taxiway/Taxilane Centerline*
- *Runway Centerline to Holdline*
- *Runway Centerline to Aircraft Parking Area*
- *Taxiway Width*
- *Taxiway Safety Area Width*
- *Taxiway Object Free Area Width*
- *Runway End Siting*
- *Part 77, Objects Affecting Navigable Airspace*

16. Airspace / Airfield Capacity

As associated with each alternative, this criterion will assess the ability of the area airspace to accommodate the anticipated aeronautical demand

without conflict, and the ability of the runway/taxiway system to accommodate anticipated aircraft operations without appreciable delay.

17. Obstruction Removal

This criterion will consider the number of obstructions that would require removal to meet aircraft approach, departure, and circling airspace needs, as related to each alternative. Applicable information found in The Virginia Department of Aviation's compatible land use guide will also be considered.

18. Instrumentation / lighting Improvements

This criterion will consider each alternative's ability to utilize and incorporate current and upcoming technologies such as GPS - WAAS based navigation and approach capabilities, as well as lighting aids.

19. Ability to Meet User Needs

This criterion will assess each alternative's overall ability to meet user needs, including: ability to provide convenient access to destinations within the service area; ability to accommodate a high percentage if the anticipated aircraft mix; and ability to provide on airport support facilities for various types of general aviation related activities.

Economic Factors Category

20. Development Costs

This criterion will consider the estimated development costs associated with the implementation of each alternative. Constant 2008 dollars will be used in all calculations.

21. Economic Benefits

Using existing data contained in the 2004 Commonwealth of Virginia Economic Impact Study, this criterion will consider how airport related jobs might shift from one community to another community – as related to each alternative.

22. FAA Funding Potential

As associated with each alternative, this criterion will assess the potential of the airport facility to be included in FAA's National Plan of Integrated Airport Systems (NPIAS) document, and become eligible for FAA grant funding.

23. Financial Viability Potential

As associated with each alternative, and using other similar general aviation airports as examples, this criterion will consider the potential of the airport facility to operate as a viable economic entity.

Public Support Factors Category

24. Ability To Secure A Public Airport Sponsor
As associated with each alternative, this criterion will consider the ability to secure a public airport sponsor for the airport facility.

25. Airport User Support
This criterion will assess the ability to achieve a high level of airport user support as related to each alternative.

26. Community Support
This criterion will assess the ability to achieve a high level of community support as related to each alternative.

27. Public Agency Support
This criterion will assess the ability to achieve a high level of public agency support as related to each alternative.

C. Alternatives Evaluation Matrix

The results of the full technical analysis as associated with alternatives evaluation effort will be summarized on the Alternatives Evaluation Matrix. For example, under “Land Acquisition”, number of acres required will be indicated for each alternative. Exhibit 5-2 provides a sample of the matrix format to be used.

Exhibit 5-2
Sample Alternatives Evaluation Matrix Format

Criteria	Alternative A Status Quo	Alternative B Local Acquisition	Alternative C Develop New Airport
ENVIRONMENTAL			
Compatible Land Use			
Potential Recreation/Wildlife/Historic Area Impacts			
Wetlands			
Floodplains			
Proximity To Land Fill/Wildlife Hazards			
Land Acquisition			
ENGINEERING			
Special Engineering Needs			
Utility/Pipeline Relocation			
Building/Structure Removal			
Topography Factors			
SURFACE TRANSPORTATION			
Road/Rail Relocation			
New Roadway Requirements			
Highway Congestion Factor			
User Driving Time			
OPERATIONAL			
Meet Design Standards			
Airspace/Airfield Capacity			
Obstruction Removal			
Instrumentation / Lighting Improvements			
Meet User Needs			
ECONOMIC			
Development Costs			
Economic Benefits			
FAA Funding Potential			
Financial Viability Potential			

PUBLIC SUPPORT			
Secure Public Airport Sponsor			
Airport User Support			
Community Support			
Public Agency Support			

D. Alternative Scoring and Rating Matrix

In an effort to allow a straight forward understanding of the advantages and disadvantages of each alternative, both a Scoring and Rating Process will be used.

The Scoring Process will be conducted by the Consultant, using a scale of between 1 to 5, to consider the relative advantages and disadvantages of each criterion, as related to the other alternatives.

