Washington State
Department of Transportation

State-Managed Airport Handbook

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Aviation Division

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- What is the purpose of this handbook?
- Who is WSDOT Aviation?
- What is the State-Managed Airport System?
- What are the policies associated with the State-Managed Airport System?

The Washington State Department of Transportation (WSDOT) Aviation Division (WSDOT Aviation) published this handbook for the purpose of documenting policies, performance measures, and guidelines for the maintenance, construction, and operation of the state-managed airports. The handbook recognizes established standards and describes accepted aviation and engineering practices. The instruction provided by this handbook is intended to identify desired results, establish standardized requirements, and provide statewide uniformity in the administration, maintenance, and construction of airports managed by the state.

The primary audience for this handbook is WSDOT Aviation staff, WSDOT maintenance staff, private contractors, airport volunteers, and other interests. Other local, state, and federal agencies and organizations that use the airport facilities should also be familiar with the guidance and instructions included in this handbook. The guidance is intended to complement airport design, construction, and maintenance techniques to promote uniformity of results among all WSDOT regions.

This handbook is divided into two primary sections. This first is comprised of an overview of WSDOT Aviation and its recent planning efforts, including the state-managed airport system plan and a review of the state-managed airports themselves. The second section will comprise the actual Airport Operating Handbook, a hands on manual that outlines the guidelines for typical airport operations within the WSDOT-managed airport system. This handbook is divided into the following seven chapters:

Note: It is important to recognize that this operations handbook is a continuation of WSDOT Aviation's overall planning effort that began with the *Long-Term Air Transportation Study* (LATS) at the state aviation level and progressed to the state-managed airports level with the State-Managed Airport Study. All efforts are part of the overall WSDOT Aviation planning continuum and are designed to interface with and complement each other.

Suggestions for corrections, additions, or improvements to this handbook are welcomed and encouraged. Any means of communication with WSDOT Aviation will be accepted and reviewed promptly.

It is important to appreciate the context within which this handbook is being established. This chapter provides information on WSDOT Aviation and its goals, an overview of recent aviation planning initiatives, and a review of the State-Managed Airport Study, the basis of this handbook.

Section Contents

Key Section Dates

Make Sure

- Check that the sections are current!
- Do they need to be updated?

Information is only as good as its current relevance. Therefore, it is important that the information contained within this chapter be updated on a regular basis to ensure that it remains appropriate to current conditions. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
1.1 Just Who is WSDOT Aviation	7/1/2010	6/1/11
1.2 What is LATS	7/1/2010	6/1/11
1.3 What is the State-Managed Airport System	7/1/2010	6/1/11
1.4 What Are the State-Managed Airport System Policies	7/1/2010	6/1/11
1.5 Chapter References and Supporting Documentation	NA	

1.1 Just Who is WSDOT Aviation

WSDOT Aviation is charged with providing for the protection, promoting safety, and assisting in the development of Washington's system of 138 public use airports. The state's airports range in size from small airports to large commercial service airports. WSDOT Aviation is directly responsible for the management of 17 airports within the system. Specifically, WSDOT Aviation is charged with general supervision and aeronautics within the state as detailed in Revised Code of Washington (RCW) 47.68.070, *General Powers*:

> The department has general supervision over aeronautics within this state. It is empowered and directed to encourage, foster, and assist in the development of aeronautics in this state and to encourage the establishment of airports and air navigation facilities. It shall cooperate with and assist the federal government, the municipalities of this state, and other persons in the development of aeronautics, and shall seek to coordinate the aeronautical activities of these bodies and persons.

WSDOT Aviation provides vital financial assistance to public-use airports across the state of Washington in the form of airport development and maintenance grants. The agency is also responsible for the management of air search and rescue operations, as well as for providing education and training in relation to the value and protection of public use airports. This also includes the promotion of the aviation industry within the state. As such, WSDOT Aviation plays a key role in the operation and development of the state's system of airports.

In 2007, the Washington State Legislature established policy goals for the planning, operation, performance of, and investment in, the state's transportation system. The policy goals were adopted to ensure that the transportation system

performance at local, regional, and state government levels progressed toward the attainment of an integrated and coordinated transportation system. All state transportation agencies (including WSDOT Aviation) must perform in a manner consistent with these policy goals, which are intended to be the basis for establishing detailed and measurable objectives and related performance measures. These policy goals also provide overall guidance to the agency when working in partnership with federal and state agencies, local jurisdictions, the state's various airport sponsors, and regional transportation planning agencies. Specifically, public investments in transportation should support achievement of the policy goals listed in the following table.

State Aviation Policy Goals	
Preservation	To maintain, preserve, and extend the life and utility of prior investments in transportation systems and services.
Safety	To provide for and improve the safety and security of transportation customers and the transportation system.
Mobility	To improve the predictable movement of goods and people throughout Washington State.
Environment	To enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities, and protect the environment.
Stewardship	To continuously improve the quality, effectiveness, and efficienc of the transportation system.
Economic vitality	To promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy.

In conformance with its mandate detailed in the General Powers, as well as the transportation policy goals, WSDOT Aviation has undertaken several recent aviation planning initiatives. Two of the most prominent efforts are described in the following sections.

1.2 What is LATS

In 2005, the state of Washington authorized a long-term air transportation planning study for all general aviation and commercial airports located within the state. Known as the Washington State *Long-Term Air Transportation Study* (LATS), the purpose of this study was to evaluate the current capacity of the state's aviation system to determine what facilities would be needed to meet the future demand for air transportation. Responsible for protecting and preserving Washington State's 138 public-use airports, WSDOT Aviation had been charged with shepherding this initiative to a successful conclusion, scheduled for July 2009.

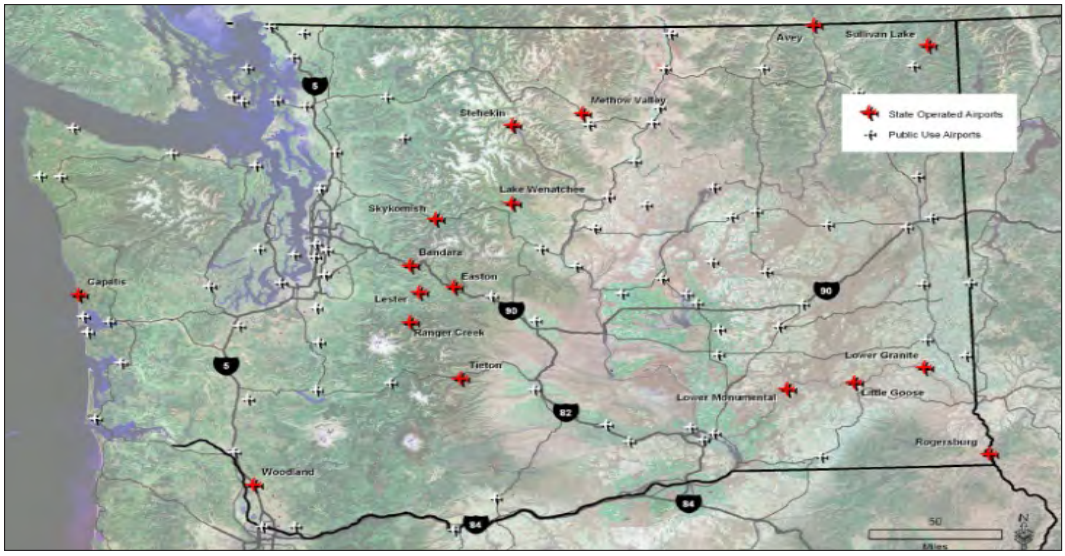
As part of that overall planning effort, it had become apparent that there was a need for more detail regarding the purpose and role of Washington's 17 state-managed airports. Specifically, due to growing uncertainty in traditional airport funding sources, it had become necessary for WSDOT Aviation, who manages these 17 airports, to examine specifically why it maintains them and to establish exactly what role these airports play in the statewide aviation system. As such, WSDOT Aviation requested that an additional planning study be conducted to evaluate, analyze and develop a strategic plan for those state-managed airports. That planning effort, the State-Managed Airport Study for WSDOT Aviation, was completed in November 2007.

1.3 What is the State-Managed Airport System

As mentioned in the previous section, the primary purpose of the State-Managed Airport Study was to answer the following questions:

- Why does WSDOT Aviation continue to operate the state-managed airports?
- What role do the state-managed airports currently play for the state?
- Are the state-managed airports adequately developed and supported to continue in providing support to the transportation system?

Additionally, the study provided evaluations, analysis, and recommendations on the long-term management of state owned and managed assets as well as some criteria and policy structure to serve as the basis for making decisions regarding air transportation improvements to meet future needs. Ultimately, the results of this study are to be directly integrated into the ongoing LATS effort to add more detail and help define the comparative benefits of the state-managed airports in relation to other airports within the state of Washington.



To reference the specifics of the study, an assessment of the state-managed airport system was conducted to determine how well each state-managed airport fulfilled various transportation needs based on the state transportation goals. These needs or purposes established within the study are listed in the following table.

Identified Transportation Needs for the State-Managed Airports	
1	Support emergency management function and forest firefighti activities.
2	Provide transportation access to remote communities.
3	Provide access for emergency medical operations.
4	Provide access to recreational areas.
5	Enhance the overall level of safety for the state aviation system.

That assessment of each of the 17 state-managed airports established the relative value each airport has for the state in terms of its ability to serve and benefit the transportation system, including its pilots, airport users, surrounding communities, and the state of Washington. As part of this effort, it was recognized that each of the state-managed airports has a relatively high facility value in terms of replacement costs, and relatively low annual operations and maintenance costs. Should any of these airports be closed or abandoned, it would likely be cost prohibitive to reopen that facility.

After establishing its overall value, an evaluation was conducted to determine how the state-managed airport system as a whole was currently performing and where that system needed to improve. This was accomplished primarily through utilization of performance measures and objectives that were based on both traditional factors (i.e., Federal Aviation Administration (FAA) airport design criteria, facility criteria, operational goals, and specific sponsor targets) and on factors that were unique to this particular system (i.e., specific airport activities that contribute to meeting state goals). Through this process, long-term individual development objectives were established for each airport to help ensure that each airport maximize its contribution to meeting the goals of the State Aviation Policy. These individual development objects are detailed in the following section.

The final principle component of the State-Managed Airport Study was the identification of generalized policy recommendations for WSDOT Aviation. While the State Aviation Policy is appropriate and effective for providing high-level guidance in relation to the overall state aviation system, it is necessarily broad in its context in order to encapsulate the diversity of the entire state aviation system. As such, the State-Managed Airport Study provided some additional guidance on applying the State Aviation Policy to the state-managed system. This guidance has evolved into an overall management philosophy for WSDOT Aviation as to how to maintain and operate the state-managed airport system. While this philosophy will be discussed in greater detail in a subsequent chapter, it is summarized in the following goals.

Management Philosophy for the State-Managed Airport System	
Safe, Clean Operating Environment	The state-managed airport system should be maintained and developed to promote access in a safe, efficien and effective operational environment.
Limit Risk to WSDOT	The state-managed airport system should be maintained and developed in such a fashion as to enhance its benefi to the state of Washington to a reasonable and responsible degree, recognizing physical and contractual limitations of each airport.
Environmentally Responsible	The state-managed airport system should be maintained and developed in conformance with all applicable environmental requirements to minimize its environmental footprint and promote sustainable activities.
Encourage Opportunities for Multimodal Use	The state-managed airport system's potential with respect to multimodal and intermodal transportation should be promoted and developed through interagency coordination efforts.
Utilize the Support of the Aviation Community	The state of Washington's aviation community enthusiastically supports the state-managed airport system and values it as an important state resource.
Provide Timely Up-to-Date Information	As stewards of the state aviation system, WSDOT Aviation must promote effective and transparent communications with respect to the status, condition, and development of the aviation system and its airports.
Provide Cost Efficient Infrastructure Investment	The state-managed airport system should be developed in a fiscall responsible manner that maximizes the return on investment to the state of Washington.

1.4 What Are the State-Managed Airport System Policies

Important!

- There are *four* primary policies with which to be familiar.

While the state-managed airport management principles are appropriate and effective for providing high-level guidance in relation to the overall state aviation system, they are necessarily broad in its context in order to encapsulate the diversity of the entire state aviation system. As such, they do not provide significant detail for the operation and maintenance of specific components of the state-managed airports.

For the state-managed airport component, additional policy structures have been established in order to provide a tool to serve as the basis for decision. Therefore, the following four policies have been established for use by WSDOT Aviation in relation to the state-managed airport system.

Primary Purpose of the State-Managed Airport System

Policy 1

The primary function of the WSDOT Aviation-Managed Airport System is to fulfill the stated purposes of the State Aviation Policy.

This policy acknowledges that the state-managed airport system exists to benefit the state of Washington through meeting the stated purposes of the State Aviation Policy of preservation, safety, capacity, and environmental protection. Manners for achieving these benefits for the state of Washington include, among others, the following:

- Support forest firefighting activities.
- Provide transportation access to remote communities.
- Provide access for emergency medical operations.
- Provide access to recreational areas.
- Enhance the overall level of safety for the state aviation system.

Operation and Maintenance of the Airport System

Policy 2

WSDOT Aviation will operate and maintain the airports within the state-managed system only to the level to sustain the fundamental benefits for the state of Washington as prescribed by the State Aviation Policy.

The majority of the airports within the state-managed system were designed and constructed primarily to provide some fundamental service(s) rooted in public safety for the state of Washington; be it to benefit the flying public by building emergency landing areas, or to benefit communities by providing access to remote areas. The system was not established to compete for aircraft operations with other airports owned by other public or private entities within the state or to function solely as economic generators. Therefore, it should not be the intent of WSDOT Aviation to operate, maintain, or develop the state-managed airports beyond that which is required for them to continue to fulfill their basic purposes.

However, while WSDOT Aviation has no mandate to maintain and operate the state-managed airports to meet the demands of commercial and/or general aviation operations, this does not preclude public entities from developing and operating the airports beyond that which WSDOT Aviation currently does as required by the State Aviation Policy. For example, a municipality which abuts or hosts a state-managed airport may want that airport to have facilities to accommodate local general aviation activity as a means to generate economic activity. If this type of development exceeds the requirements of the fundamental purposes for which the airport was designed and is maintained, WSDOT Aviation would have no obligation to sponsor such development. Yet, if that municipality is willing to undertake the responsibility for the construction and the long-term maintenance of that development, WSDOT Aviation could consider those proposals.

Such partnerships also have the potential to create additional revenue streams for WSDOT Aviation for the operation and maintenance of the overall state-managed system. Airports designed and operated for the primary purposes of providing essential public safety services commonly generate little, if any, revenue based on those services. As such, it is important for the long-term viability of the system that WSDOT Aviation make efforts to ensure that the system be as financially self-sufficient as possible. It is possible that realizing partnership opportunities at just one or two airports has the potential of sustaining the long-term health of the entire state-managed system.

However, it should be made clear that a principal concern for WSDOT Aviation in considering such proposals should be the long-term maintenance of any development that exceeds the requirements of that airport's basic purpose. WSDOT Aviation must protect itself from a situation where a development sponsor is not able to meet its long-term obligations and commitments, which ultimately could require WSDOT Aviation to assume responsibility for the development. As such, it is imperative that WSDOT Aviation carefully consider the possible implications of any such proposal, and should limit any development to a level that it deems to be reasonable. For instance, a development proposal that includes any pavement (i.e., runway, taxiway, apron) beyond what the airport currently requires should be carefully considered since the cost of its long-term maintenance will be significantly higher than that of a non-paved surface. If the development sponsor were to forgo his maintenance responsibilities, WSDOT Aviation would likely have to assume those responsibilities. In this case, it would be reasonable for WSDOT Aviation to limit the development proposal to non-paved surfaces from the start.

In such cases where it is not prohibited by existing leasing and/or ownership restrictions, WSDOT Aviation would consider itself to be open to partnering opportunities with local jurisdictions and public agencies given the conditions listed in the following table.

WSDOT Aviation-Required Partnering Conditions	
1	WSDOT Aviation would not be required to maintain and operate the airports beyond the level required to sustain the fundamental benefi to the state.
2	WSDOT Aviation would prefer that it partner with local governmental sponsoring entities (i.e., municipalities, counties) who can commit to the long-term maintenance and support of any such development.
3	In the case of private development, a local governmental sponsoring entity (i.e., municipalities, counties) must be identifie and included in partnership to ensure long-term commitment and support for any development or improvement to the airport.
4	The partnering entities would meet minimum leasing and operating standards as dictated by WSDOT Aviation, and would bear sole responsibility for the operational and maintenance requirements dictated by the enhanced level of operations.

Growth or Reduction of the Airport System

Policy 3

WSDOT Aviation will consider the acquisition or disposal of airports only within the context of fulfilling the stated purposes of the State Aviation Policy.

WSDOT Aviation is occasionally presented with opportunities to acquire ownership or management responsibilities of a public or private airport. Oftentimes, these airports are financially distressed in that maintenance and operational costs outweigh their revenue producing capabilities. In such instances, the state is often viewed as a possible sponsoring entity capable of assuming the responsibilities of operating these airports so as to protect them from being closed.

However, it must be clearly understood that the role of WSDOT Aviation is not to act as an airport sponsor or operator. As stated in RCW 47.68.070, WSDOT Aviation is empowered to encourage, foster, and assist in the development of aeronautics in the state and to encourage the establishment of airports and air navigation facilities. WSDOT Aviation should not and cannot be held to the standard of assuring that all financially distressed airports within the state remain open; there must be some overriding benefit to the state that will be realized through the acquisition of a given airport.

This overriding benefit to the state is reflected in WSDOT Aviation's sponsorship, maintenance, and operation of the state-managed airport system. As evidenced in the previous working paper, these airports provide little, if any, financial income to the state, and in fact, most operate at a loss. If judged strictly on the basis of profitability, very few could be viewed as being financially viable airports. However, what they do provide the state is the benefit of fulfilling very specific, defined roles that might otherwise not be met if not for state sponsorship. Therefore, the potential acquisition and disposal of airports should be viewed by WSDOT Aviation strictly on the basis of whether a given airport fulfills one or more of those specific roles, thereby contributing to the stated purposes of the State Aviation Policy. Those airports that do not contribute to the goals of the policy should be viewed as being beyond the mandate of WSDOT Aviation.

Below are general guidelines that have been identified which WSDOT Aviation considers as part of the airport acquisition or disposal decision-making process. It is important to recognize that the ongoing Washington Aviation System Plan (WASP) plays a critical role in making any determination for acquiring or disposing of airports. The system plan identified redundancies and deficiencies in the overall state aviation system plan over a wide range of facilities and services. Any gaps or overlaps identified in the plan will be an important consideration in the state-managed airport system decision-making process. In general, it should be understood that airport acquisition and disposal decisions related to the state-managed airport system should be based solely on the WASP recommendations and policies, unless overriding safety or capacity considerations can be shown.

Airport Disposal Guidelines	
1	Airports within the state-managed airport system that do not provide any benefi to the state in terms of the value activities described previously herein and within the aviation system plan should be considered for decommissioning and reuse/disposal.
2	Factors that may influenc the decision to decommission an airport could include the following: • A benefit-cos analysis may quantify the value of an airport (or lack thereof) in relation to the current and projected operational/maintenance costs. • Community support and involvement is vital to sustaining an airport. Community indifference or antipathy for an airport could be important indicators of a given airport's value. • The aviation system plan must be examined when considering the long-term future of a state airport, particularly in the case of an airport that increases safety or provides an adequate level of access to communities. • Environmental factors, both positive and negative, that could result from the decommissioning of an airport should be carefully considered and quantified

Airport Acquisition Guidelines	
1	For any airport to be considered for inclusion in the state-managed airport system, it must provide some value to the state that is commensurate to the other existing airports in the system, and/or has been identifie by the aviation system plan as being an important resource to the state of Washington.
2	Any airport included in the state-managed system should be maintained only to the level appropriate to provide the value activity, regardless of existing general aviation activity. WSDOT Aviation should be open to partnering opportunities with other public entities who might wish to operate the airport to a level to meet specifi commercial/general aviation demands. However, as stated in Policy 2, WSDOT Aviation should not be obliged to exceed its commitment beyond that of the basic investment needed to maintain the value activity for the state.
3	Airports could be considered for inclusion in the state-managed system even if they provide no immediate value to the state or are determined in the Aviation System Plan as unnecessary or redundant. In such cases, WSDOT Aviation would need to view the acquisition of a given airport as the preservation of an aviation resource that it considers to be critical to the current or future state airport system. Given financia and operational limitations, it is possible that such an airport be land-banked and be closed in the short term until such time that demand requirements and/or aviation system capacity constraints would require its reopening. It should be noted that in such a circumstance some potentially significan environmental efforts would need to be undertaken to reopen a facility.

Through-the-Fence Operations

Policy 4

WSDOT Aviation will not endorse the establishment of independent operators conducting aeronautical activities on land adjacent to, but not a part of, any properties associated with the state-managed airport system.

Airport owners and operators, including WSDOT Aviation, are often presented with requests by operators independent of the airport to issue permits and/or leases granting access to the airport from abutting sites. This type of arrangement is commonly known as a through-the-fence operation, and typically includes businesses or individuals that require access to the airport infrastructure from outside airport property, or which utilize airport property to conduct a business but do not rent business space at the airport. Common types of through-the-fence agreements include aircraft hangars, aircraft maintenance, general aviation fixed base operator services (FBO), miscellaneous flight services (i.e., charter, rental, skydiving), as well as airpark residential housing.

It is important to note that there are no state or federal obligations for an airport to provide such access to adjacent properties. While the FAA strongly discourages this type of activity it does not prohibit through-the-fence operations. However, permitted through the fence activities may affect future funding of the airport.

There are several concerns for an airport owner or operator related to the establishment of through-the-fence operations at an airport. First, the lease of airport property is one of only a few revenue streams that are typically available to an airport for the operation, maintenance, and improvement of the airport. Individuals and businesses that are granted access to the airport from off-airport property do not typically contribute to the airport fund at a level commensurate to on-airport operators. This could be damaging to the airport not only through the loss of that operational revenue, but also through the potential granting of an unfair competitive advantage to the off-airport operator. Specifically, a through-the-fence operator may not have to bear as high a leasing cost as that of an on-airport operator, effectively reducing the through-the-fence operator's overhead costs. Such a competitive advantage may reduce the ability of on-airport operators to compete for services, thereby hampering their financial viability, and diminishing the economic vitality of the airport.

The second principal concern related to through-the-fence operations is that of access and security. Such operations invariably lead to a greater risk of runway incursions and uncontrolled vehicle access, as well as a general reduction in airport security by introducing additional points of airfield entry. Additionally, allowing access to one through-the-fence operator may invite future or previously denied operators the opportunity for the same privilege.

While it is the policy to discourage any through-the-fence operation at any of the state-managed airports, through-the-fence operations currently exist at several state-managed airports. Therefore, if such an operation were to be introduced, WSDOT Aviation will administer these activities with the following considerations.

Through-the-Fence Operations Guidelines	
1	The development of a through-the-fence operation will require that WSDOT Aviation will manage through-the-fence access by ensuring that such access has a legal foundation, the activity is consistent with WSDOT management principles, airport rules, regulations, and minimum standards are met, the activity is properly insured, is safe, is fair and equitable, and that such access financiall contributes to the maintenance and operations of the airport. Residential and associated hangar uses will not be permitted.
2	Financial compensation shall be based on fair and reasonable practices of the activity or service, and contribution to the operation, maintenance and improvement of the airport at a competitive rate with on-airport activities, similar to rates paid by other business tenants at the airport. A yearly fee, percentage of the gross profit or an access fee may be satisfactory ways of allowing this type of operation. It is important that the state ensure that a through-the-fence operator be subjected to conditions similar to those applicable to the businesses at the airport in order to avoid complications and possible violations of state law and grant assurances.
3	Access leasing arrangements should grant WSDOT Aviation control over the types of development and operations conducted by the through-the-fence operator, including meeting the same minimum standards required of on-airport operators. These conditions may be in the form of a formal through-the-fence operations operating plan that should be established and accepted by WSDOT Aviation.
4	All development must be compatible with the airport environment and applicable Airport Master Plans or Airport Layout Plan (ALP).

The previous four policies have been specifically adopted by WSDOT Aviation to provide a general framework for decision-making as related to the state-managed airports. Essentially, these policies simply reinforce WSDOT Aviation's mandate to operate and maintain the state-managed airport system for the expressed benefit of the state of Washington through meeting the goals of the State Aviation Policy. However, it should also be noted that the State Aviation Policy is not static and continues to evolve itself. As such, these four policies, as well as their interpretations and applications, are subject to change with that state policy.

1.5 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

Chapter 1 Aviation System Overview

Supporting Documentation

The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

Chapter 1 Aviation System Overview

Chapter 2 State-Managed Airport System Overview

In This Chapter

- What are the state-managed airports and where are they located?
- Who owns the state-managed airports?
- How do the state-managed airports fi into the WASP?
- What is the development plan for the state-managed airports?
- What facilities should each airport have?
- Customized summaries for each of the state-managed airports.

This chapter provides a brief overview of the Washington State Department of Transportation (WSDOT) Aviation-managed airport system, including a description and history, as well as a review of how that system is performing to the benefit of the state. As noted in the previous chapter, a key focus of the WSDOT Aviation State-Managed Airport Study was to identify how the system of 17 state-managed airports were currently serving the state of Washington's transportation system, and establish which airports were best positioned to provide significant benefit. Additionally, the study provided guidance as to how that system could be developed to the greater benefit of aviation users within Washington.

It should be noted that this planning effort was conducted as a supplement to the state's overall aviation system planning project so as to provide additional analysis with respect to the state-managed airports. In 2005, the state of Washington authorized the long-term air transportation planning study to

conduct a comprehensive review of all general aviation and commercial airports located within the state of Washington. Known as the Washington State *Long-Term Air Transportation Study* (LATS), the purpose of this study was evaluate the current capacity of the state's aviation system and its 138 public-use airports to determine what facilities will be needed to meet the future demand for air transportation. LATS and the *Washington Aviation System Plan* (WASP) were completed July 2009.

This chapter also includes individual overviews of each of the 17 state-managed airports that provide a brief summary of each airport's current facilities and its recommended improvements.

Section Contents

Key Section Dates

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Section	Current Date	Scheduled Review Date
2.1 Just What is the State-Managed Airport System	7/1/10	6/1/11
2.2 Avey State Airport	7/1/10	6/1/11
2.3 Bandera State Airport	7/1/10	6/1/11
2.4 Copalis Beach State Airport	7/1/10	6/1/11
2.5 Easton State Airport	7/1/10	6/1/11
2.6 Lake Wenatchee State Airport	7/1/10	6/1/11
2.7 Lester State Airport	7/1/10	6/1/11
2.8 Little Goose State Airport	7/1/10	6/1/11
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2.12 Ranger Creek State Airport	7/1/10	6/1/11
2.13 Rogersburg State Airport	7/1/10	6/1/11
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2.16 Sullivan Lake State Airport	7/1/10	6/1/11
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2.18 Woodland State Airport	7/1/10	6/1/11
2.19 Chapter References and Supporting Documentation	NA	

2.1 Just What is the State-Managed Airport System

The state of Washington's aviation system is currently comprised of 138 public use airports that range in size from small to medium sized airports to large hub commercial service airports. The vast majority of these airports are owned, operated, and managed by entities other than the state of Washington, such as cities, counties, port authorities, and private interests.

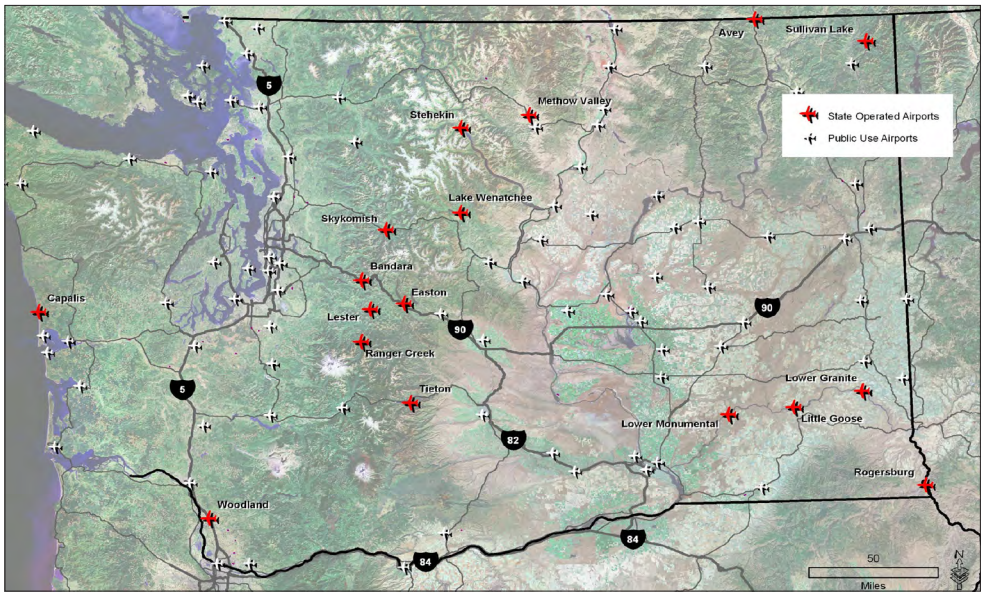
Of these public use airports, WSDOT Aviation operates and manages 17 for the benefit of the state of Washington and the general public. The following table provides a listing of these state-managed airports, while the following figure identifies the location of each and the location of all other public-use airports in the state of Washington. Included in the table is the location of each airport's nearest population center and the general setting of each. ***Note:*** Of the state-managed airports, nine are located in forested mountainous regions, four are located in the southeast region of the state in deep river valleys and canyons surrounded by semi arid desert, two are located in a semi-rural areas, one is located in an urban area and another on a coastal beach.

Airport Locations and Settings

Airport	Nearest Municipality	General Setting
Avey State Airport	Laurier	Mountain/Forest
Bandera State Airport	North Bend	Mountain/Forest
Copalis Beach State Airport	Copalis Beach	Rural Coastal Area Beach
Easton State Airport	Easton	Semi-rural
Lake Wenatchee State Airport	Coles Corner	Mountain/Forest
Lester State Airport	Easton	Mountain/Forest
Little Goose State Airport	Starbuck	River Canyon surrounded by semi-arid desert
Lower Granite State Airport	Almota	River Canyon surrounded by semi-arid desert
Lower Monumental State Airport	Clyde	River Canyon surrounded by semi-arid desert
Methow Valley State Airport	Winthrop	Semi-rural
Ranger Creek State Airport	Greenwater	Mountain/Forest
Rogersburg State Airport	Rogersburg	River Canyon surrounded by semi-arid desert
Skykomish State Airport	Skykomish	Mountain/Forest
Stehekin State Airport	Stehekin	Mountain/Forest
Sullivan Lake State Airport	Metaline Falls	Mountain/Forest
Tieton State Airport	Rimrock	Mountain/Forest
Woodland State Airport	Woodland	Urban Area

Source: Wilbur Smith Associates

State-Managed Airport System Map



Source: Wilbur Smith Associates

It is important to note that each of the 17 airports operated and managed by the state has experienced their own individual development circumstances, which may or may not have resulted in that airport functioning in the manner that it was intended. Through discussions with WSDOT Aviation and a file review, a general description of the existing functionality of each airport was determined, and is included in the following table.

Existing Functionality of the Airports

Airport	*Existing Functionality Description*
Avey State Airport	Mountain backcountry airport providing transportation access to recreational opportunities and the local community. Limited emergency medical and forest firefighti activity.
Bandera State Airport	Mountain backcountry turf airport providing access to recreational opportunities. Limited emergency medical and forest firefighti activity.
Copalis Beach State Airport	Coastal beach airport providing access to recreational opportunities and emergency medical activities.
Easton State Airport	Mountain backcountry turf airport providing access to recreational opportunities and remote communities. Moderate to high level of emergency medical, search and rescue activities, and forest firefighti activity.
Lake Wenatchee State Airport	Mountain backcountry turf airport providing access to recreational opportunities. Moderate to high usage supporting forest firefighti activity level of emergency medical, search and rescue activities, and forest firefighti activity.
Lester State Airport	Limited role or function due to runway damage. Suitable for helicopter operations only.

Little Goose State Airport	Airport provides access to limited recreational opportunities associated with the adjacent Snake River. Could possibly serve a role in responding to emergencies associated with the Little Goose Lock and Dam.
Lower Granite State Airport	Airport provides access to limited recreational opportunities associated with the adjacent Snake River. Could possibly serve a role in responding to emergencies associated with the Lower Granite Lock and Dam.
Lower Monumental State Airport	Airport provides access to limited recreational opportunities associated with the adjacent Snake River. Could possibly serve a role in responding to emergencies associated with the Lower Monumental Lock and Dam.
Methow Valley State Airport	Local airport providing aircraft basing facilities and transportation access, including charter operations to the local community. Airport serves a significan number of forest firefighti operations and a limited number of emergency medical operations and search and rescue activities.
Ranger Creek State Airport	Mountain backcountry airport providing access to recreational opportunities. Limited emergency medical and forest firefighti activity.
Rogersburg State Airport	Remote backcountry turf airport providing access to recreational opportunities. Could possibly serve a role in responding to emergencies associated along the Snake River recreational activities.
Skykomish State Airport	Mountain backcountry turf airport providing access to recreational opportunities and remote communities. Airport supports a significan number of emergency medical aircraft operations annually.
Stehekin State Airport	Remote backcountry turf airport providing transportation access to the village of Stehekin and recreational opportunities. The airport also provides significan benefi to forest firefighti operations and emergency medical operations.
Sullivan Lake State Airport	Remote backcountry turf airport providing access to recreational opportunities and a limited number of emergency medical operations. The airport also provides significan benefi to forest firefighti operations and is used on a limited basis for emergency medical operations and search and rescue activity.
Tieton State Airport	Remote backcountry turf airport providing access to recreational opportunities. The airport also provides significan benefi to forest firefighti operations and is used on a limited basis for emergency medical operations and search and rescue activity.
Woodland State Airport	Local airport providing aircraft basing facilities, transportation access, and emergency operations to the local community.

Sources: WSDOT Aviation, Wilbur Smith Associates

WSDOT-Managed Airport System History

WSDOT Aviation became involved in the management and operation of airports through a variety of circumstances. Six of the state-managed airports were in fact specifically constructed by WSDOT Aviation, most in partnership with the Federal Aviation Administration (FAA) through a state program between 1940 and 1960 for the specific purpose of providing emergency landing facilities in remote areas of the state. With the exception of Avey State Airport, all of these airports are

located in the Cascade Mountain range along major airways utilized by smaller general aviation aircraft traveling between eastern and western Washington. Avey State Airport was constructed exclusively by the state and is located in the northeastern corner of the state on the border between the U.S. and Canada.

The remaining 11 state-managed airports were originally constructed by other organizations and/or individuals with about half of these airports managed by WSDOT as emergency landing facilities. Over time, WSDOT has assumed responsibility for the remaining airports for a variety of reasons. Primary to these reasons was WSDOT Aviation's desire to preserve and maintain those airports that it considered to be important to the state's overall transportation system when their owner/sponsor became unable to continue operating the airport or ultimately lacked the ability or experience to operate the airport as a public-use facility. Without the participation of WSDOT Aviation, these airports would have almost certainly been abandoned and closed, their value to the state forever lost. The following table provides a listing of the property owners for each airport.

Airport Property Ownership

Airport	*Property Ownership*
Avey State Airport	Private Individual
Bandera State Airport	WSDOT Aviation
Copalis Beach State Airport	State Parks Department
Easton State Airport	WSDOT Aviation
Lake Wenatchee State Airport	WSDOT Aviation
Lester State Airport	WSDOT Aviation
Little Goose State Airport	Army Corps of Engineers
Lower Granite State Airport	Army Corps of Engineers
Lower Monumental State Airport	Army Corps of Engineers
Methow Valley State Airport	WSDOT Aviation
Ranger Creek State Airport	U.S. Forest Service
Rogersburg State Airport	Bureau of Land Management
Skykomish State Airport	WSDOT Aviation
Stehekin State Airport	National Parks Service
Sullivan Lake State Airport	U.S. Forest Service
Tieton State Airport	WSDOT Aviation
Woodland State Airport	WSDOT Aviation

Sources: WSDOT Aviation, Wilbur Smith Associates

State-Managed Airport Evaluations

As noted above, the WSDOT Aviation State-Managed Airport Study was conducted to supplement the LATS planning effort by providing additional detail and analysis for the state-managed airport system. A primary goal of the State-Managed Airport Study was to identify how the system of 17 state-managed airports was currently serving the state of Washington's transportation system, or, more specifically, to identify a value each airport had for the state. However, establishing value for each airport with respect to the state could have multiple connotations that range from financial implications to subjective determinations. As such, in determining the process by which this initial evaluation was to be conducted, the current State Aviation Policy was selected to be the basis by which to weigh the merits or value of each airport. This assumption was made since the primary function of any state-operated airport should be reasonably expected to fulfill some elements of this policy. As described in detail previously, the State Aviation Policy identifies six points of interest for the state in regards to aviation. However the sixth policy, Economic Vitalit, was only recently added by the legislature in 2010 and was not included in the initial airport assessment conducted in 2007.

State Aviation Policy Points of Interest	
1	Preservation
2	Safety
3	Mobility
4	Environment
5	Stewardship

Based on the policy, an assessment of the state-managed airport system was conducted to determine how well each state-managed airport fulfilled various activity needs or purposes that had been determined to bring value to the state. These activity needs or purposes included the following:

Identified Activity Needs for the State-Managed Airports	
1	Support emergency management function and forest firefighti activities.
2	Provide transportation access to remote communities.
3	Provide access for emergency medical operations.
4	Provide access to recreational areas.
5	Enhance the overall level of safety for the state aviation system.

The state-managed system was reviewed within the context of these activity needs and purposes. Those airports that directly provided support or brought the state value for one of these needs were identified, and they are noted in the following table.

Activity Needs Fulfillment	
Support Forest Firefighting Activities	***Provide Transportation Access to Remote Communities***
Avey State Bandera State Easton State Lake Wenatchee State Methow Valley State Ranger Creek State Skykomish State Stehekin State Sullivan Lake Tieton State	Avey State Easton State Lake Wenatchee State Methow Valley State Skykomish State Stehekin State Tieton State Woodland State
Provide Access to Recreational Areas	***Enhance the Overall Level of Safety for the State Aviation System***
Avey State Bandera State Copalis Beach State Easton State Lake Wenatchee State Lester State Little Goose State Lower Granite State Lower Monumental State Methow Valley State Ranger Creek State Rogersburg State Skykomish State Stehekin State Sullivan Lake State Tieton State Woodland State	Avey State Bandera State Copalis Beach State Easton State Lake Wenatchee State Little Goose State Lower Granite State Lower Monumental State Methow Valley State Ranger Creek State Rogersburg State Skykomish State Stehekin State Sullivan Lake State Tieton State Woodland State
Provide Access for Emergency Medical Operations	
Bandera State Copalis Beach State Easton State Methow Valley State Ranger Creek State Skykomish State Stehekin State Sullivan Lake State Tieton State Woodland State	

Sources: WSDOT Aviation, Wilbur Smith Associates

State-Managed Airport Recommendations

A second primary goal of the WSDOT Aviation State-Managed Airport Study was to generally identify, on a facility-level basis, how each of the 17 state-managed airports could be improved to better fulfill their roles within the aviation system. Having each airport better fulfilling its role would result in the state-managed aviation system better meeting the goals of the State Aviation Policy. This identification process was accomplished by establishing facility recommendations for each airport through two separate, but related means. Specifically, performance objectives were established from both a system stratification perspective, and from an airport activity perspective. (It should also be noted that these recommendations are general in nature and that specific facility development recommendations for each airport will ultimately be developed and refined as part of each airport's subsequent master plan or airport layout plan effort.)

First, from a system stratification perspective, the State-Managed Airport Study stratified the system based on specific criteria unique to the system. These results were then considered as the state-managed airports were evaluated within the context of LATS. Specifically, the LATS planning effort established a classification system for Washington State Aviation facilities that is included in the following table.

LATS Airport Classification System	
A	Commercial Service Airports
B	Regional Service Airports
C	Community Service Airports
D	Local Service Airports
E	Rural Essential Airports
F	Seaplane Bases

For each one of these classifications, otherwise known as airport roles, performance measures and objectives related to services and facilities were defined based on their intended function and demand relationship. These objectives addressed a variety of measures including runway length, parallel and turnaround taxiways, instrument approaches, visual glide slope indicators, automated weather reporting, fuel sales, and aircraft maintenance service. The purpose of this was to provide a basic, high-level facility standard for any airport ranked at a particular level. The performance measures and objectives are shown in the tables below.

Note: With respect to the state-managed airports, two (Methow State and Woodland State) were classified as being Local Service Airports, with the remaining 15 airports being classified as Rural Essential Airports.

Performance Measures and Objectives – Local Service Airports	
Performance Measure	***Performance Objective***
ARC	A-I
Aircraft Size	Small (under 12,500 lbs)
Runway Classificatio	Utility
Runway Length	2,400′
Runway Width	60′ recommended
Runway Surface	Asphalt
Taxiway	Turnarounds on each end[1]
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open year around
Approaches Categories Visual Aids/NAVAIDS	Visual (Daytime only) • Windsock • Runway edge reflector • Rotating beacon • Visual glide slope indicators • Weather reporting (dependent on predominate adverse weather conditions)
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13
General Maintenance/ Development Recommendation	Facilities should be maintained to the present standard. Facility should be maintained and developed to better fulfil its primary state function and purpose.

Sources: WSDOT Aviation

Performance Measures and Objectives – Rural Essential Airports	
Performance Measure	***Performance Objective***
ARC	A-I
Aircraft Size	Small (under 12,500 lbs)
Runway Classificatio	Utility
Runway Length	No Objective
Runway Width	100′ recommended, except paved runways 60′ recommended
Runway Surface	Turf/Gravel/Sand
Taxiway	Turnarounds on each end[1]
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally
Approaches Categories Visual Aids/NAVAIDS	Visual (Daytime only) • Windsock • Runway edge reflector • Weather reporting (dependent on predominate adverse weather conditions)
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13
General Maintenance/ Development Recommendation	Runway edge reflector should be of a standard design as established by WSDOT Aviation.

Sources: WSDOT Aviation

Important
- The state-managed airport system provides unique benefits for Washington.

The second means for establishing recommendations for each airport was through identifying specific facility objectives for those airports that fulfilled various activity needs or purposes that had been determined to bring value to the state. The state-managed airports provide benefits to the state that might not otherwise be afforded if not for the existence of the state-managed airport system. Specifically, the primary benefits or values to the state identified lie within the following five main areas.

- Support of forest firefighting activity.
- Transportation access to remote communities.
- Support of emergency medical operations.
- Transportation access to recreational areas.
- Flight safety enhancement.

Similar to the performance measures and objectives described above which were based on the system stratification, performance objectives were also identified that were based on the type of activity that a given airport accommodated. This was done since the activities identified above may have requirements that are unique to that particular activity. For example, an airport that only provides access to recreational areas will likely have some different requirements than an airport that accommodates firefighting activities.

As such, performance objectives for each of the five types of activities that benefit the state were identified and are listed in the table below. It should be noted that there are several performance objectives that are consistent for all activities. These include approach/departure airspace that is clear of obstructions, aircraft parking areas that are safely clear of the runway environment, and some sort of local weather reporting capability given the diverse and rapidly changing weather conditions frequently experienced in mountainous regions.

It should also be noted that these objectives are broad in nature in that they are necessarily subject to the specific requirements and limitations of the individual airports. However, they do provide guidance for long-term development planning of the airports. For example, in terms of airports accommodating recreational activities, these performance objectives establish goals for WSDOT Aviation to pursue in the long-term development of the airports, such as campsites, picnic tables, and firepits. However, these specific objectives would be subject to the requirements and limitations of the individual airports, since they can vary dramatically depending on a variety of factors including airport property ownership and any associated owner-related policies, requirements and restrictions. Therefore, while an airport accommodating recreational activities may have a goal of providing facilities like campsites, picnic tables, and firepits, there are no set standards established due to variabilities associated with each airport.

Activity Needs Based Performance Objectives	
Support Forest Firefighting Activities	***Provide Transportation Access to Remote Communities***
Clear approaches (aircraft/helicopter) Aircraft parking area(s) Weather reporting Pad (approximately 30′ x 30′) for command unit trailer with utility hook-ups (water, power, telephone) Area(s) for firefight camping/staging/ auto parking Complete grass coverage of all areas to minimize dust (turbine-engine intakes/ downwash) – may require irrigation system	Clear approaches (aircraft/helicopter) Aircraft parking area(s) Weather reporting Good landside accessibility from road to airport (paved or graded gravel road) Auto parking

Provide Access to Recreational Areas	*Enhance the Overall Level of Safety for the State Aviation System*
Clear approaches (aircraft/helicopter) Aircraft parking area(s) Weather reporting Telephone (for landside transportation) Water Restrooms Good landside accessibility from road to airport (paved or graded gravel road) Auto parking Campsites/picnic tables/fir pits	Clear approaches (aircraft/helicopter) Aircraft parking area(s) Weather reporting Telephone Shelter
Provide Access for Emergency Medical Operations	
Clear approaches (aircraft/helicopter) Aircraft parking area(s) Weather reporting Paved/marked/lighted helipad Floodlighting for helipad area Snow removal for helipad Telephone Excellent landside accessibility from road to airport (paved or graded gravel road) Auto parking	

Sources: WSDOT Aviation, Wilbur Smith Associates

Utilizing the two groups of performance objectives and measures described above, facility development recommendations were identified for each airport. The individual facility development recommendations for each airport have been included in the following sections.

However, it should also be noted that there are several facility recommendations that should be considered to be standard for all state-managed airports. These standard facilities are listed in the following table.

Standard Facility Recommendations	
A	Telephone
B	Water
C	Emergency shelter
D	Roadway signage
E	Weather reporting
F	Web cameras

Specifically, since these airports are predominantly located in remote areas, it would be ideal for these facilities to be able to offer some basic emergency support facilities, including a telephone, some access to drinkable water and some form of basic emergency structure capable of providing shelter from the region's potentially severe weather conditions. It is also understood that given their remote locations, providing such facilities at these airports could prove to be cost-prohibitive for WSDOT Aviation. Therefore, WSDOT Aviation should consider partnering opportunities with public agencies within the state who have similar interests in providing such facilities. For example, firefighting agencies (including the U.S. Forest Service and the Bureau of Land Management) that regularly operate at specific airports might be leveraged to provide some of these basic facilities for their benefit, as well as for that of the airport.

In terms of roadway signage for the airports, recommendations have been provided above, based specifically on supporting local emergency medical services. However, beyond these types of operations, the state-managed airports have the potential to support the overall state emergency management initiative. It is recommended that WSDOT Aviation continue to pursue partnering opportunities related to statewide emergency services with interested agencies (i.e., Washington Emergency Management Division, Washington State Emergency Management Association). These relationships could result in increased signage recommendations to raise the airport's visibility within the surrounding population.