A score of 5 would indicate the best opportunity of meeting documented needs, fostering value to the community, and reducing potential negative impacts. A score of 1 indicates the opposite. Scores between 1 and 5 indicate the relative differences between worst and best. Procedures to be utilized to determine score numbers between 1 and 5 are shown below in Exhibit 5-3.

Exhibit 5-3
Alternatives Evaluation Scoring Methods
(To be used by the Consultant)

Sample "Quantitative" Criterion = Development Costs

Proposed Scoring Method

Lowest Development Costs = 5 (Best)

Within 10% of best = 4 (Very Good)

Within 11-25% of best = 3 (Good)

Within 26-40% of best = 2 (Poor)

Not within 40% of best = 1 (Very Poor)

Sample "Qualitative" Criterion = Community Support

Proposed Scoring Method

Highest Support Potential = 5 (Best)

Significant Support Potential = 4 (Very Good)

Moderate Support Potential = 3 (Good)

Minor Support Potential = 2 (Poor)

Lowest Support Potential = 1 (Very Poor)

An alternative weighting system will also be used to factor criteria importance as determined by the Community Airport Committee. In this regard, each Committee member has been asked to "weight" the importance of each criterion on a scale of 1 to 10, with 1 meaning the criterion is of "very minor importance", and 5 standing for "average importance", and a 10 meaning the criterion is of "very high importance".

The weightings received from each Committee member were then averaged together to produce an average weighting for each criterion. Average weightings calculated from weights provided by each Community Airport Committee member are shown below in Exhibit 5-4.

Exhibit 5-4
James City County Airport Feasibility Study

Importance Weighting Of Evaluation Criteria

(To Be Accomplished By Each Community Airport Committee Member)

CRITERIA	ASSESSMENT OF CRITERIA IMPORTANCE
1. Compatible Land Use	8.9
2. Potential Recreation / Wildlife / Historic Area Impacts	6.6
3. Wetlands	6.7
4. Floodplains	4.6
5. Proximity To Land Fill / Wildlife Hazards	5.4
6. Land Acquisition	6.6
7. Special Engineering Factors	5.1
8. Utility / Pipeline Relocation	3.4
9. Building / Structure Removal	5.3
10. Topography Factors	5.6
11. Road / Rail Relocation	4.0
12. New Roadway Requirements	4.4
13. Highway Congestion Factor	3.1

CRITERIA	ASSESSMENT OF CRITERIA IMPORTANCE
14. User Driving Time	5.7
15. Ability To Meet Design Standards	9.1
16. Airspace / Airfield Capacity	8.3
17. Obstruction Removal	8.0
18. Instrumentation / Lighting Improvements	7.3
19. Ability to meet User Needs	8.9
20. Development Costs	8.0
21. Economic Benefits	8.7
22. FAA Funding Potential	10.0
23. Financial Viability Potential	9.6
24. Ability To Secure A Public Airport Sponsor	7.0
25. Airport User Support	7.9
26. Community Support	8.1
27. Public Agency Support	7.4

Once the Scoring and Rating numbers have been calculated, they will be displayed on the Alternatives Scoring and Rating Matrix. A sample format of this matrix is shown below in Exhibit 5-5.

Exhibit 5-5
Sample Alternatives Scoring and Rating Matrix

Criteria	Weight	A – Status Quo		B – Local Acquisition		C – Develop New Airport	
		Score	Rating	Score	Rating	Score	Rating
ENVIRONMENTAL							
Compatible Land Use							
Potential Recreation/Wildlife/Historic Area Impacts							
Wetlands							
Floodplains							
Proximity To Land Fill/Wildlife Hazards							
Land Acquisition							
ENGINEERING							
Special Engineering Needs							
Utility/Pipeline Relocation							
Building/Structure Removal							
Topography Factors							
SURFACE TRANSPORTATION							
Road/Rail Relocation							
New Roadway Requirements							
Highway Congestion Factor							
User Driving Time							
OPERATIONAL							
Meet Design Standards							
Airspace/Airfield Capacity							
Obstruction Removal							
Instrumentation/Lighting Improvements							
Meet User Needs							
ECONOMIC							
Development Costs							
Economic Benefits							
FAA Funding Potential							
Financial Viability Potential							

PUBLIC SUPPORT							
Secure Public Airport Sponsor							
Airport User Support							
Community Support							
Public Agency Support							
TOTALS							

Lastly, it should be noted that selection of a favored alternative will not be accomplished as a result this Study. Matrix information is intended to provide future decision makers with information relative to the advantages and disadvantages of each alternative.