Additionally, weather reporting can be very important at the state-managed airports where the closest reporting facility could be many miles away. Given the remote locations of these state-managed airports and the variability/potential severity of the region's weather, even weather reporting from a nearby location can be dramatically different from that experienced at an airport (particularly in the mountainous areas). As such, each state-managed airport ideally should have its own local weather reporting capability. However, since cost considerations for such facilities can be significant and potentially prohibitive, it will be important for WSDOT Aviation to carefully consider where and how to make such an investment. When weighing opportunities to establish weather reporting services at its airports, WSDOT Aviation should consider a variety of factors. These include a cost-benefit needs analysis for the airport, a thorough analysis of area adverse weather conditions, and an analysis of other weather reporting currently available at other locations (including airports) located nearby in terms of accuracy and relevance to state-managed airport operations. Additionally, as suggested above, WSDOT Aviation should also identify and pursue any potential partnering opportunities with other interested groups and agencies (including other divisions of WSDOT that provide weather reporting) within the state.

The state should also consider strategically placing web cameras at appropriate state-managed facilities. Web cameras provide a visual snapshot of current conditions at state-managed airports, and offer helpful real-time weather information. Web cameras have been established at several of the state-managed airports, including Methow Valley, Easton, and Skykomish.

Finally, it must be stated that all of these recommendations have been established to provide WSDOT Aviation with a general plan as to how to best develop the state-managed airport system to better fulfill the goals of the State Aviation Policy, thereby serving the state of Washington. This should not be interpreted as the specific action plan that WSDOT Aviation will follow for the development of these airports since other considerations (including funding and economic conditions) as well as shifting local, state, and federal transportation and safety priorities all can have an impact on what projects are ultimately pursued at particular airports. Any and all development of the state-managed airport system should be done entirely at the discretion and direction of WSDOT Aviation.

2.2 Avey Field State Airport (69s)

History

Avey Field State Airport, also known as Avery Field State/Laurier Airport or simply Avey State Airport, straddles the United States and Canadian border. The airport is shared between the state of Washington and the Province of British Columbia, and both the U.S. Customs Service and Canada Border Services Agency have offices located adjacent to the airport.

The airport was constructed by the Washington State Aeronautics Commission with the dual purpose of serving as an emergency landing area and a border-crossing airport. The airport was dedicated on July 11, 1963 and was constructed at a cost of $23,455 provided by the state of Washington. No federal funds were used in the construction of this facility.

General Overview

The Avey State Airport is a public-use facility operated by WSDOT Aviation. The land for the Avey Airport is leased by WSDOT Aviation from a private citizen who lives near the airport. The most recent formal lease agreement was entered into in 1999. The airport has a single gravel surfaced runway (Runway 17-35) measuring 1,950 feet long and 40 feet wide. The aircraft parking apron is located on the west side of the runway, measures approximately 200 by 200 feet, and is equipped with several aircraft tie-downs. The airport is equipped with a single wind indicator located near mid-field.

The surrounding land area is very rural and is primarily used for recreational purposes. The only close-in development near the airport is associated with the U.S. Customs Service and Canada Border Services Agency offices. Ground access to the airport is provided directly by US 395.

The Avey State Airport currently accommodates an estimated 1,000 annual operations. The airport is primarily used for access to this remote area of the state and for recreational purposes. A U.S. Customs Service office is located adjacent to the airport that can provide customs service to aircraft arriving from Canada if they provide at least a one-hour notice prior to arrival.

Avey State Airport – Location

Source: Wilbur Smith Associates, 2007

Avey State Airport – Layout/Aerial

Source: WSDOT Aviation

Avey State Airport – Primary Airport Characteristics			
Nearest Municipality	Laurier, Washington	**Runway Length**	1,975′
General Setting	Mountain/Forest	**Runway Surface**	Gravel
Land Owner	Private	**Annual Operations**	<500 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest		
Existing Functionality Description	Mountain backcountry airport providing transportation access to recreational opportunities and the local community. Limited emergency medical and forest firefighti activity.	**Infrastructure/ Facilities**	Hangar, Windsock, Non-standard runway reflector

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Avey State Airport are included below.

Avey State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	○
Aircraft Size	Small (under 12,500 lbs)	○
Runway Classificatio	Utility	○
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended, except paved runways 60′ recommended	○
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	○
General Maintenance / Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	○

● = *Objective Met* ○ = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Avey State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	●
	Weather reporting[2]	O
	Telephone (for landside transportation)	●
	Water	●
	Restrooms	●
	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Auto parking	O
	Campsites/picnic tables/fir pits	O
Moderate Use		
• Provide Access to Remote Areas	(Included in objectives listed above)	
Lower Use		
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	○
	Complete grass coverage of all areas to minimize dust	○
• Flight Safety Enhancement	Emergency Shelter	●

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• WSDOT Aviation should consider options to making existing facilities (water, telephone, shelter) on the airport available for pilot use.

2.3 Bandera State Airport (4W0)

History

Bandera State Airport is located in King County approximately 6 miles west of Snoqualmie Pass on Interstate 90. The airport is located along a major airway utilized by smaller general aviation aircraft traveling through the Cascade mountain range between eastern and western Washington.

A site investigation report completed in 1947 noted that the airport was constructed by the Washington State Aeronautics Commission in the late 1940s for the purpose of serving as an emergency landing area along this heavily utilized east-west mountain flyway. Specifically, the airport was designed to serve as an emergency landing area primarily for single engine aircraft. Historical records from WSDOT Aviation indicated that the land for the airport was acquired by WSDOT Aviation from the forest service and from a private owner through condemnation on June 11, 1947 at a cost of $229.50.

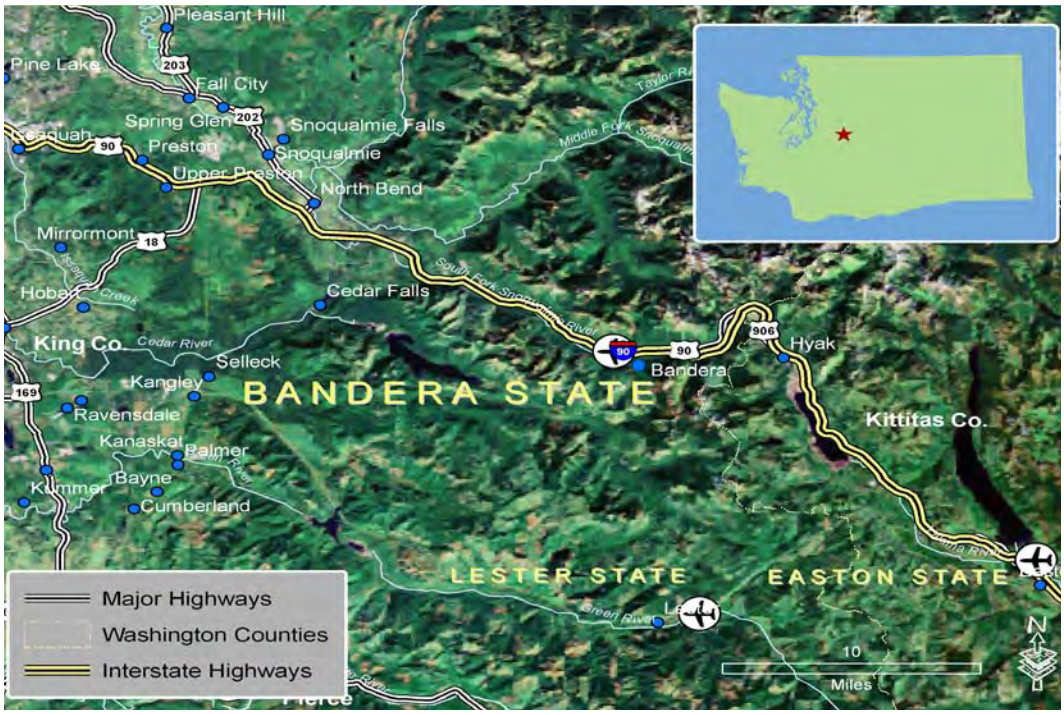
General Overview

The Bandera State Airport is a public-use facility owned and operated by WSDOT Aviation. The airport has a single turf surfaced runway (08-26) measuring 2,342 feet long and 100 feet wide, as well as a turf aircraft parking area located on the west end of the runway. This parking area is not equipped with aircraft tie-downs. The airport has one wind cone located near mid-field.

The surrounding land area is forested and is primarily used for recreational purposes. According to the King County Comprehensive Plan Land Use Map 2004 the airport is located in a forestry zone. The airport is located in the Snoqualmie National Forest with significant tree growth surrounding the entire airport. Ground access to the airport is provided via Forest Road 9031 which runs a short distance between the airport and a full interchange on Interstate 90. Vehicular access to the airport is controlled by a locked gate at the end of the access road.

The Bandera State Airport currently receives an estimated 500 to 1,000 annual operations and has no based aircraft. The airport is primarily used for recreational purposes, providing access for camping, fishing, and other outdoor recreational activities. The airport is also used for medical evacuation flights four to five times per year resulting from automobile accidents on Interstate 90, and it is used as a forest firefighting base about every other year. The airport is commonly used (three to four times per week) for flight instruction, providing pilots an opportunity to practice backcountry and mountain flying techniques.

Bandera State Airport – Location



Source: Wilbur Smith Associates, 2007

Bandera State Airport – Layout/Aerial

Source: WSDOT Aviation

Bandera State Airport – Primary Airport Characteristics			
Nearest Municipality	North Bend, Washington	**Runway Length**	2,344′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	WSDOT Aviation	**Annual Operations**	500–1,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest		
Existing Functionality Description	Mountain backcountry turf airport providing access to recreational opportunities. Limited emergency medical and forest firefighti activity.	**Infrastructure/ Facilities**	Windsock, Runway markers

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Bandera State Airport are included below.

Bandera State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	●
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	O
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Bandera State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Flight Safety Enhancement	Clear approaches (aircraft/ helicopter)	⭘
	Aircraft parking area(s)	●
	Weather reporting[2]	⭘
	Telephone	⭘
	Emergency Shelter	⭘
Moderate Use		
• Provide Access to Recreational Areas	Water	⭘
	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Restrooms	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
Lower Use		
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	○
	Complete grass coverage of all areas to minimize dust	○
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	●
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow Removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	⭘
• Provide Access to Remote Areas	(Included in objectives listed above)	

● = *Objective Met* ⭘ = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.4 Copalis Beach State Airport (S16)

History

Copalis Beach State Airport is located on the Pacific coast in Grays Harbor County near the mouth of the Copalis Beach River. The airport has the distinction of being the only ocean beach airport in Washington State.

According to WSDOT Aviation historical records, a designated landing area on Copalis Beach was first established by the Grays Harbor County Commission in 1951, which was likely to formalize the use of a site that was already being used as a landing area. In 1967, a law was enacted by Washington State giving authority to the Parks and Recreation Commission to establish vehicular traffic rules on Copalis Beach. During this time it was also determined that the Grays Harbor County Commission did not have jurisdiction over the beach area, which voided the Commissions establishment of the landing area on Copalis Beach. Following this action, the Parks and Recreation Commission adopted Washington Administrative Code (WAC) 352-37-170 that recognized the use of Copalis Beach as an aircraft landing area subject to Aeronautics Commission jurisdiction.

General Overview

The Copalis Beach State Airport is a public-use facility operated by WSDOT Aviation. The Washington State Parks and Recreation Commision has ownership of the land with WSDOT having jurisdiction over operation of the facility per WAC 352-37-170.

The airport has a single sand surfaced landing area (Runway 14-32), measuring approximately 4,500 feet long and 150 feet wide. The runway lies between the mouth of the Copalis River on the south and approximately one mile north to the Copalis rocks. The parking area is not equipped with aircraft tie-downs. The airport is equipped with one wind cone located near mid-field.

The land area surrounding the airport is a rural coastal area primarily used for recreational purposes, single family homes and vacation properties. Ground access by vehicular traffic is permitted on the beach, but is limited due to WAC 352-37-070.

The Copalis Beach State Airport currently receives an estimated 500 to 1,000 annual operations. The airport is unable to accommodate based aircraft due to the airfield being underwater during high tide. The airport is almost exclusively used for recreational purposes, providing access for surfing, fishing, and other beach related activities. Overnight camping is not allowed. During special events such as the opening of clam season and fly-in gatherings as many as 30 aircraft may be found using this airport. The airport is also occasionally used for flight instruction providing pilots an opportunity to practice soft-field take-off and landing techniques.

Copalis Beach State Airport – Location

Source: Wilbur Smith Associates, 2007

Copalis Beach State Airport – Layout/Aerial

Source: WSDOT Aviation

Copalis Beach State Airport – Primary Airport Characteristics			
Nearest Municipality	Copalis Beach, Washington	**Runway Length**	4,500′
General Setting	Rural Coastal Area Beach	**Runway Surface**	Sand/Beach
Land Owner	State Parks Department	**Annual Operations**	500–1,000 (WSDOT 2007 estimate)
Surrounding Land Area	Public Lands, Rural Residential		
Existing Functionality Description	Coastal beach airport providing access to recreational opportunities.	**Infrastructure/ Facilities**	Windsock

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Copalis Beach State Airport are included below.

Copalis Beach State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	●
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	O
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	O
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	●
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Copalis Beach State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/ helicopter)	O
	Aircraft parking area(s)	○
	Weather reporting[2]	O
	Telephone (for landside transportation)	O
	Water	O
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
Lower Use		
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	○
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• Runway edge reflector cannot be standard due to tidal impacts. WSDOT Aviation should consider an alternative design capable of withstanding tides.

2.5 Easton State Airport (ESW)

History

Easton State Airport is located in Kittitas County approximately 10 miles east of Snoqualmie Pass at exit 80 off Interstate 90. The airport is located along a major airway and is utilized by smaller general aviation aircraft traveling through the Cascade mountain range between eastern and western Washington.

The airport was constructed by the federal government in the late 1930s to serve as an emergency landing area along this heavily utilized east-west mountain flyway. The land for the airport is owned by WSDOT Aviation. An easement providing ground access to the airport is shared between WSDOT Aviation, Silver Ridge Ranch, and the Department of Natural Resources.

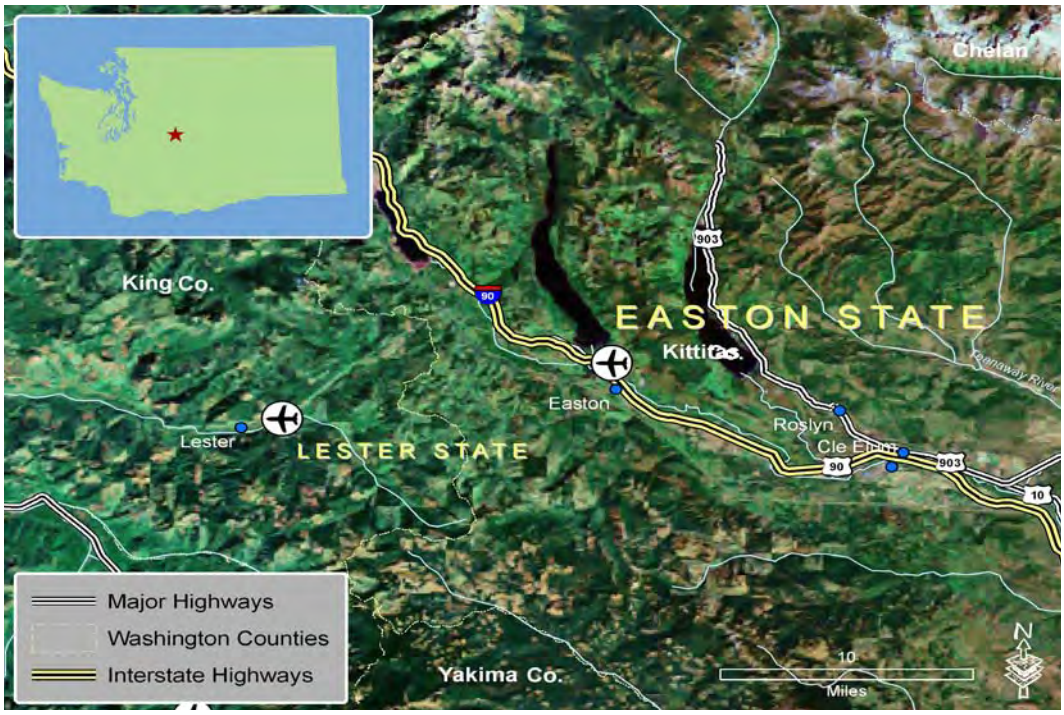
General Overview

The Easton State Airport is a public-use facility owned and operated by WSDOT Aviation. The airport occupies approximately 13 acres and has a single turf surfaced runway (Runway 09-27) measuring 2,640 feet long and 100 feet wide. A turf aircraft parking area is located on the west end of the runway and is equipped with six aircraft tie-downs. A single wind cone is located near mid-field. Other utilities and facilities at the airport include phone service, electrical power, drinking water, camping and picnic facilities available to the public. The airport has electrical power, web camera, and phone equipment shed on site.

The airport is located in a densely forested area with significant tree growth surrounding the entire airport. According to the Kittitas County Comprehensive Plan Zoning Map for the Easton area, the airport property is located inside the Easton UGN boundary in an unclassified zone. The land surrounding the airport is zoned rural residential, forest mixed use, industrial, and commercial. The surrounding land area is part of the Snoqualmie National Forest and is primarily used for recreational purposes. Private property exists west and east of the airport with many large lot home sites. The Silver Ridge Ranch (private campground) is located southeast of the airport. Ground access to the airport is provided via an easement off Sparks Road, which connects to Interstate 90.

The Easton State Airport currently receives an estimated 1,000 to 2,000 annual operations and has no based aircraft. The airport is primarily used by pilots for access to the surrounding recreational area that includes camping, fishing, and other outdoor recreational activities. The airport is also commonly used for medical evacuation flights (10 to 15 times per year) primarily to transport people with injuries sustained from automobile accidents on Interstate 90. The airport is also typically used on an annual basis as a staging area for forest firefighting activity, and it is also occasionally used as a by the U.S. Army and the U.S. Forest Service for training exercises.

Easton State Airport – Location



Source: Wilbur Smith Associates, 2007

Easton State Airport – Layout/Aerial

Source: WSDOT Aviation

Easton State Airport – Primary Airport Characteristics			
Nearest Municipality	North Bend, Washington	**Runway Length**	2,640′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	WSDOT Aviation	**Annual Operations**	1,000–2,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest, Rural Residential		
Existing Functionality Description	Mountain backcountry turf airport providing access to recreational opportunities and remote communities. Moderate to high level of emergency medical, search and rescue activities, and forest firefighti activity.	**Infrastructure/ Facilities**	Windsocks, Telephone, Electrical power, Water, Electrical equipment shed, Maintenance building

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Easton State Airport are included below.

Easton State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	O
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	O
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Easton State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Flight Safety Enhancement	Clear approaches (aircraft/ helicopter)	⭘
	Aircraft parking area(s)	●
	Weather reporting[2]	⭘
	Telephone	●
	Emergency Shelter	●
Moderate Use		
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	○
	Complete grass coverage of all areas to minimize dust	●
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	○
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow Removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	⭘
• Provide Access to Recreational Areas	Water	●
	Restrooms	●
	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Auto parking	○
	Campsites/picnic tables/fir pits	●
Lower Use		
• None		

● = *Objective Met* ⭘ = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• WSDOT Aviation should consider options to making existing facilities (water, telephone, shelter) on the airport available for pilot use.

2.6 Lake Wenatchee State Airport (27W)

History

Lake Wenatchee State Airport is located near the center of Chelan County, approximately 16 miles northwest of the City of Leavenworth, north of State Route 207 and northeast of Lake Wenatchee. The airport is located on the eastern side of a major airway utilized by smaller general aviation aircraft traveling through the Cascade mountain range between eastern and western Washington.

A special use permit was granted to the WSDOT Aeronautics Division in 1949 for the purpose of constructing and maintaining and emergency landing area for airplanes. The airport was constructed by the Washington State Aeronautics Commission in the late 1940s to serving as an emergency landing area along this heavily utilized east-west mountain flyway. The land for the airport was deeded (see airport appendix) by the United States of America to the state of Washington.

General Overview

The Lake Wenatchee State Airport is a public-use facility owned and operated by WSDOT Aviation. It provides the only landing area within a large remote region of the state, with surrounding airports located at least 30 miles away in any direction. The airport has a single turf surfaced runway (Runway 09-27) measuring 2,474 feet long and 100 feet wide. A turf aircraft parking area, measuring approximately 50 feet by 100 feet, is located on the east end of the runway, and is equipped with five aircraft tie-downs. The airport also has two wind cones, one located at each runway end. Utilities located near the airport include phone service, electrical power, and water None of these are available for public airport uses. The airport has a private-use meeting hall on-site that was constructed and is owned by the Lake Wenatchee Recreation Club. Through a lease, a recreation club conducts minor maintenance such as mowing and windsock replacement. The recreation club building has been leased by forest firefighting personal in the past when the airport is used as forest firefighting base. Advances in technology has allowed forest firefighting to be conducted through the use of mobile RV command centers. The airport does not have any type of perimeter fencing.

The surrounding land area is a rural forested area that is primarily used for recreational purposes. The Lake Wenatchee State Park is located adjacent to the airport and contains 197 well-developed camping sites, a general store, and boat rentals on Fish Lake. The airport is located in a forested area with dense tree growth surrounding the entire airport that obstructs the approach paths to both runway ends. Ground access to the airport is provided via State Highway 207, which connects to US 2 approximately 7 miles south of the airport.

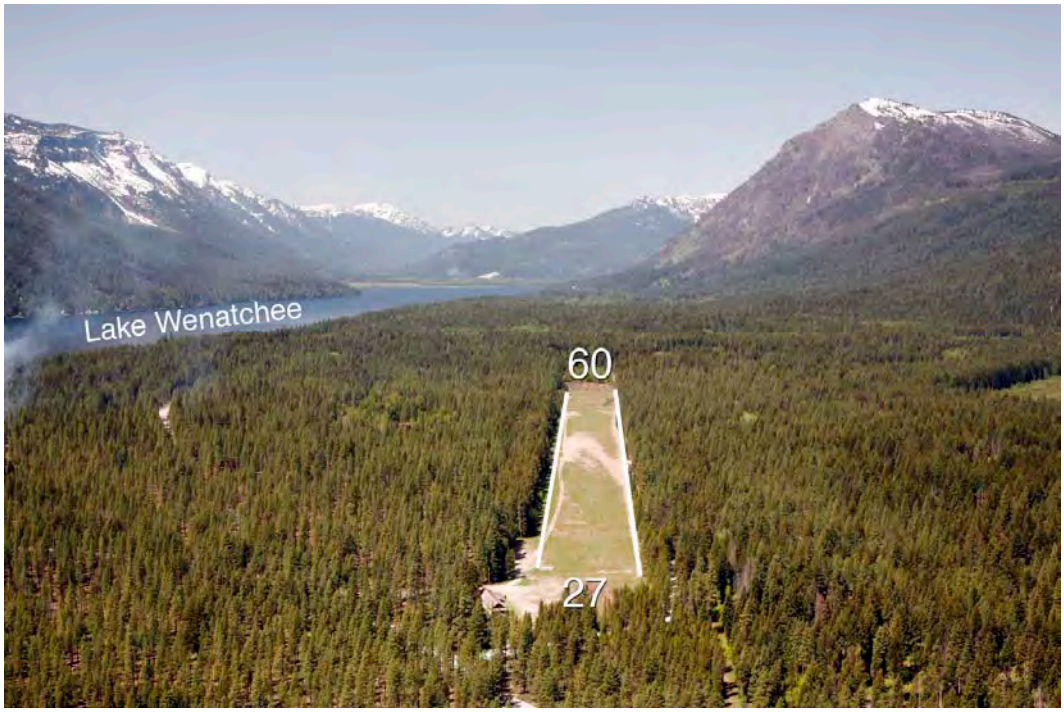
The Lake Wenatchee State Airport currently receives an estimated 500 to 1,000 annual operations and has no based aircraft. It is primarily used by pilots for transportation access to camping, fishing, and other outdoor recreational activities located in the surrounding forest areas. The 35 acre airport is also typically used annually as a forest firefighting base, primarily serving as a landing and staging area for forest firefighting helicopters. ***Note:*** The airport provides a safer area for firefighting helicopter operations to be conducted, as opposed to an open field or some other area that do not have established approaches. The airport is also used (two to three times per week) for flight instruction and training of backcountry and mountain flying techniques.

The airport provides limited utility in terms of an emergency landing facility. The short runway and obstructed approach paths to both runways make landing at the airport challenging under normal conditions. However, the airport does provide pilots with an alternate landing area when deteriorating weather conditions occur in the area.

Lake Wenatchee State Airport – Location

Source: Wilbur Smith Associates, 2007

Lake Wenatchee State Airport – Layout/Aerial



Source: WSDOT Aviation

Lake Wenatchee State Airport – Primary Airport Characteristics			
Nearest Municipality	Coles Corner, Washington	**Runway Length**	2,474′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	WSDOT Aviation	**Annual Operations**	500–1,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest		
Existing Functionality Description	Mountain backcountry turf airport providing access to recreational opportunities. Moderate to high usage supporting forest firefighti activity level of emergency medical, search and rescue activities, and forest fir fightin activity.	**Infrastructure/ Facilities**	Windsocks, Tie-downs, Telephone, Electrical Power, Water, Privately-owned meeting hall

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Lake Wenatchee State Airport are included below.

Lake Wenatchee State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	O
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	O
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance / Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Lake Wenatchee State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	⭘
	Aircraft parking area(s)	⭘
	Weather reporting[2]	⭘
	Telephone (for landside transportation)	●
	Water	●
	Restrooms	●
	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Auto parking	●
	Campsites/picnic tables/fir pits	●
Moderate Use		
• Support Forest Firefightin Operations	Command unit trailer	⭘
	Area(s) for firefight camping/staging/auto parking	⭘
	Complete grass coverage of all areas to minimize dust	⭘
• Flight Safety Enhancement	Emergency Shelter	●
Lower Use		
• Provide Access to Remote Areas	(Included in objectives listed above)	○

● = *Objective Met* ⭘ = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• WSDOT Aviation should consider options to making facilities (water, telephone, shelter) located in Lake Wenatchee Recreation Club available to pilots. • Facilities for firefighti operations are a high priority for this airport and development cost may be recoverable through short-term leases by the forest service. • Campsites are prohibited on the airport. However, access to sites abutting the airport is permitted.

2.7 Lester State Airport (15S)

History

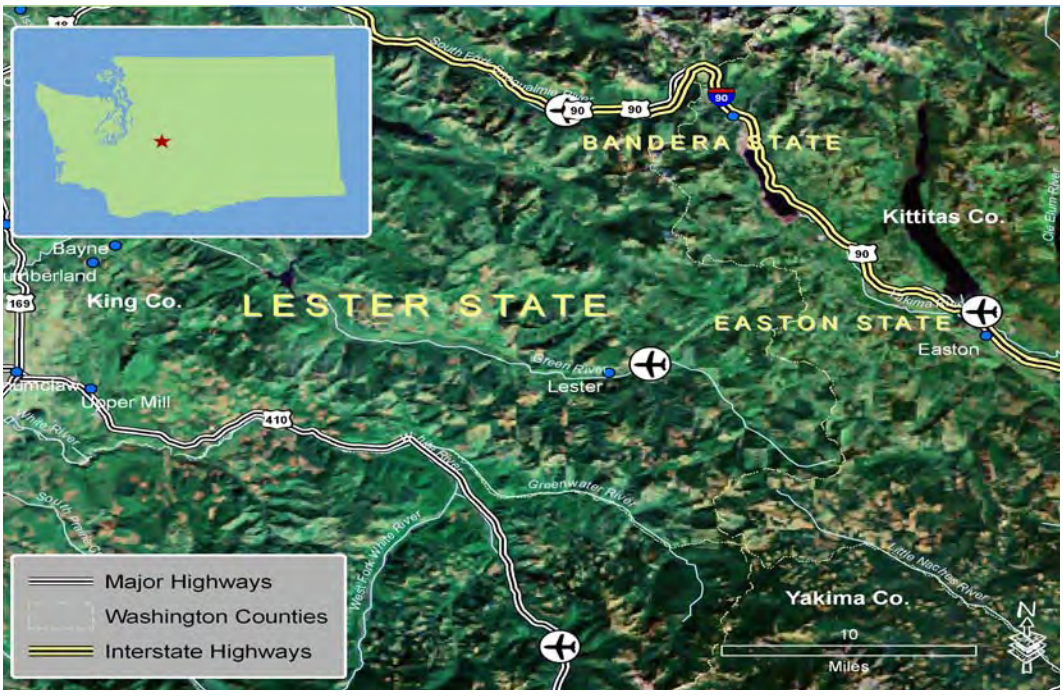
Lester State Airport is located on the eastern side of King County approximately 10 miles southwest of Stampede Pass on NF-54. The airport is located along the bank of the Green River in the Tacoma Watershed area.

The airport was constructed in 1948 to provide access to this remote area of the state. The majority of the airport runway was washed away by the adjacent Green River in 1989 and is now listed as a helicopter landing zone only.

General Overview

Ground access to the airport is provided via NF-54, a gravel road crossing Stampede Pass and connecting to Interstate 90 approximately 20 miles northeast of the airport. Approximately 400 feet of runway is available for helicopter and search and rescue operations. The state will be re-evaluating the airport to determine future improvements to meet the state's air transportation needs.

Lester State Airport – Location



Source: Wilbur Smith Associates, 2007

Lester State Airport – Layout/Aerial

Unavailable

Lester State Airport – Primary Airport Characteristics			
Nearest Municipality	Lester, Washington	**Runway Length**	400′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	WSDOT Aviation	**Annual Operations**	<500 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest		
Existing Functionality Description	Limited role or function due to runway damage. Suitable for helicopter and ultralight operations only.	**Infrastructure/ Facilities**	None

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Lester State Airport are included below.

Lester State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	WSDOT Study to determine future objective	●
Runway Width	100′ recommended	○
Runway Surface	Turf/Gravel/Sand	○
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	
Approaches Categories	Visual (Daytime only)	○
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	○
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	●
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Lester State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• None		
Lower Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	⭘
	Aircraft parking area(s)	○
	Weather reporting[2]	⭘
	Telephone (for landside transportation)	⭘
	Water	⭘
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○

● = *Objective Met* ⭘ = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• This airport and its associated properties has the potential to be used for land banking, environmental mitigations, or land swaps.

2.8 Little Goose State Airport (16W)

History

Little Goose Lock and Dam State Airport is located along the northern border of Columbia County near the Little Goose Dam on the Snake River. The airport is located approximately 10 miles northeast of Starbuck, Washington. The airport was constructed by the Army Corps of Engineers to provide access during the construction of the Little Goose Dam, and was leased by WSDOT Aviation from the Army Corps of Engineers and designated a public-use airport in 1977.

General Overview

Little Goose Lock and Dam State Airport is a public-use facility owned by the Army Corps of Engineers and operated by WSDOT Aviation. The airport has a single gravel surfaced runway (Runway 13-31) measuring 3,400 feet long and 50 feet wide. A gravel aircraft parking area equipped with a cable tie-down is located on the west end of the runway. This parking area measures approximately 100 by 100 feet and will accommodate three to four aircraft. The airport is equipped with one wind cone located near mid-field.

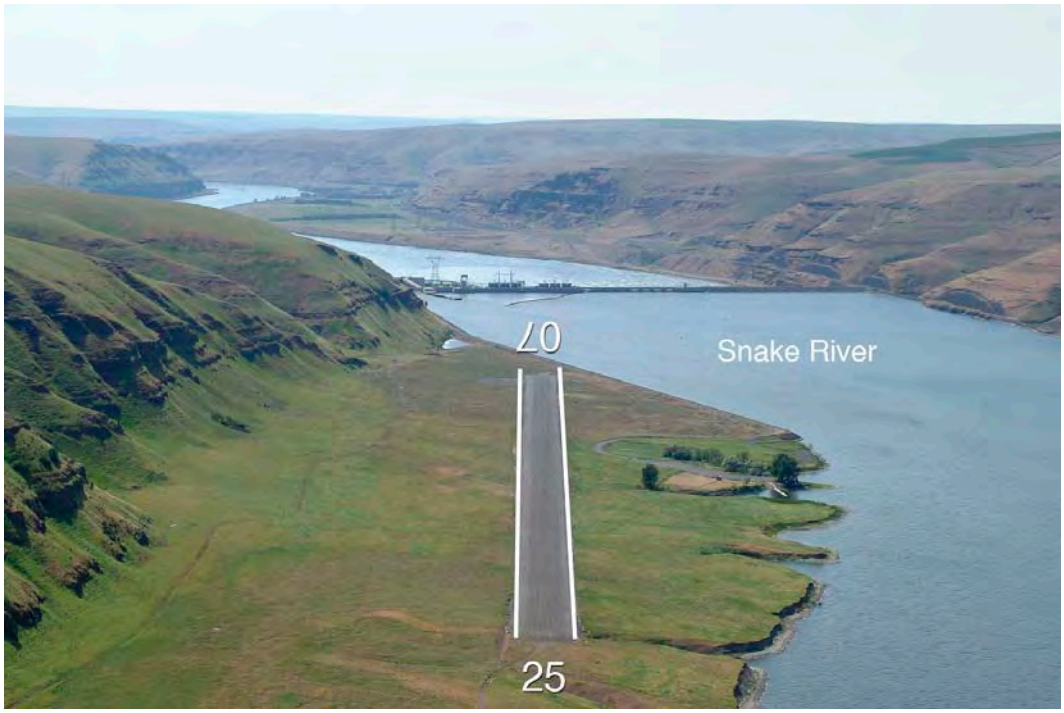
The surrounding land is a very rural, semi-arid desert area primarily used for agricultural and recreational purposes. According to the Columbia County planning department, the airport is in an area zoned for industrial use. The airport is located inside a canyon carved by the Snake River. Ground access to the airport is provided via Little Goose Dam Road which runs a between the airport and the town a Starbuck, Washington. Vehicular access to the airport is controlled by a locked gate at the end of a short gravel access road. Some power wires obstruct the approach path near the Dam on Runway 07.

The Little Goose Lock and Dam State Airport currently receives fewer than an estimated 500 annual operations, and has no based aircraft. The airport is primarily used for recreational purposes, providing access for camping, boating, fishing, and other outdoor recreational activities associated with the adjacent Snake River and Lake Bryan. The airport is utilized by the military about once every two years. Recently the Air Force has used the airport for air-drop competitions and training.

Little Goose State Airport – Location

Source: Wilbur Smith Associates, 2007

Little Goose State Airport – Layout/Aerial



Source: WSDOT Aviation

Little Goose State Airport – Primary Airport Characteristics			
Nearest Municipality	Starbuck, Washington	**Runway Length**	3,400′
General Setting	River Canyon surrounded by semi arid desert	**Runway Surface**	Gravel
Land Owner	Army Corps of Engineers	**Annual Operations**	<500 (WSDOT 2007 estimate)
Surrounding Land Area	Public Lands		
Existing Functionality Description	Airport provides access to limited recreational opportunities associated with the adjacent Snake river. Could possibly serve a role in responding to emergencies associated with the Little Goose Lock and Dam.	**Infrastructure/ Facilities**	Windsocks, Tie-downs

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Little Goose State Airport are included below.

Little Goose State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	○
Aircraft Size	Small (under 12,500 lbs)	○
Runway Classificatio	Utility	○
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	○
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	○
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	○
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	○

● *= Objective Met* ○ *= Objective Recommended* ○ *= Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Little Goose State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/ helicopter)	O
	Aircraft parking area(s)	○
	Weather reporting[2]	O
	Telephone (for landside transportation)	O
	Water	O
	Restrooms/showers	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
Lower Use		
• None		

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• WSDOT Aviation should consider options to making existing facilities (water, telephone, shelter) on the airport available for pilot use. • Facilities for firefighti operations are a high priority for this airport and development cost may be recoverable through short-term leases by the forest service.

2.9 Lower Granite State Airport (00W)

History

Lower Granite State Airport is located in Whitman County approximately 14 mile south of Colfax Washington. The airport was constructed by the Army Corps of Engineers to provide access during the construction of the Lower Granite Dam. A request to change the designation of the airport from a private-use to pubic-use was made by WSDOT Aviation to the FAA, and the designation of the airport as a pubic-use facility was approved by the FAA in December 1977. The airport was leased by WSDOT Aviation from the Army Corps of Engineers.

General Overview

The Lower Granite State Airport is a public-use facility owned by the Army Corps of Engineers and operated by WSDOT Aviation. The airport has a single gravel surfaced runway (Runway 14-32) measuring 3,400 feet long and 50 feet wide. In 2006 and 2008, the center of the runway was rolled and oil fogged, which improved the gravel surface. A gravel aircraft parking area is located on the east end of the runway, measuring approximately 100 by 100 feet that will accommodate three to four aircraft. The airport is equipped with one wind cone located near mid-field.

The land surrounding the airport is a rural semi-arid desert area and is primarily used for agricultural and recreational purposes. The airport is in an agriculturally zoned district, although it existed before the zoning regulation went into effect. The airport is located inside a canyon on the northern bank of the Snake River. Ground access to the airport is provided via Almota Road which runs between the airport and the city of Colfax to the north. Almota road also runs south of the airport and connects with US 12 near Alpowa Summit. Some power wires obstruct the approach path near the Dam on Runway 32. A public use campground is also located near the end of Runway 14.

The Lower Granite State Airport currently receives fewer than an estimated 500 annual operations, and has no based aircraft. The airport is primarily used for recreational purposes, providing access to camping, fishing, hunting, and other outdoor recreational activities associated with the Snake River and Lake Bryan. The airport is also used by army engineers flying single-engine aircraft.

Lower Granite State Airport – Location

Source: Wilbur Smith Associates, 2007

Lower Granite State Airport – Layout/Aerial

Source: WSDOT Aviation

Lower Granite State Airport – Primary Airport Characteristics			
Nearest Municipality	Almota, Washington	**Runway Length**	3,400′
General Setting	River Canyon surrounded by semi arid desert	**Runway Surface**	Gravel
Land Owner	Army Corps of Engineers	**Annual Operations**	<500 (WSDOT 2007 estimate)
Surrounding Land Area	Public Lands		
Existing Functionality Description	Airport provides access to limited recreational opportunities associated with the adjacent Snake river. Could possibly serve a role in responding to emergencies associated with the Lower Granite Lock and Dam.	**Infrastructure/ Facilities**	Windsocks, Tie-downs

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Lower Granite State Airport are included below.

Lower Granite State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	○
Aircraft Size	Small (under 12,500 lbs)	○
Runway Classificatio	Utility	○
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	○
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	○
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	○
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	○

● = *Objective Met* ○ = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Lower Granite State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	⭘
	Aircraft parking area(s)	○
	Weather reporting[2]	⭘
	Telephone (for landside transportation)	⭘
	Water	⭘
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
Lower Use		
• Provide Access to Remote Areas	(Included in objectives listed above)	○
• Flight Safety Enhancement	Emergency Shelter	○

● = *Objective Met* ⭘ = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.10 Lower Monumental State Airport (W09)

History

Lower Monumental State Airport is located in Walla Walla County approximately 5 miles south of Kahlotus, Washington. The airport was constructed by the Army Corps of Engineers to provide access during the construction of the Lower Monumental Dam. Management of the airport was assumed by WSDOT Aviation in 1978 to insure access to major water resources including the Lower Monumental Dam and to provide an emergency landing area on the route between the cities of Lewiston/Clarkston and the Tri-Cities area. The airport was leased by WSDOT Aviation from the Army Corps of Engineers.

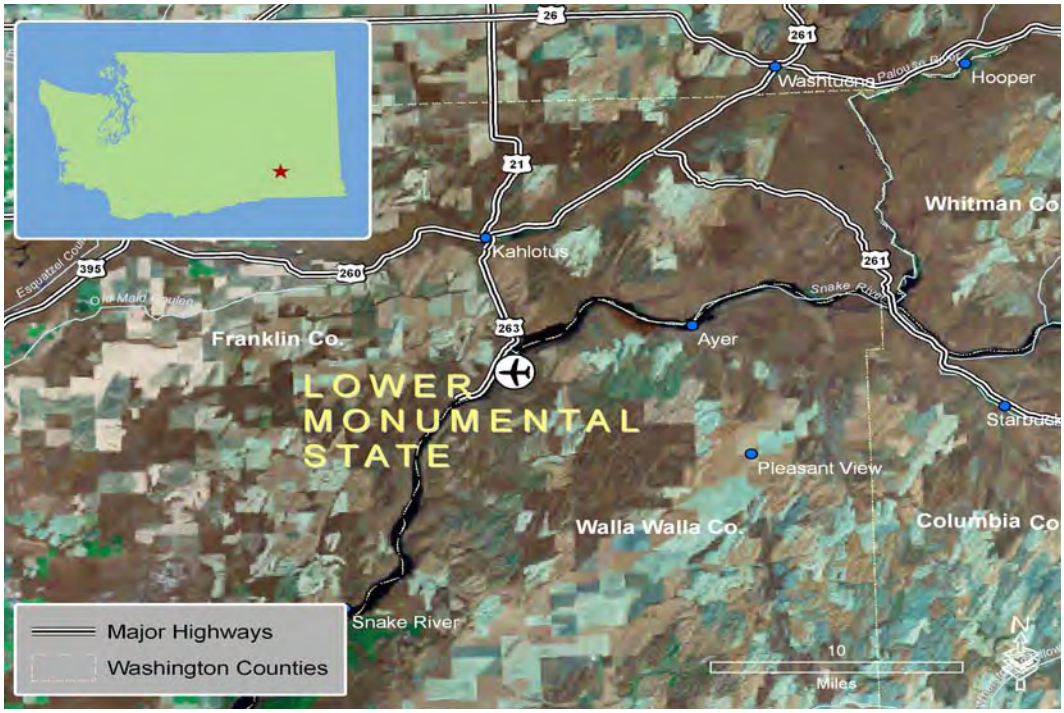
General Overview

The Lower Monumental State Airport is a public-use facility owned by the Army Corps of Engineers and operated by WSDOT Aviation that occupies approximately 38.5 acres. The airport has a single gravel surfaced runway (Runway 01-19) measuring 3,300 feet long and 50 feet wide. A gravel surfaced aircraft parking area is located on the southern end of the runway measuring approximately 100 by 100 feet that will accommodate three to four aircraft. The airport is equipped with one wind cone located near mid-field.

The surrounding land area is rural and is primarily used for agricultural and recreational purposes. The airport is located in semi-arid desert area in a canyon created by the Snake River. The Land Use Plan Map from the Walla Walla County Comprehensive Plan indicates the land surrounding the airport is zoned primarily agriculture. Ground access to the airport is provided via Lower Monumental Road. This winding road runs south approximately 30 miles before connecting with State Highway 124. Access to the airport via the Lower Monumental Dam north of the airport is not available to the general public.

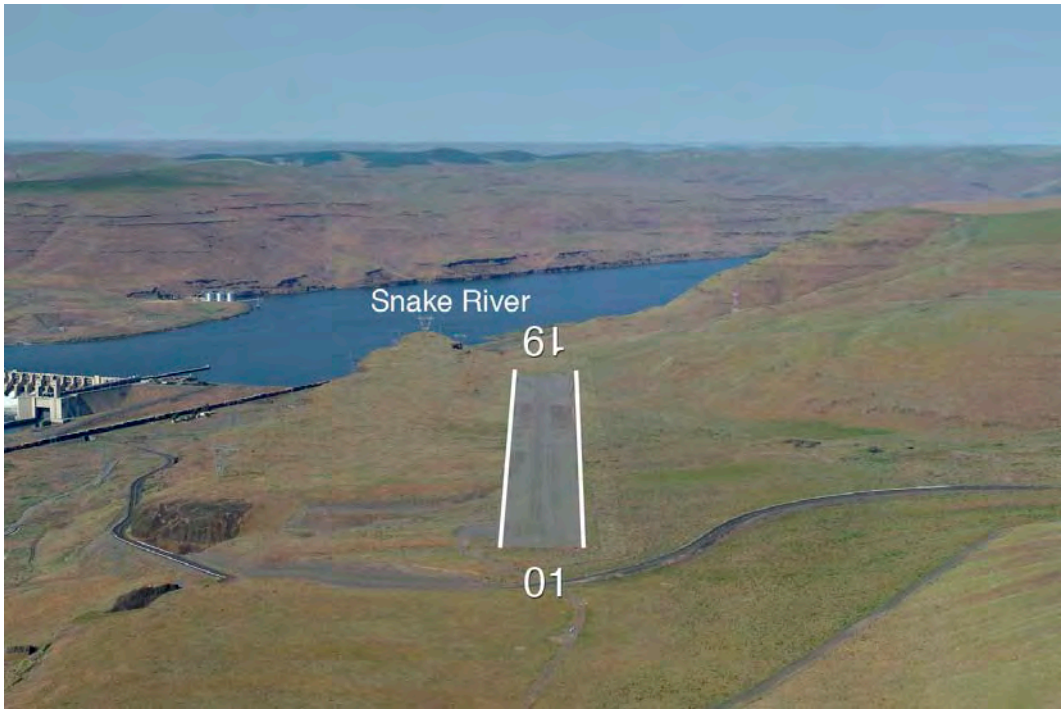
The Lower Monumental State Airport currently receives fewer than an estimated 500 annual operations, and has no based aircraft. It is one of the least utilized of the airports managed by WSDOT Aviation. The airport is primarily used for recreational purposes, providing access for camping, fishing, and other outdoor recreational activities.

Lower Monumental State Airport – Location



Source: Wilbur Smith Associates, 2007

Lower Monumental State Airport – Layout/Aerial



Source: WSDOT Aviation

Lower Monumental State Airport – Primary Airport Characteristics			
Nearest Municipality	Clyde, Washington	**Runway Length**	3,300′
General Setting	River Canyon surrounded by semi-arid desert	**Runway Surface**	Gravel
Land Owner	Army Corps of Engineers	**Annual Operations**	<500 (WSDOT 2007 estimate)
Surrounding Land Area	Public Lands		
Existing Functionality Description	Airport provides access to limited recreational opportunities associated with the adjacent Snake river. Could possibly serve a role in responding to emergencies associated with the Lower Monumental Lock and Dam.	**Infrastructure/ Facilities**	Windsocks, Tie-downs

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Lower Monumental State Airport are included below.

Lower Monumental State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	○
Aircraft Size	Small (under 12,500 lbs)	○
Runway Classificatio	Utility	○
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	○
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	○
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	○
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	○

● = *Objective Met* ○ = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Lower Monumental State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• None		
Lower Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	○
	Weather reporting[2]	O
	Telephone (for landside transportation)	O
	Water	O
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
• Provide Access to Remote Areas	(Included in objectives listed above)	○
• Flight Safety Enhancement	Emergency Shelter	○

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.11 Methow Valley State Airport (S52)

History

Methow Valley State Airport is located in Okanogan County approximately 5 miles south of Winthrop, Washington. The airport has been described as the "Crown Jewel" of the state-managed airport system and is the only state-managed airport included in the FAA National Plan of Integrated Airport Systems (NPIAS), making it eligible to receive airport development grants from the FAA Airport Improvement Program (AIP). The airport is located in the Methow Valley and provides access to a growing number of people who travel to this scenic area to participate in the numerous outdoor events and recreation opportunities including: festivals, skiing, hunting, camping and fishing. In recent years the area has experienced a significant increase in the number of vacation homes and retirement properties, and this growth has created a corresponding increase in the demand for facilities and services provided by the airport.

The airport was originally constructed by the forest service as the home of the North Cascades Smokejumper Base. The Methow Valley Airport is considered to be the birthplace of smokejumping with the first initial experimental parachute jumps and testing of equipment occurring at the airport in the late 1930s. The smokejumper base continues to be owned and operated by the U.S. Forest Service and occupies approximately 17 acres direct adjacent to the airport. Operation and management of the airport became the responsibility of WSDOT Aviation in the 1950s. This occurred due to increasing demand, unrelated to the smokejumper operation, for airport services in the area. The increased demand brought about the need to designate the airport as a public use facility. WSDOT Aviation was the most logical sponsor for the airport, as the U.S. Forest Service and the local municipality were uninterested or unable to operate the airport as a public-use facility.

General Overview

The Methow Valley State Airport is a public-use facility owned and operated by WSDOT Aviation. The airport has a single, asphalt surfaced runway (Runway 13-31) measuring 5,049 feet long and 75 feet wide, and is equipped with standard medium intensity runway lighting. Aircraft parking aprons are located on both sides of the runway and the airport has five hangars located on its property in addition to three properties with hangar facilities located adjacent to the airport. Off-airport hangar owners were given through the fence access to the airport in exchange for other property on the airport needed for development and to protect the airport from surrounding incompatible land uses. The Methow Valley State Airport occupies approximately 75 acres. Various types of fencing surround the entire airport. The airport does not currently have a Fixed Based Operator (FBO). Fuel and other aircraft services are not available to the general public. An Airport Master Plan and Airport Layout Plan was completed for this airport in July of 2009 and sets forth several planned capital improvements to address obstructions and other safety issues for the airport.

The surrounding land area is rural mountain valley. Low density residential development is located throughout the valley. The Methow Valley zoning map indicates that the area surrounding the airport is zoned as an airport development district. The stated purpose of this zoning designation is to provide for future airport expansion, set aside adjacent land for airport compatible uses, and to protect airport facilities.

The Methow Valley State Airport currently accommodates an estimated 9,000 to 10,000 annual operations and has nine based aircraft. The airport is used on a daily basis throughout the year by general aviation aircraft providing access to many business and home owners in the Methow Valley and surrounding area. During the summer months the airport is used extensively in support of forest firefighting activity including significant numbers of firefighting helicopter operations. The U.S. Forest Service also bases a Casa Smokejumper Aircraft at the airport.

Methow Valley State Airport – Location

Source: Wilbur Smith Associates, 2007

Methow Valley State Airport – Layout/Aerial

Source: WSDOT Aviation

Methow Valley State Airport – Primary Airport Characteristics			
Nearest Municipality	Winthrop, Washington	**Runway Length**	5,049′
General Setting	Mountain/Forest	**Runway Surface**	Asphalt
Land Owner	WSDOT Aviation	**Annual Operations**	9,000–10,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest, Rural Residential		
Existing Functionality Description	Traditional GA airport providing aircraft basing facilities and transportation access, including charter operations to the local community. Airport serves a significan number of forest firefighti operations and a limited number of emergency medical operations and search and rescue activities.	**Infrastructure/ Facilities**	Hangars, Runway Lighting, Electricity, Phone, Water, Forest Service Smokejumper Base

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Methow Valley State Airport are included below.

Methow Valley State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	2,400′	●
Runway Width	60′ recommended	●
Runway Surface	Asphalt	●
Taxiway	Turnarounds on each end	●
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	●
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Rotating Beacon • Visual glide slope indicators • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	Facilities should be maintained to its present standard. Facility should be maintained and developed to better fulfil its primary state function and purpose. A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1] *Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Methow Valley State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Support Forest Firefightin Operations	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	O
	Weather reporting[2]	O
	Complete grass coverage of all areas to minimize dust	O
	Command unit trailer pad	O
	Area(s) for firefight camping and staging	O
• Provide Access to Remote Areas	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Auto parking	●
• Provide Access to Recreational Areas	Campsites/picnic tables/fir pits	O
	Restrooms	●
Moderate Use		
• Access for Emergency Medical Operations	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Appropriate emergency airport signage on surrounding roadways	O
• Flight Safety Enhancement	Telephone	●
	Emergency Shelter	●
Lower Use		
• None		

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• WSDOT Aviation should consider options to making existing facilities (water, telephone, shelter) on the airport available for pilot use. • Facilities for firefighti operations are important for this airport and development cost may be recoverable through short-term leases by the forest service.

2.12 Ranger Creek State Airport (21W)

History

Ranger Creek State Airport is located in Pierce County 30 miles southeast of Enumclaw, Washington on State Route 410, just outside the northeast boundary of Mount Rainier National Park. The airport was constructed in the early 1940s as a Civil Conservation Corporation project and was used by the Army during and after the Korean War as a base for winter training operations. The Army discontinued use of the field in 1957 at which time the forest service and WSDOT Aviation reached an agreement that the airport would remain open as an emergency landing facility. The U.S. Forest Service issued a 30-year Special Use Agreement authorizing WSDOT Aviation to operate, maintain, and develop the airport as part of the divisions system of emergency landing facilities. This permit expired in May 1998. The current Special Use Permit was issued by the U.S. Forest Service in July 1995 for a period of 15 years after extensive efforts by the Washington Pilots Association (WPA) in concert with other user groups.

General Overview

The Ranger Creek State Airport is a public-use facility operated by WSDOT Aviation. According to the Special-Use permit granted by the U.S. Forest Service, the airport occupies approximately 20.3 acres. The airport has a single, asphalt surfaced runway (15-33) measuring 2,876 feet long and 30 feet wide. A gravel-surfaced aircraft parking area is located on the south end of the runway and is equipped with several aircraft tie-downs. The airport is equipped with two wind cones located at each runway end. The U.S. Forest Service maintains a campground next to the airport with outhouse-type restroom facilities. Neither the airport nor the adjacent campground has water, electrical power, or phone service.

Zoning information from Pierce County indicates the land around the airport is zoned as designated forest land. The surrounding land area is part of the Snoqualmie National Forest and is primarily used for recreational purposes. The airport is located in a densely forested area with significant tree growth surrounding the entire airport, with some obstructions within the approach and transition surfaces of the airport. Ground access to the airport is provided via a gravel access road that runs a short distance between the airport and State Route 410. Vehicular access on the airport, with the exception of aircraft, is prohibited by an order issued by the U.S. Forest Service in August 1995.

The Ranger Creek State Airport currently receives an estimated 500 to 1,000 annual operations and has no based aircraft. The airport is primarily used for recreational purposes, providing access for camping, fishing, and other outdoor recreational activities. The airport is also used for medical evacuation flights five to six times per year. Due to the remote location in the Cascade Mountain Range and proximity to the Mount Rainer National Park, the airport is occasionally used for forest fire-fighting (rotary wing aircraft mostly) and search and rescue missions. Its location also makes it popular for use as a training site for mountain flying instruction.

Ranger Creek State Airport – Location

Source: Wilbur Smith Associates, 2007

Ranger Creek State Airport – Layout/Aerial

Source: WSDOT Aviation

Ranger Creek State Airport – Primary Airport Characteristics			
Nearest Municipality	Greenwater, Washington	**Runway Length**	2,876′
General Setting	Mountain/Forest	**Runway Surface**	Asphalt
Land Owner	U.S. Forest Service	**Annual Operations**	500–1,000 (WSDOT 2007 estimate)
Surrounding Land Area	Wilderness Area		
Existing Functionality Description	Mountain backcountry airport providing access to recreational opportunities. Limited emergency medical and forest firefighti activity.	**Infrastructure/ Facilities**	Windsocks, tie-downs

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Ranger Creek State Airport are included below.

Ranger Creek State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	○
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	O
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	O
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Ranger Creek State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	O
	Weather reporting[2]	O
	Telephone (for landside transportation)	O
	Water	O
	Restrooms	●
	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Auto parking	●
	Campsites/picnic tables/fir pits	●
Moderate Use		
• Flight Safety Enhancement	Emergency Shelter	O
Lower Use		
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	○
	Complete grass coverage of all areas to minimize dust	○
• Provide Access to Remote Areas	(Included in objectives listed above)	○
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	○
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• Campsites are prohibited on the airport. However, access to sites abutting the airport is permitted.

2.13 Rogersburg State Airport (D69)

History

Rogersburg State Airport is located in the southeast corner of Washington State in Asotin County, approximately one mile south of the town of Rogersburg next to the Snake River near the mouth of Hells Canyon. The airport was constructed by an individual who was the previous landowner in the 1950s as a private airfield to provide access to a cabin in the area. The land was later sold to the Bureau of Land Management (BLM) and the airstrip was closed. Subsequently, a group of pilots worked with the BLM to reopen the airport. The BLM agreed to reopen the airport on the condition that WSDOT Aviation would assume responsibility for operation and maintenance of the facility. A right of way grant was issued by the BLM in March, 2004 allowing public-use of the airport with several stipulations including a limit of four aircraft parked at the airport at any time, no overnight camping, and that annual usage of the airport only occur between March 1 and November 1.

General Overview

The Rogersburg State Airport is a public-use facility owned by the BLM and operated by WSDOT Aviation. The airport has a single dirt/grass surfaced runway (Runway 09-27) measuring 1,500 feet long and 35 feet wide. A small aircraft parking area is maintained adjacent to the runway and is not equipped with aircraft tie-downs. The airport is equipped with one wind cone located near mid-field. According to the BLM Right of Way Grant the Rogersburg State Airport occupies approximately 3.3 acres.

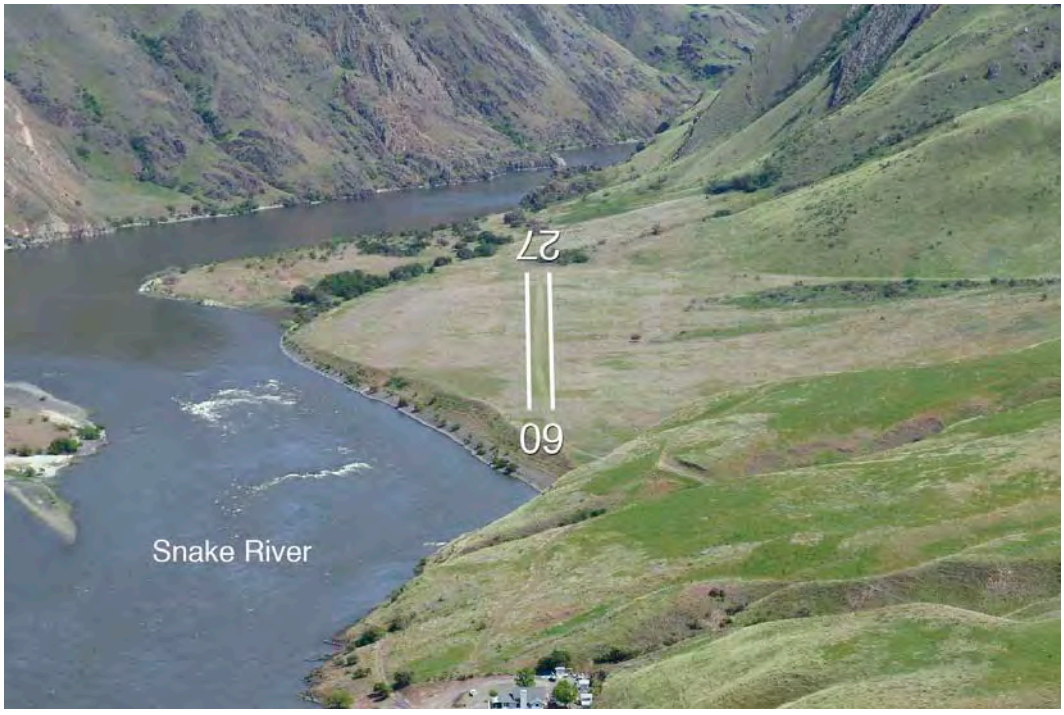
The surrounding land area is rural and is primarily used for recreational purposes. An official with the Asotin County planning department said the airport is not part of any planning document and that it is grandfathered as a non-conforming use under the zoning regulation that went into effect in 2001. The airport is located in semi-arid dessert area in a canyon created by the Snake River. Ground access to the airport is not available to the general public. Ground access to the airport is controlled by a locked gate on the dirt access road to the airport. Ground access the airport requires permission from private landowners in the town of Rogersburg who control the access road gate.

The Rogersburg State Airport accommodates fewer than an estimated 500 annual operations. The airport is primarily used for recreational purposes, with some flight instruction occurring at the airport. It also provides access to a very remote and scenic area of the state, which is otherwise only accessible by boat.

Rogersburg State Airport – Location

Source: Wilbur Smith Associates, 2007

Rogersburg State Airport – Layout/Aerial



Source: WSDOT Aviation

Rogersburg State Airport – Primary Airport Characteristics			
Nearest Municipality	Rogersburg, Washington	**Runway Length**	1,500′
General Setting	River Canyon surrounded by semi-arid desert	**Runway Surface**	Improved Turf
Land Owner	Bureau of Land Management	**Annual Operations**	<500 (WSDOT 2007 estimate)
Surrounding Land Area	Public Lands, Rural Residential		
Existing Functionality Description	Remote backcountry turf airport providing access to recreational opportunities.	**Infrastructure/ Facilities**	Windsocks, Runway Markers

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Rogersburg State Airport are included below.

Rogersburg State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	○
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Rogersburg State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• None		
Lower Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	○
	Weather reporting[2]	O
	Telephone (for landside transportation)	O
	Water	O
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
• Flight Safety Enhancement	Emergency Shelter	○

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.14 Skykomish State Airport (S88)

History

Skykomish State Airport is located in King County approximately 1 mile east of Skykomish, Washington on US 2. The airport is located along a major airway utilized by smaller general aviation aircraft traveling through the Cascade mountain range between eastern and western Washington. According to the historical records from WSDOT Aviation, the airport was dedicated in July 1949 and was the first of three emergency landing facilities sponsored by the Washington State Aeronautics Commission to be constructed along a commonly used east-west flyway through the Cascade Mountain Range near Stevens Pass. A portion of the land for construction of the airport was donated to the state by the town of Skykomish. Funds to construct the airport were provided by WSDOT Aviation and the Civil Aeronautics Administration, the precursor of today's FAA. Additional land was deeded to the state from the Burlington Northern Railroad Company in 1988.

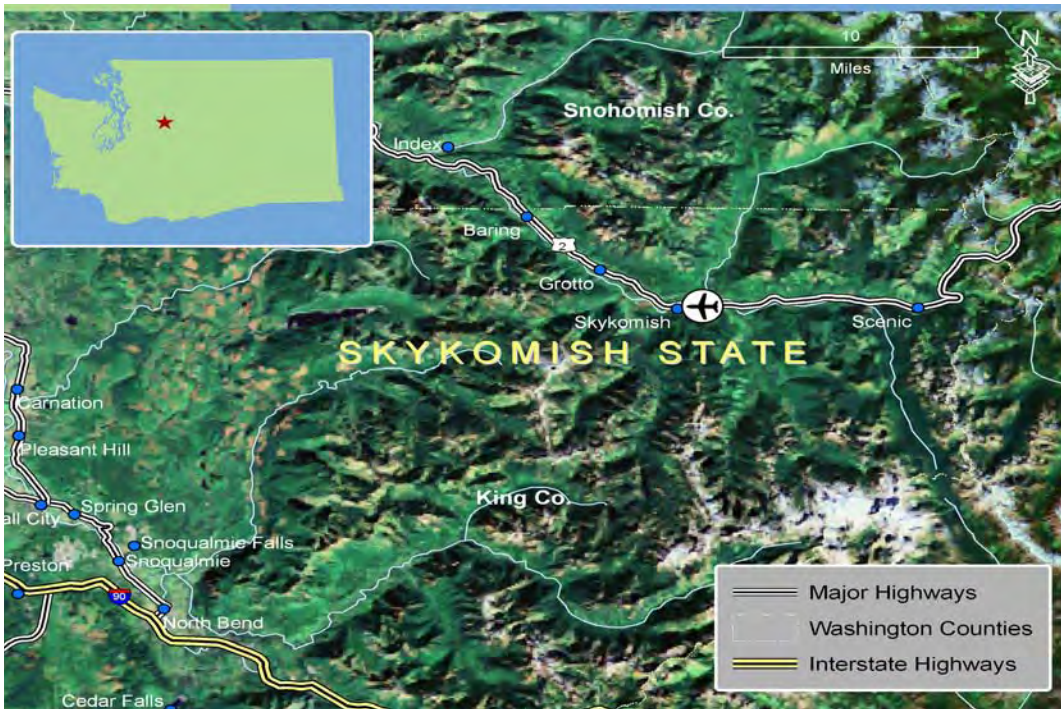
General Overview

The Skykomish State Airport is a public-use facility owned and operated by WSDOT Aviation. The airport occupies 160 acres owned by the state of Washington, and has a single, turf runway (Runway 06-24) measuring 2,048 feet long and 100 feet wide. A turf aircraft parking area is located adjacent to the runway near mid-field and is equipped with aircraft tie-downs. The airport is equipped with one wind cone located near mid-field and a turf helipad with portable solar powered lights to facilitate night-time helicopter operations. A web camera is also available onsite. Additionally the airport has outhouse-type restroom facilities, picnic tables, and water well.

The surrounding land area is forested and is primarily used for recreational and emergency operations. According to the 2004 King County Comprehensive Plan Land Use Map, the airport is located in a rural residential zone allowing a maximum residential density of one unit per 2.5 acres. The airport is located in the Snoqualmie National Forest with significant tree growth surrounding the entire airport with some obstructions within the approach and transition surfaces of the airport. Ground access to the airport is provided via Old Cascade Highway which connects the airport and nearby US 2. Vehicular access to the airport is controlled by a locked gate at the end of the access road.

The Skykomish State Airport currently receives an estimated 1,000 to 2,000 annual operations, and has no based aircraft. The airport is regularly used for recreational purposes, providing access for camping, fishing, and other outdoor recreational activities. The airport is also extensively used for medical evacuation flights up to 200 times per year resulting from automobile and skiing accidents. The airport is typically used annually as forest firefighting based and for training of forest firefighting personnel.

Skykomish State Airport – Location



Source: Wilbur Smith Associates, 2007

Skykomish State Airport – Layout/Aerial

Source: WSDOT Aviation

Skykomish State Airport – Primary Airport Characteristics			
Nearest Municipality	Skykomish, Washington	**Runway Length**	2,048′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	WSDOT Aviation	**Annual Operations**	1,000–2,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest, Rural Residential		
Existing Functionality Description	Mountain backcountry turf airport providing access to recreational opportunities and remote communities. Airport supports a significan number of emergency medical aircraft operations annually.	**Infrastructure/ Facilities**	Windsocks, Tie-downs, Portable solar helipad lighting, Restrooms, Picnic tables, Web cam

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Skykomish State Airport are included below.

Skykomish State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	○
Aircraft Size	Small (under 12,500 lbs)	○
Runway Classificatio	Utility	○
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	●
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	○
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	○

● = *Objective Met* ○ = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Skykomish State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Access for Emergency Medical Operations	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	O
	Weather reporting[2]	O
	Excellent landside accessibility from road to airport (paved road)	●
	Paved/marked/lighted helipad	O
	Floodlighting for helipad area	●
	Snow removal for helipad	O
	Appropriate emergency airport signage on surrounding roadways	O
• Flight Safety Enhancement	Telephone	●
	Emergency Shelter	●
Moderate Use		
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	○
	Complete grass coverage of all areas to minimize dust	○
• Provide Access to Remote Areas	(Included in objectives listed above)	○
• Provide Access to Recreational Areas	Water	●
	Restrooms	●
	Auto parking	●
	Campsites/picnic tables/fir pits	●
Lower Use		
• None		

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications

- WSDOT Aviation should consider options to making existing facilities (water, telephone, shelter) on the airport available for pilot use.
- Improvements for emergency medical operations should be centered on helicopter operations since they encompass the majority of this activity. This could also include efforts to increase the visibility and use of the airport by emergency operators by directly contacting them to establish additional facility requirements.

2.15 Stehekin State Airport (6S9)

History

Stehekin State Airport is located in Chelan County northwest of the village of Stehekin on the northern tip of Lake Chelan in the North Cascades National Park. The airport was constructed in the 1960s by the U.S. Forest Service to provide access to firefighters in this extremely remote location. Today, other than watercraft that cross Lake Chelan, Stehekin State Airport provides the most immediate access to this area of the state. As such, the airport provides a vital transportation link to the village of Stehekin, which has a population of approximately 50 residents in the winter and 200 in the summer. The airport is currently operated under a Special Use Permit granted to WSDOT Aviation from the National Park Service.

General Overview

The Stehekin State Airport is a public-use facility operated by WSDOT Aviation. The airport has a single, turf runway (Runway 13-31) measuring 2,630 feet long and 80 feet wide. A turf aircraft parking area is located near mid-field and is equipped with several aircraft tie-downs. The airport is equipped with one wind cone located near mid-field. Camping facilities are specifically prohibited adjacent to the airstrip, but are provided approximately ¼ mile away from the airstrip to the general public including outhouse-type restroom facilities. A solar-powered weather observation station is operated at the airport by the National Park Service. An irrigation system was recently installed by WSDOT Aviation to improve grass growth on the runway.

A shuttle service runs through the valley between Stehekin Landing and High Bridge campground. It passes within about a quarter mile of the airport, so airport users can get to town if they are willing to walk a little ways to catch the shuttle. The shuttle is operated by the National Park Service. The surrounding land area is forested and lies within the North Cascades National Park. Dense tree growth surrounds the entire airport with some obstructions within the approach and transition surfaces of the airport. Land use surrounding the airport is regulated by an Airport Overlay District established under Chelan County Code Chapter 11.74.

The Stehekin State Airport currently receives an estimated 1,000 to 2,000 annual operations. A National Park Ranger bases an aircraft at the airport during the summer, although this is a personal aircraft and not for official NPS use. The airport is used for recreational purposes by fishermen, campers, sightseers, picnickers, and visitors to the nearby Stehekin Valley Ranch and Stehekin Lodge. The airport also provides access to the remote village of Stehekin. The airport is regularly used to provide access for forest firefighters and is occasionally used for medical evacuation operations.

Stehekin State Airport – Location

Source: Wilbur Smith Associates, 2007

Stehekin State Airport – Layout/Aerial

Source: WSDOT Aviation

Stehekin State Airport – Primary Airport Characteristics			
Nearest Municipality	Stehekin, Washington	**Runway Length**	2,630′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	National Parks Service	**Annual Operations**	1,000–2,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Recreation Area		
Existing Functionality Description	Remote backcountry turf airport providing transportation access to the village of Stehekin and recreational opportunities. The airport also provides significan benefi to forest firefighti operations and is used on a limited basis for emergency medical operations.	**Infrastructure/ Facilities**	Windsock, Tie-downs, Irrigation system

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Stehekin State Airport are included below.

Stehekin State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	○
Aircraft Size	Small (under 12,500 lbs)	○
Runway Classificatio	Utility	○
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	○
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	○
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	○

● = *Objective Met* ○ = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Stehekin State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Provide Access to Remote Areas	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	O
	Weather reporting[2]	O
	Good landside accessibility from road to airport (paved or graded gravel road)	O
	Auto parking	O
Moderate Use		
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	O
	Complete grass coverage of all areas to minimize dust	O
• Provide Access to Recreational Areas	Telephone	O
	Water	O
	Restrooms	O
	Campsites/picnic tables/fir pits	○
Lower Use		
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	○
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow Removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	O
• Flight Safety Enhancement	Emergency Shelter	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• Facilities for firefighti operations are important for this airport and development cost may be recoverable through short-term leases by the forest service. • All maintenance and improvement activities at this airport must be coordinated with the National Park Service. • A noxious weed program is required for the airport for vegetation control. • No camping is permitted.

2.16 Sullivan Lake State Airport (09S)

History

Sullivan Lake State Airport is located in Pend Oreille County in the northeast corner of Washington State. According to the WSDOT historical records, the airport was originally a U.S. Forest Service facility. In the early 1970s, the forest service determined it no longer needed the facility. Because of the value and unique services the airport provides, WSDOT Aviation acquired rights to use and maintain the property. In August 1971, the forest service issued the first Special Use Permit to WSDOT Aviation. The forest service requires the Special Use Permit to be renewed every 10 years. The current Special Use Permit expires in 2010.

General Overview

The Sullivan Lake State Airport is a public-use facility that is operated by WSDOT Aviation. The airport occupies approximately 20 acres and has a single, turf runway (Runway 16-34) measuring 1,765 feet long and 150 feet wide. Dense trees surround the airport with some obstructions within the approach and transition surfaces. A turf aircraft parking area is located on the west end of the runway, but is not equipped with aircraft tie-downs. The airport is equipped with one wind cone located near mid-field.

The surrounding land area is heavily forested and is primarily used for recreational purposes. Ground access to the airport is provided via Forest Road 9031, which runs a short distance between the airport and a full interchange on Interstate 90. Vehicular and pedestrian access to the airport is controlled by fences running down each side of the runway.

The Sullivan Lake State Airport currently receives an estimated 1,000 to 2,000 annual operations and has no based aircraft. Activity is tracked by pilots recording their flights on a log kept in a box on the field. The airport is primarily used for recreational purposes, providing access for camping, fishing, and other outdoor recreational activities. Aviators also use the picnic tables and fire pits located on the airport. The airport is also used for medical evacuation flights about five times per year resulting from accidents sustained in the adjacent campground. The airport has been used by wildlife tracking flights and helicopters engaged in logging operations. The Cessna 180/185 owners group periodically holds a fly-in at Lake Sullivan State Airport and, because of the nearby lake, amphibious aircraft and seaplanes sometimes use the airport.

Sullivan Lake State Airport – Location

Source: Wilbur Smith Associates, 2007

Sullivan Lake State Airport – Layout/Aerial

Source: WSDOT Aviation

Sullivan Lake State Airport – Primary Airport Characteristics			
Nearest Municipality	Metaline Falls, Washington	**Runway Length**	1,765′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	U.S. Forest Service	**Annual Operations**	1,000–2,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest		
Existing Functionality Description	Remote backcountry turf airport providing access to recreational opportunities and a limited number of emergency medical operations.	**Infrastructure/ Facilities**	Windsock

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Sullivan Lake State Airport are included below.

Sullivan Lake State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	O
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Sullivan Lake State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• None		
Moderate Use		
• Provide Access to Recreational Areas	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	○
	Weather reporting[2]	O
	Telephone (for landside transportation)	O
	Water	O
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
Lower Use		
• Provide Access to Remote Areas	(Included in objectives listed above)	○
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	○
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	O
• Flight Safety Enhancement	Emergency Shelter	○

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.17 Tieton State Airport (4S6)

History

Tieton State Airport is located in Yakima County approximately 6 miles east of White Pass on US 12. The airport is located on the eastern shore of Rimrock Lake along a major airway utilized by smaller general aviation aircraft traveling through the Cascade Mountain Range between eastern and western Washington.

According to the historical records from WSDOT Aviation, the airport was dedicated in September 1952. The airport was the eighth emergency landing facility sponsored by the Washington State Aeronautics Commission and the second airport constructed along this commonly used east-west flyway. Half of the funds to construct the airport were provided by the Civil Aeronautics Administration referred to today as the FAA.

General Overview

The Tieton State Airport is a public-use facility owned and operated by WSDOT Aviation. The Tieton State Airport has a single turf runway (Runway 02-20) measuring 2,509 feet long and 140 feet wide. A turf aircraft parking area is located on the east end of the runway that is equipped with a cable tie-down capable of accommodating 3 to 4 aircraft. The airport is equipped with two wind cones each with segmented circles located at each end of the runway. The U.S. Forest Service maintains a campground next to the airport with outhouse-type restroom facilities. The legal description of the property indicates the Tieton State Airport occupies approximately 22.20 acres. The perimeter of the airport is not fenced.

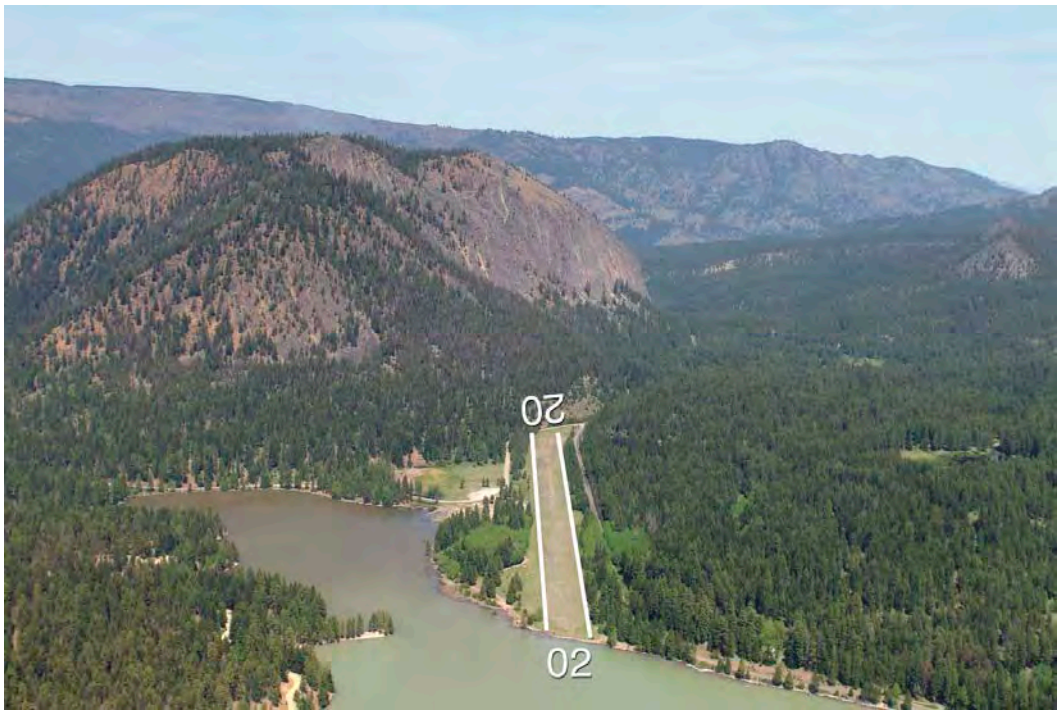
The surrounding land area is forested and primarily used for recreational purposes. According to Yakama County zoning information, the airport is located in a forestry watershed zone in the Snoqualmie National Forest. Ground access to the airport is provided via Tieton Reservoir Road, which connects to US 12 approximately 3 miles northeast of the airport.

The Tieton State Airport currently receives an estimated 500 to 1,000 annual operations and has no based aircraft. The airport is primarily used for recreational purposes, providing access for camping, fishing, and other outdoor recreational activities. The airport is also used as a forest firefighting base approximately once every two years, and is said to be used frequently for search and rescue operations.

Tieton State Airport – Location

Source: Wilbur Smith Associates, 2007

Tieton State Airport – Layout/Aerial



Source: WSDOT Aviation

Tieton State Airport – Primary Airport Characteristics			
Nearest Municipality	Rimrock, Washington	**Runway Length**	2,509′
General Setting	Mountain/Forest	**Runway Surface**	Turf
Land Owner	WSDOT Aviation	**Annual Operations**	500–1,000 (WSDOT 2007 estimate)
Surrounding Land Area	National Forest		
Existing Functionality Description	Remote backcountry turf airport providing access to recreational opportunities and a limited number of forest firefighti operations, emergency medical operations and search and rescue activities.	**Infrastructure/ Facilities**	Windsock, Tie-downs

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Tieton State Airport are included below.

Tieton State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	Maintain Existing Length	●
Runway Width	100′ recommended	●
Runway Surface	Turf/Gravel/Sand	●
Taxiway	Turnarounds on each end	○
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	○
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Weather reporting (as required)	O
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Tieton State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Flight Safety Enhancement	Clear approaches (aircraft/helicopter)	O
	Aircraft parking area(s)	O
	Weather reporting[2]	O
	Telephone	O
	Emergency Shelter	O
Moderate Use		
• Provide Access to Recreational Areas	Water	O
	Restrooms	○
	Good landside accessibility from road to airport (paved or graded gravel road)	○
	Auto parking	○
	Campsites/picnic tables/fir pits	○
Lower Use		
• Provide Access to Remote Areas	(Included in objectives listed above)	○
• Support Forest Firefightin Operations	Command unit trailer pad	○
	Area(s) for firefight camping/staging/auto parking	○
	Complete grass coverage of all areas to minimize dust	○
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	○
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.18 Woodland State Airport (W27)

History

Woodland State Airport is located in Cowlitz County between the cities of Kelso and Vancouver on Interstate 5. The airport was originally constructed by the Civil Air Patrol (CAP) in 1928 to facilitate search and rescue missions conducted by the agency. The land for the airport was later acquired by WSDOT as part of the right of way acquisition for the construction of Interstate 5. The airport land has since been transferred to WSDOT Aviation. The City of Woodland operated the airport for a short time and later returned operational responsibility to WSDOT Aviation. The Woodland State Airport is recognized in the City of Woodland Comprehensive Plan 2005 as being a notable part of the overall transportation system. Due to the benefits the airport provides the community, the plan states that it is important to maintain the airport services for the overall benefit it provides Woodland area residents.

General Overview

The Woodland State Airport is a public-use facility owned and operated by WSDOT Aviation. The airport has a single, asphalt surfaced runway (Runway 14-32) which measures 1,953 feet in length and 25 feet in width. A turf aircraft parking apron is located on the north end of the airport and is equipped with a 100-foot cable tie-downs. The airport has 15 open T-hangars in three separate buildings. The hangars are owned by WSDOT Aviation and leased to individual tenants. New tie-downs, electrical, and water service are planned to be installed along with improved fencing for better airport security. Wind cones are located at each runway end. The airport does not have a public phone or restroom facilities and is fenced with chain-link and barbwire fencing.

The airport is located on a narrow strip of land between Interstate 5 and the Lewis River. Incompatible development is beginning to occur in the area surrounding the airport, primarily to the north. A recent airspace analysis has indicated obstructions located within the approach and transitional surfaces of the airport. Some obstructions are also located within the approach of the airport. Ground access to the airport is provided via Treatment Plan Road, a paved road that runs a short distance to NW Pacific Highway which connects to a full interchange on Interstate 5.

The Woodland State Airport currently accommodates an estimated 4,000 to 5,000 annual operations, and has 8 based single engine general aviation aircraft. The airport is used for recreational and business purposes providing access to Woodland area residents to the national air transportation system. Recreational uses include picnicking at the airport, as well as fishing in the nearby Lewis River. Visitors to Woodland also use the airport both to attend events in Woodland as well as frequenting a number of Woodland restaurants that are within walking distance of the airport. The airport is also used for medical evacuation flights, and occasionally by the state patrol and the forest service for staging helicopters engaged in firefighting operations. Helicopters used for agricultural spraying periodically use the airport as well.

Woodland State Airport – Location

Source: Wilbur Smith Associates, 2007

Woodland State Airport – Layout/Aerial

Source: WSDOT Aviation

Woodland State Airport – Primary Airport Characteristics			
Nearest Municipality	Woodland, Washington	**Runway Length**	1,953′
General Setting	Urban Area	**Runway Surface**	Asphalt
Land Owner	WSDOT Aviation	**Annual Operations**	4,000–5,000 (WSDOT 2007 estimate)
Surrounding Land Area	Residential, Commercial, Industrial		
Existing Functionality Description	Traditional GA airport providing aircraft basing facilities and transportation access to the local community.	**Infrastructure/ Facilities**	Hangars, Runway lighting

Source: FAA 5010 data, Wilbur Smith Associates

State-Managed Airport Study Recommendations

Based on the adopted performance objectives, the actions recommended for Woodland State Airport are included below.

Woodland State Airport – Performance Objectives Recommendations		
Facility Performance Objectives		**Action**
LATS Stratification Level: Recreation or Remote Airports		
ARC	A-I	O
Aircraft Size	Small (under 12,500 lbs)	O
Runway Classificatio	Utility	O
Runway Length	2,400′	○
Runway Width	60′ recommended	○
Runway Surface	Asphalt	●
Taxiway	Turnarounds on each end	●
Other Facilities/Services	• Transient aircraft parking area • Auto parking • Open seasonally	●
Approaches Categories	Visual (Daytime only)	●
Visual Aids/NAVAIDS	• Windsock • Runway edge reflector [1] • Rotating Beacon • Visual glide slope indicators • Weather reporting (as required)	O
Airport Design	• To the greatest extent practicable, the airport should meet the approach surface requirements of FAR Part 77 • To the greatest extent practicable, the airport should maintain appropriate Runway Safety Areas per FAA AC 150/5300-13	O
General Maintenance/ Development Recommendation	Facilities should be maintained to its present standard. Facility should be maintained and developed to better fulfil its primary state function and purpose. A master plan, airport layout plan, and capital improvement program should be completed for this airport.	O

● = *Objective Met* O = *Objective Recommended* ○ = *Not applicable or recommended*

[1]*Runway edge reflectors should be of a standard design as established by WSDOT Aviation.*

Woodland State Airport – Performance Objectives Recommendations		
Activity Performance Objectives		**Action**
Higher Use		
• Provide Access to Remote Areas	Clear approaches (aircraft/helicopter)	⭘
	Aircraft parking area(s)	●
	Weather reporting[2]	⭘
	Good landside accessibility from road to airport (paved or graded gravel road)	●
	Auto parking	●
Moderate Use		
• Provide Access to Recreational Areas	Telephone	⭘
	Water	⭘
	Restrooms	⭘
	Campsites/picnic tables/fir pits	○
• Flight Safety Enhancement	Emergency Shelter	⭘
Lower Use		
• Access for Emergency Medical Operations	Excellent landside accessibility from road to airport (paved road)	●
	Paved/marked/lighted helipad	○
	Floodlighting for helipad area	○
	Snow removal for helipad	○
	Appropriate emergency airport signage on surrounding roadways	⭘

● = *Objective Met* ⭘ = *Objective Recommended* ○ = *Not applicable or recommended*

[2]*Weather reporting is recommended only after a thorough analysis and confirmation of need for the airport.*

Additional Recommendations/Clarifications
• None

2.19 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

Chapter 2 State-Managed Airport System Overview

Supporting Documentation

The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

Chapter 2 State-Managed Airport System Overview

Chapter 3 Airport Safety and Security Guidelines

In This Chapter
• What are WSDOT Aviation's safety directives? • What are pre-activity worker safety plan/hazard assessments? • How to operate safely in an on-airport environment. • How and when to issue a NOTAM. • How to respond to an emergency situation. • What is appropriate security on the airports?

It is a fundamental goal of the Washington State Department of Transportation (WSDOT) Aviation Division (WSDOT Aviation) that all maintenance activities, capital construction projects, and airport security measures within the state-managed airport system are conducted with the highest level of safety consistent with WSDOT-published safety directives. This chapter contains applicable safety and security guidelines for the state-managed airports.

WSDOT Aviation's *General Safety Plan* is referred to as a living plan in that it has been designed to be updated on a continuing basis as WSDOT Aviation activities and safety requirements evolve. Input from airport maintenance and construction personnel, volunteers, and pilots is critical to ensure the continued success of WSDOT Aviation's Airport Safety and Security Program.

Section Contents

Make Sure

- Check that the sections are current!
- Do they need to be updated?

Key Section Dates

Information is only as good as its current relevance. Therefore, it is important that the information contained within this chapter be updated on a regular basis to ensure that it remains appropriate to current conditions. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
3.1 What Are the WSDOT Aviation Safety Directives	7/1/2010	6/1/11
3.2 What is a Pre-Activity Worker Safety Plan/Hazard Assessment	7/1/2010	6/1/11
3.3 What Are the Guidelines for Conducting Safe On-Airport Maintenance Activities and Construction Projects	7/1/2010	6/1/11
3.4 What Are the General On-Airport Activity BMP Guidelines	7/1/2010	6/1/11
3.5 What Are the Procedures for Issuing a NOTAM	7/1/2010	6/1/11
3.6 What is Airport Emergency Response	7/1/2010	6/1/11
3.7 What Are State Airport Security Plans	7/1/2010	6/1/11
3.8 What Are Communication/Mutual Aid Agreements	7/1/2010	6/1/11
3.9 Chapter References and Supporting Documentation	NA	

3.1 What Are the WSDOT Aviation Safety Directives

Providing all airport-related personnel (including WSDOT Aviation employees, maintenance crews, contractors, subcontractors, and volunteers) with a safe working environment is WSDOT Aviation's highest priority. To ensure that this commitment is met, it is standard policy for WSDOT to provide appropriate training and guidance about working in a safety conscious manner. With respect to this, WSDOT has established and maintains the WSDOT *Safety Procedures and Guidelines Manual* M 75-01 to formally document procedures and guidelines for promoting worker safety.

Consistent with the Transportation's Secretary's Executive Order E 1033.00, the WSDOT *Safety Procedures and Guidelines Manual* is written with this commitment to safety in mind. This publication is primarily intended for all employment levels within WSDOT, and provides guidance outlining responsibilities and procedures to ensure workplace safety.

In compliance with the requirements of the WSDOT *Safety Procedures and Guidelines Manual* and E 1033.01, WSDOT Aviation has also established its own Aviation Division's *General Safety Plan* that provides safety guidance for general WSDOT Aviation activities.

The primary components of the Aviation Division's *General Safety Plan* are listed below and in the Chapter References and Supporting Documentation tables at the end of this chapter. They can be obtained individually through the identified links.

Important
The primary components of the Aviation Division's *General Safety Plan* include the following: • Aviation Division Hazard Assessment Checklist – State Airports • Aviation Division Pre-Activity Safety Plan – State Airports • Aviation Division *Safety Procedures and Guidelines Manual* All are located on the WSDOT Aviation Safety website.

3.2 What Safety Guidelines and Plans Does WSDOT Provide for Airport Workers and Volunteers

To ensure its commitment of creating a safe working environment is fulfilled, WSDOT provides general safety training procedures and guidance through its WSDOT *Safety Procedures and Guidelines Manual*.

To specifically address aviation-related safety issues, WSDOT Aviation has also established two additional safety plans:

- Aviation Division *General Safety Plan*
- Aviation Division *General Airport Safety Plan*

Aviation Division General Safety Plan

The primary components of this *General Aviation Safety Plan* are the:

- Pre-Activity Safety Plan (PASP)
- General Hazard Assessment Checklist
- Associated specific safety plans (i.e., safety plans for a specific activity)

Make Sure
- Complete the required safety checklists!

The safety guidance provided in the *General Safety Plan* is largely general in nature and is currently broken down into three primary activity categories: office activities, driving activities, and field activities (including activities on-airport). This plan is a living document in that it has been designed to be updated on a continuing basis as WSDOT Aviation activities and associated safety requirements evolve.

These documents are available within the WSDOT Aviation office and are maintained by the WSDOT Aviation safety officer. They must be used by anyone working on a WSDOT Aviation-related project.

Aviation Division General Airport Safety Plan

The *General Airport Safety Plan* (see Supporting Documents and Resources section) supplements the *General Safety Plan* to address airport specific safety issues. WSDOT is currently in the process of establishing safety plans that are

specific to each of the state-managed airports. Once completed, these safety plans should be used by WSDOT employees, maintenance crews, contractors, subcontractors, and volunteers who perform any type of maintenance or improvement work at the state-managed airports. Since each of the state-operated airports offers its own unique and sometimes challenging working environments, these plans are necessary to provide additional direction and guidance to promote safety.

The airport-specific safety plans will also include pre-activity safety plans, hazard assessment checklists, and any associated specific safety plans. They will also be maintained by the WSDOT safety officer in the WSDOT Aviation office and must be used by anyone working on a WSDOT project or conducting activities at a state-managed airport.

Pre-Activity Safety Planning Through Hazard Assessments

It is critical that anyone working at a state-managed airport is aware of potential hazards that could compromise safety. Prior to conducting any new maintenance activity or construction project on state-managed airports, individuals must complete a site-specific hazard assessment. This tool will allow workers to identify and mitigate potential hazards through use of controls listed within the PASP. The following tables describe the actions that must be taken by all parties. (***Note:*** The supervisor-in-charge is defined as the person directly responsible for the activity. This person will frequently be the Airport Manager.)

Airport Manager Responsibilities	
1	Ensure that prior to any new activity, supervisors and work crews conduct an airport hazard assessment through use of a PASO consistent with all worker safety directives listed in the WSDOT *Safety Procedures and Guidelines Manual*.
2	Provide airport specifi guidance and information on airport hazard assessments and pre-activity safety planning.
3	Issue Notices to Airmen (NOTAMs) as necessary or initiate Aviation Division airport web page safety updates.
4	Develop a review/update schedule consistent with established state practices that will allow for routine updates for each section.
5	Establish a regular review and update schedule for manual checklists, forms, and logs as required.
6	Establish a user web base for records, checklists, forms, and logs.

Supervisor-in-Charge Responsibilities	
1	Obtain a PASP from the Airport Manager prior to conducting that activity.
2	Ensure that a Hazard Assessment Checklist is completed and an activity specifi safety briefin is conducted.
3	Ensure that all participants initial and date the hazard assessment checklist.
4	Coordinate with the Airport Manager as necessary to ensure work crews understand and adhere to airport specifi safety instructions consistent with all worker safety directives listed in the WSDOT *Safety Procedures and Guidelines Manual*.
5	For any potential hazards as identifie by the checklist, the Supervisor-in-Charge shall consult the airport's PASP hazard controls section to appropriately mitigate identifie concerns.
6	If the Supervisor-in-Charge of the activity cannot locate an applicable safety plan to mitigate an identifie hazard for the given activity and/or airport in the aforementioned sources, the supervisor shall consult the following sources for additional specifi guidance: • Site-specifi Safety Office (*Note:* This could be the Airport Manager) • WSDOT *Safety Procedures and Guidelines Manual* • WSDOT Region Safety Office • Director of Aviation
7	If the Supervisor-in-Charge of the activity is presented with new or updated safety guidance, the supervisor shall provide that guidance to the WSDOT Aviation Airport Manager for inclusion in the WSDOT Airports PASP and Hazard Assessment checklists.
8	The Supervisor-in-Charge shall ensure that all identifie hazards are addressed using a PASP and additional resources as needed to mitigate the concern.

Volunteer Responsibilities	
1	Participate in and comply with activity specifi airport hazards assessments through pre-activity safety planning as directed by the airport manager or onsite supervisor.
2	Obtain and wear all personal protective equipment applicable to the activity specifi requirements as provided by the airport manager.
3	Read and sign the Adopt-An-Airport agreement and sign in on the activity specifi participation roster.

The primary components of the Aviation Division's *General Safety Plan* are listed in the Supporting Documentation table at the end of this chapter and can be obtained individually through the identified links.

3.3 What Are the Guidelines for Conducting Safe On-Airport Maintenance Activities and Construction Projects

This section provides specific safety guidelines when conducting selected maintenance or construction activities at the state-managed airports. WSDOT Aviation has overall responsibility for any maintenance and construction activities at the state-managed airports. Therefore, it is important that contractors, construction and maintenance crews, and volunteers understand and comply with these general safety guidelines.

These guidelines do not supersede any of the guidance provided in Section 3.1, Pre-Activity Worker Safety Plan/Hazard Assessment. In fact, many of the guidelines within this section may be included in the airport-specific safety plans described in that section. Rather, the guidelines within this section should be viewed as supplemental in that they are specifically related to an airport environment.

General Safety Guidelines

The following table lists general safety guidelines set forth by the Federal Aviation Administration (FAA). In conjunction with WSDOT's safety guidelines, these requirements serve as a basis for standard operating practices.

General Safety Operating Practices	
1	Airport runways closures should be limited as much as possible.
2	Aircraft use near construction activity should be controlled to minimize disturbance of maintenance or construction operation.
3	Any airport personnel accessing areas of hazardous activities/materials shall receive appropriate safety training.
4	Maintenance and construction within a designated airport safety area should be performed when the runway is closed or restricted with prior permission from the Airport Manager.
5	The Airport Manager has the authority to suspend operations in order to move personnel, equipment, and materials (to ensure safe operations at the airport).
6	The Airport Manager shall have the authority for determining the issuance of a Notices to Airmen (NOTAMs).

Safety Clothing and Protective Devices

WSDOT Aviation employees and contractors are responsible for wearing all personal protective equipment (PPE) as detailed in the most current WSDOT *Safety Procedures and Guidelines Manual*, Chapter 5, necessary for the specific type of work being conducted. Unless otherwise stipulated by an individual airport project contract or safety plan, contractors are responsible for furnishing and using their own PPE.

Special selective PPE may occasionally be necessary to fit the specific airport project needs. Additional activity specific safety plan/s may be necessary to identify selective PPE.

Look For

- Applicable quick links in the references table at the end of this chapter.

Airport Manager Responsibilities	
1	Ensure all airport personnel utilize necessary PPE consistent with directives listed in the WSDOT *Safety Procedures and Guidelines Manual*.
2	Ensure all airport personnel read, understand, and utilize all necessary airport and activity site-specifi PPE.

Supervisor-in-Charge Responsibilities	
1	Ensure compliance with airport specifi safety requirement as directed by airport manager.
2	Ensure work crews have and utilize all applicable and necessary PPE identifie on site-specifi hazard assessments.

Employee Responsibilities	
1	Use all prescribed PPE at all times when performing maintenance activities at state airports as needed and identifie by the site-specifi hazard assessment checklist.
2	Comply with all safety instructions provided by the Airport Manager and Supervisor/s.

Volunteer Responsibilities	
1	Volunteers participating in limited minor airport maintenance activities shall be provided with and use all necessary PPE applicable to the specifi maintenance activity being conducted with the exception of safety boots.
2	Use all prescribed PPE at all times when performing maintenance activities at state-managed airports.
3	Comply with all safety instructions provided by the Airport Manager.
4	Typical volunteer PPE includes: • Orange Safety Vest • Safety Goggles or Glasses • Gloves • Hearing Protection

General State Vehicle Operation Guidelines

All state vehicles used in conjunction with or support of state airport maintenance activities and capital construction projects shall comply with all instructions and rules listed in the WSDOT Fleet and Vehicle Operations Adopted Rules and Procedures Memorandums, WSDOT *Vehicle Operator's Handbook* M 3032.04, WSDOT *Use of State Provided Motor Vehicles* M 53-50.02, and other applicable directives.

General Vehicle Operations State Airport Rules

All airport personnel conducting airport maintenance or construction projects shall operate vehicles and equipment on state airport property in accordance with the all federal, state, and local laws, applicable contract provisions, and the additional state airport rules in the following table.

Look For

- Applicable quick links in the references table at the end of this chapter.

State Airport Rules for Vehicle Operations	
1	All vehicles shall yield right of way to aircraft in motion and emergency vehicles.
2	No vehicle except ground service and emergency vehicles shall approach too close to any aircraft with running engine(s) as to create a hazard.
3	All vehicles entering or exiting an operating airport access gate shall wait for or close the gate completely behind them before proceeding to their destination so as to not allow the entry of any other vehicle.

4	Vehicles or equipment working within the airport operations areas to include are required to display a rotating amber beacon, or flashin lights and the standard 36″ square orange and white checkered safety flag as per FAA AC 150/5210-5C, *Painting, Marking, and Lighting of Vehicles Used on and Airports*.
5	All vehicles authorized to operate on taxiways or the runways are required to have and use either (1) an operable aviation, two-way radio (transceiver) with them at all times in order to monitor the published Common Traffi Advisory Frequency (CTAF), or (2) have a second person on site dedicated to spotting potential aircraft operations.
6	All vehicle operators shall coordinate through the onsite safety manager or supervisor to contact the airport manager to determine if work activities on or near the airport require publication of a Notices to Airmen (NOTAM). See NOTAM section for criteria for placing a NOTAM.
7	Parked vehicles must be moved off the runway, where they present the least possible traffi hazard. Vehicles parked overnight must be located as far from the runway as practicable. Vehicles shall not be parked overnight within a runway safety area.
8	When operating vehicles or equipment on runway and aircraft are attempting to land, pull completely off of the runway (or to the extreme side of the runway at a minimum) and give the aircraft the right of way.
9	If work activities are to occur on the runway itself, a NOTAM shall be issued (see Section). If the work is to be short-term, two days advance notice is adequate. If the runway will be disrupted or closed for a period of time, a minimum of two weeks notice should be given.

State Airport Radio Communications

The Airport Manager shall provide the appropriate training necessary to ensure that any contractors and related construction crews observe the appropriate radio communication and proper communication techniques. If available, a portable aviation two-way radio shall be used at all state-managed airports, to communicate ground vehicle and aircraft movements on a CTAF.

Typically, state maintenance crews are not supplied with two-way radios or airport specific radio communication standards training. The airport manager, if present during maintenance activities, shall obtain and utilize a two-way radio in addition to determining necessary airport closures or additional notices such as publishing Notices to Airmen (NOTAMs).

State Airport Electrical Equipment and Wiring

All electrical equipment and wiring shall conform to the latest version of the WSDOT *Standard Specifications for Road Bridge and Municipal Construction* M 41-10, Chapter 8-20, Illumination, Traffic Signal Systems, NFPA 70: National Electrical Code, and Washington State Department of Labor and Industries (L&I) rules pertaining to electrical installations or applicable FAA standards. All new electrical service, repairs, or modifications shall be inspected an approved by L&I.

State Airport Fencing and Gates

The Airport Manager shall ensure that maintenance activities and contract projects maintain clearly identified work zones whenever possible. (Per construction standards set out by FAA AC 150/5370-2E, *Operational Safety on Airports During Construction*.) Temporary construction fencing can be utilized to limit access to people and animals, especially during non-working hours.

All state-managed airport gates shall remain closed and locked at all times or immediately after entering or leaving the airport to ensure no unauthorized access occurs. All state-managed airport access requests shall be reviewed and approved by the Airport Manager using WSDOT approved processes for access approval to state-owned or managed property.

State Airport Foreign Object Debris (FOD) Management

Waste or loose materials commonly referred to as FOD are capable of causing damage to an aircraft. Maintenance and construction workers should not leave FOD in the vicinity of aircraft operating areas. It is also important to remove FOD that may attract wildlife.

All loose materials shall be stored in an approved facility capable of handling the material or secured in a location approved by the Airport Manager.

3.4 What Are the General On-Airport Activity (BMP) Guidelines

Operating in the on-airport environment can pose significant safety challenges and having a thorough understanding of that environment is critical to maintaining safety. The following sections provide some general best management practices (BMPs) for operating within the on-airport environment.

Runway Safety Area (RSA)/Runway Object Free Area (ROFA)/ Obstacle-Free Zone (OFZ)

Airport personnel must always be aware of and protect critical areas on the airport such as runway safety areas, obstacle free zones, and approach surfaces, even during construction operations. For additional details, review Chapter 5, Airport Construction Guidelines, and FAA AC 150-5370-2E, *Operational Safety on Airports During Construction*.

Critical Areas on an Airport
Runway Safety Areas (RSA)
An RSA is define as the surface surrounding the runway that is capable of reducing the risk of damage to an aircraft in the event of an undershoot, overshoot, or excursion from the runway. For the state-managed airports, the typical RSA is 120 feet wide (centered on the runway centerline) by 240 feet off the runway end. These dimensions must be confirme by reviewing the current Airport Layout Plan (if available), consulting with the agency airport planner, or directly reviewing FAA AC 150/5300-13, *Airport Design*.
Runway Object Free Area (ROFA)
A ROFA is generally define as an area that must be kept free of objects, except for those that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. For the state-managed airports, the typical ROFA is 250 feet wide (centered on the runway centerline) by 240 feet off the runway end. These dimensions must be confirme by reviewing the current Airport Layout Plan (if available), consulting with the agency airport planner, or directly reviewing FAA AC 150/5300-13, *Airport Design*.
Obstacle-Free Zone (OFZ)
An OFZ is generally define as an area 150 feet above the define airport elevation, which is required to be clear of all objects, except for frangible and visible NAVAIDs. For the state-managed airports, the typical OFZ is 120 feet wide (centered on the runway centerline) by 200 feet off the runway end. These dimensions must be confirme by reviewing the current Airport Layout Plan (if available), consulting with the agency airport planner, or directly reviewing FAA AC 150/5300-13, *Airport Design*.

The following graphic provides a generalized description of the runway environment and the location of these critical areas. ***Note:*** The sizes of these areas can vary depending on the airport. Therefore, personnel operating on an airport must consult with the airport-specific safety plan or the Airport Manager to determine the location and sizes of these critical areas.

FAA AC 150/5370-2E, *Operational Safety on Airport During Construction*, shall be used as the standard to be maintained regarding operations on and around RSAs, ROFAs, and OFZs. In general, it should be stated that all on-airport maintenance and construction activities should remain clear of the RSAs, due to the possibility of aircraft operations. (***Note:*** This should be standard operating procedures even if a NOTAM has been issued and/or the runway closed. Even under such circumstances, aircraft activities could still occur.) Also personnel, material, and equipment may not penetrate the OFZ, as defined in FAA AC 150/5300-13, *Airport Design*.

Critical Areas on an Airport

Runway Edges

No maintenance or construction activities may occur within 200 feet of the runway centerline unless the runway is closed or aircraft operations are restricted. The Airport Manager should still issue a local NOTAM as it is the only means to notify pilots of possible obstructions to these imaginary surfaces surrounding the runway.

Runway Ends

Only if the runway is closed or restricted may an RSA's dimensions be less than pre- construction dimensions. Similarly to runway edge guidelines, all personnel, materials, and equipment must remain clear of applicable approach surfaces and may not penetrate the OFZ. WSDOT Aviation staff must be contacted if a NOTAM is deemed necessary for such a construction or maintenance activity.

Excavations

Maintenance and construction personnel are required to mark excavations or open trenches at a construction site with red or orange flags and light them during hours of restricted visibility. While the runway is open, no open trenches or excavations are permitted within 200 feet of a runway centerline. Covering or backfilling the trenches to support the weight of the heaviest aircraft is the only alternative while keeping the runway open.

Closed Runway and Taxiway Marking and Lighting

In the event a runway or taxiway needs to be closed for maintenance, construction project, or other approved activities, operators should place Xs on or near the runway designation numbers on the runway ends to identify the closure. (At night, the use of lighted Xs is highly recommended.) The X should be placed at each end of the runway and only at the entrances for taxiways. Barricades, traffic cones, and stop bars are also acceptable visual devices to prevent aircraft access on a certain portion of a runway or taxiway. Additionally, see the specific recommendations in the following table.

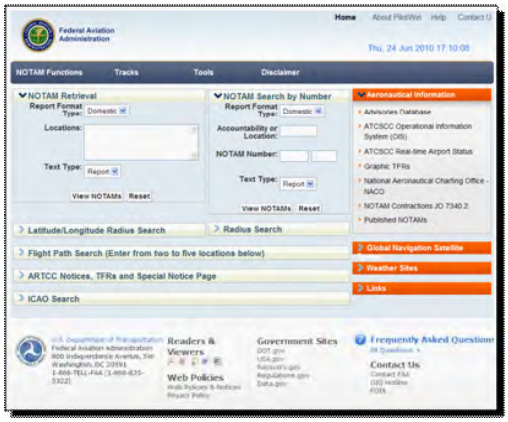
Closed Runway and Taxiway Marking and Lighting Recommendations	
1	Barricades must be of low mass, of low-height, be retro reflectiv orange/white in color, and be easily collapsible/frangible.
2	Use flag to mark barricades during the day. Use red lights at night, steady burning or flashing
3	Non-frangible barricades, such as metal drums or concrete dividers, are prohibited in movement areas. Do not use wood railroad ties on runways.
4	Turn off runway lights and approach lighting on closed runways. Obscure lighting on closed portions of runways (i.e., displaced thresholds).
5	When runways are closed, operators should place Xs on the runway ends or just off the runway end when required by construction activity to identify the closure. At night, the use of lighted Xs is highly recommended. See FAA AC 150/5345-55 or 150/5340-IJ.

Runway Closure Marker Examples

Note: Xs can be placed just off the runway when required by construction activity to identify the closure.

Taxiway Closure Marker Example

3.5 What Are the Procedures for Issuing a NOTAM



The Notices to Airmen (NOTAM) system disperses information pertaining to unanticipated or temporary changes to components of (i.e., facilities, services, or procedures) or hazards within the National Airspace System (NAS). A NOTAM provides information that becomes available too late to publicize in associated aeronautical charts and other related publications, and they can remain effective until they are canceled or the associated aeronautical charts and related publications have been amended.

Note: A supplemental narrative has been provided in Appendix 3-1 that describes current practices for issuing NOTAMs.

Standards for Issuing NOTAM

NOTAMs can be issued for the state-managed airport by the Airport Manager, the WSDOT Aviation Director, and the Emergency Services Coordinator. It is at their discretion to determine if a NOTAM is necessary based on airport work activity or specific airport conditions. Additionally, WSDOT Aviation has adopted the following conditions that require the issuance of a NOTAM.

Conditions Requiring Issuance of a NOTAM	
1	Maintenance activities and construction projects occurring on a runway.
2	Maintenance activities and construction projects occurring within 200 feet of a runway centerline.
3	Maintenance activities and construction projects occurring within a Runway Safety Area (RSA).
4	Maintenance activities and construction projects occurring that penetrate an Obstacle Free Zone (OFZ).
5	Maintenance activities and construction projects that require closure of the runway or airport.

Primary Responsibilities for Issuing State Airport NOTAMs

Responsibilities for issuing NOTAMs are summarized in the following tables.

Airport Manager Responsibilities	
1	Coordinate with Maintenance/Construction Supervisor/s to assess activities and determine if NOTAMs should be published.
2	Prepare draft NOTAM information to include at a minimum: • Airport name. • Date and time activity starts. • Duration of activity. • Description of activity. • Location of activity on airport (runway, taxiway, apron, etc.). • Types of equipment involved with activity.
3	Coordinate with the FAA on issuing a NOTAM (within two days for start of minor activity and within two weeks for start of major activity).
4	Verify the establishment of the NOTAM immediately prior to the start of the activity.
5	Confir the establishment of the NOTAM to the on-site activity Supervisor-in-Charge.
6	Ensure Maintenance or Construction Supervisor is briefed on specifi published NOTAM coverage.

Maintenance or Construction Supervisor/s Responsibilities	
1	Contact Airport Manager prior to any work activity to review and determine if a NOTAM is to be issued.
2	Supply Airport Manager with activity specifi information as requested.
3	Comply with NOTAMs.

Volunteer Lead Responsibilities	
1	Complete Volunteer activity forms by describing all work to be completed by volunteer group.
2	Assist Airport Manager to determine if NOTAMs is warranted.
3	Comply with NOTAMs.

Additional Process Instructions and Conditions Information for Issuing State Airport NOTAMs

Airport Management Responsibilities
Notification Process
Airport sponsors at public-use airports are expected to reveal, as soon as practicable, any existing or anticipated condition on or in the vicinity of the airport that would prevent, restrict, or endanger arriving or departing aircraft.
The public notificatio of this type of information is normally accomplished through the NOTAM system, and should be made not more than 48 hours before the expected condition is to occur. This same notificatio process should be conducted when the reported condition has been corrected or otherwise modified
Notification Responsibility
With respect to the WSDOT Aviation state-managed airport system, airport facilities such as airfiel pavements, runway lights, and airport guidance sign systems are the responsibility of the Airport Manager, as are airport services and airspace obstructions. Other airport facilities such as NAVAIDs and approach lights are the responsibility of the FAA.
The Airport Manager should initiate a NOTAM for a facility only when its operational and maintenance functions are clearly within their sphere of responsibility. The Airport Manager is also responsible for providing the appropriate air traffi facility, normally the associated FSS, with a list of individuals authorized to supply NOTAM information.

Air Traffic Control (ATC) Responsibility
Notification Process
FAA air traffi personnel must accept aeronautical information provided that the occurrence is no more than three days in the future. They are required to document the source of the information and then forward the data to the appropriate *Flight Service Station* (FSS) for NOTAM processing. *Note: Situations that present an immediate hazard should be reported to the ATC facility most concerned. Other situations should be reported on a first priority basis to the FSS.* FSS specialists are responsible for the classification accuracy, format, dissemination, and cancellation of NOTAM information. All information submitted by FSS specialists is subject to verificatio with the US NOTAM Offic (1-877-4US-NTMS (877-487-6867)) before distribution as a NOTAM. Flight Data Center (FDC) NOTAMs are issued by the US NOTAM Office/Nationa Flight Data Center and pertain to changes such as navigational facilities, instrument approaches, and fligh restrictions. FDC NOTAMs refer to information that is regulatory in nature. The FAA publishes NOTAM information that is expected to remain effective for extended periods (in excess of seven days) in Notices to Airmen, Class II, issued every other week. *Note: Although the airport operator has primary NOTAM origination responsibilities for the movement areas, the ATC facility managing the NOTAM system is responsible for and has the authority to ensure the systems compatibility of the format and content of the proposed NOTAM message.*

Composing the NOTAM

Airport Manager Responsibilities	
1	Compose NOTAMs using Appendix 3-1 guidelines.
2	See Appendix 3-1 for additional guidance on composing a NOTAM.

Recording the NOTAM

Airport Manager Responsibilities	
1	Keep a log of the state-managed airport NOTAMs and maintain their status so that airport official can be made aware of the facility's representation in the aviation community.
2	Develop a NOTAM checklist to track NOTAMs as part of a routine schedule for managing the state-managed airports.
3	Obtain a copy of the NOTAMs for future reference to demonstrate the airport's regulatory compliance may be warranted.

Distributing NOTAMs

Although the Airport Manager is not responsible for the method of distributing NOTAMs, they should be familiar with the criteria used by the FSS in making the determination. The circulation of an airport condition report is based on the nature of the reported item and the NOTAM service qualification of the airport.

3.6 What is Airport Emergency Response

By FAA definition, an airport emergency is any occasion or instance, natural or man-made, that warrants action to save lives and protect property and public health.

This handbook shall address those emergencies that occur on or directly impact an airport or adjacent property that:

- Is within the authority and responsibility of the Airport Manager to respond.
- Presents a threat to the airport property, infrastructure, or airport personnel because of the proximity of the emergency to the airport.
- Where the airport has responsibilities under local/regional emergency plans and by mutual aid agreements.

At this time, WSDOT Aviation has not established individual state-managed airport formal emergency response procedures. WSDOT Aviation will establish formal relations with local authorities and detail those persons and agencies that must be contacted in all emergency situations. As comprehensive emergency response actions are developed through coordination with local authorities, this handbook and will be amended.

WSDOT Aviation has developed a *General State Airport Emergency Plan* for the state-managed airports that details general response actions and contacts.

Additional information, which includes industry best management practices for developing individual state airport emergency response plans, has been provided in the section supplement located in the Appendix 3-1.

WSDOT Standard Airport Emergency Response Procedures

There are a wide variety of emergency situations that can occur at or near one of the state-managed airports, including aircraft accidents, fires, HAZMAT response, medical emergencies, etc. The following sections shall be reviewed and consulted in order to mitigate aircraft accident situations on and off state airport property.

Aircraft Accident Policy Overview

Depending on the nature of the emergency, it is at the Airport Manager's discretion as to how to respond. However, in support of that, the following two sections provide specific actions that must by taken by the Airport Manager to inform appropriate personnel and agencies who also have a responsibility, interests, or jurisdiction over the state-managed airports.

WSDOT Aviation Responsibilities	
1	All aircraft accidents at state-managed airports shall be reported to the FAA and the National Transportation Safety Board (NTSB) for investigation.
2	Local state, county, and/or municipalities shall have the overall authority in the immediate handling of such accidents. While the FAA's and NTSB's involvement is in the interest of air safety, local law enforcement and emergency responders are trained to deal with emergency situations, including: crowd control, isolation and security of wreckage, and providing medical care for any injured persons until medical help arrives.

State Airport Emergencies and Aircraft Accidents

With respect to any emergency situation involving the state-managed airports, the WSDOT Airport Manager has an established list of responsibilities.

Airport Emergencies	
Airport Manager Responsibilities	
1	Contact the Aviation Emergency Services Coordinator to ensure he/she has been notified
2	Coordinate with the Aviation Emergency Services Coordinator as necessary in support of handling response needs.
3	Ensure a chain of command has been established for managing the emergency.
4	Ensure role/duties of Airport Manager have been define related to support needs of the emergency.
5	Provide all necessary support to the State Emergency Services Coordinator to ensure airport specifi emergent needs are mitigated.
6	Coordinate with WSDOT Media Relations Office as necessary.

Airport Emergency INCIDENT Actions (Non-Aircraft Accident)	
Airport Manager Responsibilities	
1	Contact the following persons/agencies
2	Local Emergency Services Provider/s
3	WSDOT Aviation Emergency Services Coordinator
4	WSDOT Director of Aviation
5	WSDOT Aviation Communications Manager
6	WSDOT Risk Management Office Administrative Operations Division (within 24 hours, if required)

Airport Emergency INCIDENT Actions (Aircraft Accident)	
Airport Manager Responsibilities	
1	Contact the following persons/agencies
2	Local Emergency Service Provider/s
3	WSDOT Aviation Emergency Services Coordinator
4	National Transportation Safety Board (NTSB)
5	FAA NW Mountain Regional Operations Center
6	WSDOT Director of Aviation
7	WSDOT Aviation Communications Manager
8	WSDOT Risk Management Office Administrative Operations Division (within 24 hours)

Use of State-Managed Airports for Forest Firefighting Operations

With respect to use of the state-managed airports for emergency forest firefighting operations, the Airport Manager has an established list of responsibilities.

Use of State-Managed Airports for Forest Firefighting Operations	
Airport Manager Responsibilities	
1	Establish, review, and amend State Aviation Policy as necessary for forest firefighti operations staged at state-managed airports.
2	Ensure forest firefighti operations are conducted to safety standards.
3	Ensure agencies using state-managed airports have established safety plans.
4	Review agency safety plans.
5	Ensure public is informed about state-managed airport being used for forest firefightin
6	Establish user list of agency representatives who use state-managed airport for forest firefighti operations.
7	Ensure airports remain open to the public at all times unless public safety would be compromised by staged operations.
8	Inspect forest firefighti operations for safety compliance.
9	Assist agencies as needed in support of staged activity.
10	Initiate press releases through Aviation communications liaison.

Agency Aviation or Site Fire Officer Responsibilities	
1	Contact WSDOT Aviation Airport Manager.
2	Review state airport usage by forest firefighti operations to determine if NOTAMs are to be published.
3	Review and assist the Airport Manager to determine if airport can remain open to public.
4	Review published Temporary Flight Restrictions (TFRs) and impacts to public use at the airport.
5	Report number of, type/s of, and locations of staged aircraft at the airport.
6	Report support equipment and crews being staged at the airport to the Airport Manager.
7	Recommend airport operations restrictions or closures based on expected staging at the airport for forest firefighti activity.
WSDOT Communications Liaison	
1	Assist Airport Manager to publish public notice/press release.
2	Update WSDOT Aviation web page as needed to reflec current status.
3	Assist Airport Manager to answer questions from public and media concerning use of state airports for forest firefighti operations.

Aircraft Accident Media Relations

In the event of an aircraft accident or emergency incident on the airport, the airport manager or spokesperson should anticipate immediate and continued communication with the media.

Aircraft Accident Media Relations	
Airport Manager Responsibilities	
1	Coordinate with State Aviation Communications Manager.
2	Coordinate with the law enforcement agency and primary jurisdiction (i.e., State Police) and, when appropriate forward media calls to designated source.
3	Assist on media event security checks to ensure proper identificatio at media only events.
4	Project a professional image and remain calm, revealing neither fear nor frustration.
5	Focus the discussion on established facts only. There should be no speculative responses to questions.

WSDOT Communications Manager	
1	Coordinate with the Airport Manager on all incident/accidents on state-managed airports.
2	Prepare press releases and issue updated press releases to keep the media informed with key facts and messages about the incident.
3	Assist Airport Manager or spokesperson to prepare a short statement that includes key messages prior to arriving at the scene of an accident.
4	Assist the Airport Manager or spokesperson to select a suitable site to conduct media relations that is easily accessible to the media and preferably removed from the accident scene to avoid close video coverage of the accident.
5	Arrange to have press identificatio security checks.
6	Control media questioning during press briefing by calling on individuals rather than allowing everyone to shout questions.
7	Refrain from assuming responsibility – Culpability for aircraft accidents is determined at the conclusion of the investigations conducted by the local law enforcement, the FAA and the NTSB. Therefore, any admission of responsibility by the airport manager or spokesperson would be imprudent, premature and inappropriate.

Development of Emergency Response Plans for the State-Managed Airports

Generally, an airport emergency action plan should address emergencies that occur or directly impact property within the airport's authority and responsibility, or may present a threat to the airport because of the proximity of the emergency. The Airport Manager should include community and agency involvement in the development of an emergency response plan because it will include the assistance of local fire and EMS authorities in the response effort. At a minimum, this plan should address the following key guideless as outlined in FAA AC 150/5200-31, *Airport Emergency Plan*:

- Assign responsibilities to organizations and individuals carrying out specific actions in response to an emergency.
- Establish line of authority and organizational relationships in coordinating response actions.
- Describe how people and property will be protected in emergency situations.
- Identify personnel, equipment, facilities, supplies, and other resources available for use during response and recovery operations.

- Cite objectives and acknowledge assumptions from a legal basis.
- Facilitate response and short-term recovery for successful long-term recovery.

3.7 What Are State Airport Security Plans

It is the policy of WSDOT Aviation to meet the goals of the Transportation Security Administration's (TSA) Security Guidelines for General Aviation Airports to ensure public safety and security at all state-managed airports. Reflective of this policy, State Aviation, in 2003 established general state airport security plans for 16 of the state-managed airports. Generally, they provide guidelines with respect to the following topics:

- Detection and Prevention
- Reporting, Communicating, and Disseminating
- Unusual or Suspicious Activity
- Aircraft Security
- Airfield Security
- Flight Operations Security
- Flight Training Security
- Developing an Airport Security Plan
- Access Control, Monitoring, and Identification
- Security Signage
- Education

The individual Airport Security Plans are customized to the individual needs and environments of the airports that they represent. These plans are also confidential and maintained at the WSDOT Aviation administrative offices.

State Airport Security Plan Procedures	
Airport Manager Responsibilities	
1	Utilize and maintain all security documents and procedures related to the state-managed airports. *Note:* While this maintenance handbook is a public document, the individual Airport Security Plans are confidentia and secured within WSDOT Aviation.
2	Establish State Airport Security Plan Review and Amendment Schedule.
3	Review and Amend State Airport Security Plans.
4	Assess and plan for State Airport Security measure improvements.
5	Administer State Airport Security Plan.

General State Airport Security Procedures

Aircraft

The main goal of enhancing GA airport security is to prevent the intentional misuse of GA aircraft for terrorist purposes. Proper securing of aircraft is the most basic method of enhancing GA airport security.

Aircraft Security Procedures	
Airport Manager Responsibilities	
1	Ensure pilots employ multiple methods of securing their aircraft to make it as difficul as possible for an unauthorized person to gain access to it.
2	Ensuring that door locks are consistently used to prevent unauthorized access or tampering with the aircraft.
3	Ensure aircraft have keyed ignitions where appropriate.
4	Promote pilot use of an auxiliary aircraft locking system to further protect aircraft from unauthorized use. Commercially available options for auxiliary locks include locks for propellers, throttle, and tie-downs.
5	Ensure that aircraft ignition keys are not stored inside the aircraft.
6	Account for and document all aircraft parking on State Airports through leases rental process developed through WSDOT Property Management Division process and procedures.
Pilot/User Responsibilities	
1	Report any unsafe acts to Airport Manager.
2	Report any suspicious activity at state-managed airports to Airport Manager.

Perimeter and Access Control

Perimeter and Access Control Security Procedures	
Airport Manager Responsibilities	
1	Conduct individual state airport assessments to determine threat level.
2	Coordinate with safety and security experts as necessary.
3	Determine cost benefi and prioritize additional security measures at state-managed airports.
4	Ensure home facility perimeter security with effective fencing, lighting, security patrols (as appropriate), gates, and limited access areas.
5	Ensure street-side gates and doors are closed and locked at all times.
6	Require positive access control for all external gates and doors.
7	Close and lock hangar doors when that area is unattended.
8	Secure all key storage areas (food and liquor, parts and tools, etc.).
9	Have an access control management system for keys and passes.
10	Post emergency numbers prominently around facility.
11	Ensure easy access to phones or panic buttons in various facility locations (break room, hangar bay, etc.).
12	Confir security of destination facilities.
13	Be aware of your surroundings and do not be complacent—activate local law enforcement as needed, but do not challenge strangers or take the law into your own hands.

Hangar Facilities

To be developed.

Airport Tenant Facilities

Airport Tenant Facilities Security Procedures	
Airport Manager Responsibilities	
1	Develop State Aviation Standards for Tenant Facilities.
2	Document all tenant use of State Airport Facilities.
3	Establish lease and rental agreements.
4	Ensure airport safety practices and policy.
5	Establish and Implement Airport Security measures.
Airport Tenant Responsibilities	
1	Maintain airport security by exercising approved entry and exit protocol.
2	Report all non-compliant airport access.
3	Adhere to all tenant responsibilities set out in lease/s.

Aircraft and Vehicle Fueling Facilities

To be developed.

Lighting

Lighting Security Procedures
Airport Manager Responsibilities
Protective lighting is a primary means of providing a base level of protection from nighttime theft, vandalism, or other illegal activities that is generally inexpensive to maintain, and when properly employed, may provide airport personnel with added protection from surprise by a determined intruder. Since protective lighting requirements at airports depend upon the local conditions as well as the areas to be protected, a careful analysis of security lighting is needed. These requirements should consider the need for good visibility, employee recognition and badge identification vehicle access identificatio and control, detection of intruders, and deterrent to illegal entry.
When developing any security lighting plan, care must be taken to ensure that lighting does not interfere with aircraft operations. However, considerations should be given to how installing outdoor security area lighting could help improve the security of aircraft parking and hangar areas, fuel storage areas, airport access points; and other appropriate areas.

Signage

The use of signs provides a relatively inexpensive deterrent by warning of facility boundaries as well notifying of the consequences for violation. Some of the basic considerations related to airport security signage include those listed in the following table.

Signage Security Procedures	
Airport Manager Responsibilities	
1	Signs along a fence line should be located such that when standing at one sign, the observer is able to see the next sign in both directions.
2	While signs for security purposes should be designed to draw attention, it also should be coordinated with other airport signs for style and consistency when possible.
3	Signs should be constructed of durable materials, contrasting colors, and reflectiv material where appropriate.
4	Use as concise language as possible.
5	Wording may include – but is not limited to – warnings against trespassing, unauthorized use of aircraft, tampering with aircraft, and reporting of suspicious activity.
6	Signage should include phone numbers of the nearest responding law enforcement agency.
7	Many locations with access control or Closed Circuit Television (CCTV) equipment may warrant signage for directional, legal, or law enforcement purposes.
8	Refer to FAA AC 150/5360-12D, *Airport Signing and Graphics*.

Airport Community Watch Program

One of the most effective deterrents in GA airport security is awareness. Typically, the airport user population is familiar with those individuals who have a valid purpose for being on the airport property, and consequently, unfamiliar faces are quickly noticed. Teaching an airport's users and tenants what to look for with regard to unauthorized and potentially illegal activities is essential to effectively utilizing this resource. Airport Managers can either utilize an existing airport watch program or establish their own airport specific plan. Some of the primary elements to be considered when establishing a watch program include those listing in the following table.

Airport Community Watch Program Considerations	
1	Coordinate the program with all appropriate stakeholders, including airport officials pilots, businesses, and/or other airport users.
2	Hold periodic meetings with the airport community.
3	Develop and circulate reporting procedures to all who have a regular presence on the airport.
4	Encourage proactive participation in aircraft and facility security and heightened awareness measures. This should include encouraging airport and line staff to query unknowns on ramps, near aircraft, etc.
5	Post signs promoting the program, warning that the airport is watched. Include appropriate emergency phone numbers on the sign.
6	Install a bulletin board for posting security information and meeting notices.
7	Provide training to all involved for recognizing suspicious activity and appropriate response tactics. This could include the use of a video or other media for training.
8	Utilize local law enforcement for airport security community education.
9	Encourage tenants to make their staff aware of the airport watch programs.
10	Additional resources can be obtained through AOPA's Airport Watch program. Completed in partnership with the TSA, this program encourages pilots to be the eyes and ears for observing and reporting suspicious activity and includes warning signs for airports, informational literature, and a training video for pilots and airport employees.

Threat/Security Communication System

The development of a comprehensive contact list is recommended to be included in any airport security procedures with the list distributed to all appropriate individuals. The following phone numbers should be included on the contact list (include after hour contact numbers where appropriate):

Recommended Contact List	
1	Landing Facility Operator
2	Landing Facility Manager
3	Individual with responsibility for facility security
4	Local Police or County Sheriff Department (List all responding LEO Agencies)
5	State Aviation Director
6	County/City Emergency Manager
7	State Police
8	Fire Department
9	State Offic of Public Safety/Homeland Security
10	FBI
11	Local FAA contact
12	Local TSA contact (that is, Federal Security Director or designee)
13	Any other appropriate organization

Additionally, in the event of a security incident, it is essential that first responders and airport management have the capability to communicate effectively. Where possible, common radio communication frequencies and procedures should be coordinated with local law enforcement.

Finally, the communication process by which all new security policies, procedures, and alerts are communicated to tenants and other airport users is of critical importance. One method of accomplishing this is to conduct regular meetings with airport tenants and the flying public to discuss security issues and challenges, establishing a centralized area for posting of security information, or even developing an email alert system.

3.8 What Are Communication/Mutual Aid Agreements

Communication or mutual aid agreements are typically established between an airport operator and local emergency service providers when that operator cannot provide such services in a reasonable or practicable manner. Such agreements will often include airport security support through local law enforcement agencies, airport emergency services support through local firefighting agencies, etc. While it is understood that many of these types of services would automatically be provided by local agencies due to the nature of a given condition or situation (i.e., fire, medical emergency), such agreements would establish formal plans and procedures for operating at an airport. This would ultimately help to establish expectations and maintain consistency of service from those service providers. ***Note:*** When established, these types of agreements will be integral components of Airport Emergency Response Plans (see Section 3.6).

Due to the limited size and levels of activity of the WSDOT Aviation state-managed airports, none of them have the need and/or the appropriate resources to warrant dedicated service providers. There is also no formal communication or mutual aid agreement currently established; these services are currently inherently provided by local governing agencies and emergency service providers. However, WSDOT Aviation intends to pursue establishing formal communication and mutual aid agreements with local governing and emergency service agencies as appropriate for each airport.

3.9 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

3.1 What Are the WSDOT Aviation Safety Directives
• Aviation Division Hazard Assessment Checklist – State Airports WSDOT Aviation Safety Web Page
• Aviation Division Pre-Activity Safety Plan – State Airports WSDOT Aviation Safety Web Page
• Aviation Division *Safety Procedures and Guidelines Manual* WSDOT Aviation Safety Web Page

3.2 What is a Pre-Activity Worker Safety Plan/Hazard Assessment
• WSDOT Aviation – Aviation Safety web page (WSDOT internal website) wwwi/aviation/aviationsafety.htm
• WSDOT *Safety Procedures and Guidelines Manual* M 75-01 www.wsdot.wa.gov/publications/manuals/m75-01.htm
• WSDOT Headquarters Safety Offic web page (WSDOT internal website) wwwi.wsdot.wa.gov/employee/safety/
• WSDOT Eastern Region www.wsdot.wa.gov/regions/eastern/
• WSDOT North Central Region www.wsdot.wa.gov/regions/northcentral/
• WSDOT Northwest Region
• WSDOT Olympic Region www.wsdot.wa.gov/regions/olympic/
• WSDOT South Central Region www.wsdot.wa.gov/regions/southcentral/
• WSDOT Southwest Region www.wsdot.wa.gov/regions/southwest/

3.3 What Are the Guidelines for Conducting Safe On-Airport Maintenance Activities and Construction Projects
General Safety Guidelines
• FAA AC 150/5370-2E, *Operational Safety on Airports During Construction*. FAA. 17 January 2003
• FAA AC 150/5210-5C, *Painting, Marking, and Lighting of Vehicles Used on and Airports*. FAA. 31 August 2007
Safety Clothing and Protective Devices
• WSDOT *Safety Procedures and Guidelines Manual* M 75-01 www.wsdot.wa.gov/publications/manuals/m75-01.htm
• WSDOT Aviation – Aviation Safety web page (WSDOT internal website) wwwi/aviation/aviationsafety.htm
General State Vehicle Operation Guidelines
• WSDOT *Use of State Provided Motor Vehicles* M 53-50 www.wsdot.wa.gov/publications/manuals/m53-50.htm wwwi.wsdot.wa.gov/maintops/equipment/rules_procedures.htm
• TEF *Vehicle Operator's Handbook* M 3032.04 www.wsdot.wa.gov/publications/manuals/m3032.htm

3.4 What Are the General On-Airport Activity BMP Guidelines
• FAA AC 150/5370-2E, *Operational Safety on Airports During Construction*. FAA. 17 January 2003
• FAA AC 150/5210-5C, *Painting, Marking, and Lighting of Vehicles Used on and Airports*. FAA. 31 August 2007

3.5 What Are the Procedures for Issuing a NOTAM
• FAA AC 150/5200-28D, *Notices to Airmen (NOTAM) for Airport Operators*. FAA. 28 April 2009
• FAA Federal Aviation Order 7930.2, change 2, Notices to Airmen (NOTAM). FAA. 28 April 2009

3.6 What is Airport Emergency Response
• FAA AC 150/5200-31A, *Airport Emergency Plan*. FAA. 30 September 1999
• WSDOT Aviation Emergency Action Plan, June 2008. WSDOT Aviation
• WSDOT *Disaster Plan* M 54-11 www.wsdot.wa.gov/publications/manuals/m54-11.htm
• WSDOT *Emergency Relief Procedures Manual* M 3014.01 www.wsdot.wa.gov/publications/manuals/m3014.htm
• State Emergency Services Plan. WSDOT Aviation
• State Media Coverage Plan. WSDOT Aviation

3.7 What Are State Airport Security Plans
• Transportation Security Administration (TSA), Security Guidelines for General Aviation Airports, 2004 www.tsa.gov/what_we_do/tsnm/general_aviation/airport_security_guidelines.shtm
• Aircraft Owners and Pilots Association (AOPA), Airport Watch, 2009 www.aopa.org/airportwatch/

3.8 What Are Communication/Mutual Aid Agreements
• FAA AC 150/5200-31, *Airport Emergency Plan*

Supporting Documentation

The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

3.2 What is a Pre-Activity Worker Safety Plan/Hazard Assessment
• WSDOT Aviation General Pre-Activity Worker Safety Plan – Offic Environment
• WSDOT Aviation General Hazard Assessment Checklists – Offic Environment
• WSDOT Aviation General Safety Plans
• WSDOT Aviation Airport-Specifi Safety Plans. Appendix 3-1

3.5 What Are the Procedures for Issuing a NOTAM
• General BMPs for Issuing NOTAMs. Appendix 3-1
• Standard NOTAM Template. Appendix 3-1

3.6 What is Airport Emergency Response
• State Emergency Services Plan. WSDOT Aviation
• State Media Coverage Plan. WSDOT Aviation
• State Aviation Division Media Coverage Procedures. WSDOT Aviation
• WSDOT Aviation Emergency Action Plan, June 2008. WSDOT Aviation

3.7 What Are State Airport Security Plans
• WSDOT Aviation Airport Security Plans for 17 State-Managed Airports (April 5, 2003 – confidential
• WSDOT Aviation State-Managed Airport Security Plan Template (confidential
• Current BMPs for Airport Security. Appendix 3-1

3.8 What Are Communication/Mutual Aid Agreements
• General BMPs for Establishing Letters of Agreement (LOA). Appendix 3-1

Appendix 3-1 General BMPs for Issuing NOTAMs

1. Airport Management Responsibility

Notification Process

Airport sponsors at public-use airports are expected to reveal, as soon as practicable, any existing or anticipated condition on or in the vicinity of the airport that would prevent, restrict, or endanger arriving or departing aircraft.

The public notification of this type of information is normally accomplished through the NOTAM system, and should be made not more than three days before the expected condition is to occur. This same notification process should be conducted when the reported condition has been corrected or otherwise modified.

Notification Responsibility

With respect to the WSDOT Aviation state-managed airport system, airport facilities such as airfield pavements, runway lights and airport guidance sign systems are the responsibility of the Airport Manager, as are airport services and airspace obstructions. Other airport facilities such as NAVAIDs and approach lights are the responsibility of the FAA.

The Airport Manager should initiate a NOTAM for a facility only when it is operational and maintenance functions are clearly within their sphere of responsibility. The Airport Manager is also responsible for providing the appropriate air traffic facility, normally the associated FSS, with a list of individuals authorized to supply NOTAM information.

2. Air Traffic Control (TC) Responsibility

Notification Process

FAA air traffic personnel must accept aeronautical information provided that the occurrence is no more than three days in the future. They are required to document the source of the information and then forward the data to the appropriate Flight Service Station (FSS) for NOTAM processing.

Note: Situations that present an immediate hazard should be reported to the ATC facility most concerned. Other situations should be reported on a first priority basis to the FSS.

FSS specialists are responsible for the classification, accuracy, format, dissemination, and cancellation of NOTAM information. All information submitted by FSS specialists is subject to verification with the US NOTAM Office (1-877-4US-NTMS (877-487-6867)) before distribution as a NOTAM. Flight Data Center (FDC) NOTAMs are issued by the US NOTAM Office/ National Flight Data Center and pertain to changes such as navigational facilities, instrument approaches, and flight restrictions. FDC NOTAMs refer to information that is regulatory in nature.

The FAA publishes NOTAM information that is expected to remain effective for extended periods (in excess of seven days) in Notices to Airmen, Class II, issued every other week.

Note: Although the airport operator has primary NOTAM origination responsibilities for the movement areas, the ATC facility managing the NOTAM system is responsible for, and has the authority to ensure the systems compatibility of the format and content of the proposed NOTAM message.

3. Composing the NOTAM

Wherever possible, NOTAMs must use official contractions and abbreviations. Official contractions are in FAA Order 7930.2, Notices to Airmen (NOTAM) and are included at the end of this chapter. If those terms do not fit a specific situation, use clear and concise plain language for the text of the message, or consult with the FSS for preferred terminology. A NOTAM must always state the abnormal condition – do not state a normal condition. The only exception to the preceding is for data that is already published and is being replaced; for example, a runway that was previously closed and is now open.

Following are the general steps and elements required in the development of a NOTAM in order from left to right order: (***Note:*** For illustrative purposes only, XYZ is used where an accountability or location identifier would normally appear in a NOTAM message.)

General Steps for the Development of a NOTAM	
1	**ADP code.** This will be an exclamation point "!"
2	**ACC LOC.** Three letter identifie code, XYZ, for the accountability (i.e., the responsible party) location.
3	**AFF LOC.** Three letter identifie code, XYZ, for the affected facility (i.e., airport, ILS) or location. For certain airspace NOTAMs, it will be the identifie of the nearest VOR/DME or VORTAC.
4	**Location Identifie .** One of the following twelve keywords must be entered to identify the location of the condition. (*Note:* A full explanation of these identifier are included at the end of this chapter.) • AD (Aerodrome) • AIRSPACE • APRON • COM (Communications) • NAV (Navigation Aids) • OBST (Obstructions, including obstruction lighting outages) • RAMP (synonymous with APRON) • RWY (Runway) • TWY (Taxiway) • SVC (Services) • (U) (Unverifie Aeronautical Information) • (O) (Other)
5	**Surface Identification** Optional - this must be the runway identificatio for runway-related NOTAMs, the taxiway identificatio for taxiway related NOTAMs, or the ramp/apron identificatio for ramp/apron-related NOTAMs.
6	**COND.** Identifie describing the condition of the affected facility that prompted the NOTAM. Airspace NOTAMs shall begin with either the identificatio of the airspace, or with the activity type requiring the NOTAM.
7	**TIME.** Identifie the effective time of the NOTAM condition or date/time of return to service or return to normal status. The absence of a return-to service time indicates that the condition will continue indefinitel . The month, day, time, and time zone for the beginning and end of the condition should be included in the NOTAM. If a continental time zone (such as EST for Eastern Daylight Time) is provided, the FSS will convert to Coordinated Universal Time (UTC) prior to the transmission.

Examples

Following are several examples of various NOTAMs:

- !XYZ XYZ VOR OTS WEF 0004281600
  Explanation: The VOR is expected to go out of service at 1600 on April twenty-eight, 2000, and remain out until further notice.
- !XYZ XYZ VOR VOR OTS TIL 0004281800
  Explanation: The VOR is expected to remain out of service until 1759. At that time, this NOTAM will be cancelled automatically by the USNS.
- !XYZ XYZ AP CLSD 1100-1900 DLY WEF 0006011100-0006151900
  Explanation: The airport is closed from 1100 to 1900 daily from June 1, 2000, at 1100 until June 15, 2000, at 1900. This NOTAM will be automatically cancelled by the USNS on June 15, 2000, at 1900.

4. Submitting the NOTAM

As mentioned previously, NOTAMs may be submitted through a local FAA air traffic facility or mailed directly to NFDC. The former method is the most commonly practiced; however, the latter is preferred if the condition is known well in advance.

The local air traffic facility is normally the airport's associated FSS, which is identified in the Airport Facilities Directory (AFD). FSS facility managers are required to ensure that lists of airport employees with authorization to issue NOTAMs are available and current. To avoid potential delays in NOTAM dissemination, airport sponsors are encouraged to assist the FSS with keeping the authorization lists up to date. (***Note:*** If there is difficulty in contacting the FSS identified in the AFD, contact the US NOTAM Office at 877-4US-NTMS (877-487-6867) and they will route the call to the proper flight service center.)

Whatever the method of filing, make certain that the FAA facility in receipt of the NOTAM is provided with the appropriate contact information (name, title, address, and telephone number) of the responsible airport official. This will allow the FSS to confirm the NOTAM when required. If the information is reported over the telephone, the operating initials of the FSS specialist who is handling the NOTAM should be requested to simplify any follow-up or other reference.

5. Recording the NOTAM

The Airport Manager should keep a log of the airport's NOTAMs and maintain its status so that airport officials are aware of the facility's representation in the aviation community. This should be a checklist item on the daily routine of managing the airport. Additionally, obtaining a copy of the NOTAM for future reference and to demonstrate the airport's regulatory compliance is recommended.

6. Distributing NOTAMs

Although the Airport Manager is not responsible for the method of distributing NOTAMs, they should be familiar with the criteria used by the FSS in making the determination. The circulation of an airport condition report is based on the nature of the reported item and the NOTAM service qualification of the airport.

Class (D) NOTAMs

Distant (D) NOTAMs distribute information for all public use airports, seaplane bases, and heliports listed in the Airport/Facility Directory (AFD) and all navigational facilities that are part of the NAS when one of the following conditions is reported:

General Steps for the Development of a NOTAM	
1	The commissioning or decommissioning of landing areas or portions thereof.
2	Airport closure (either complete closures or closures for certain types of aircraft).
3	Conditions restricting or precluding the use of any portion of a runway or waterway.
4	Breaking action is poor or nil.
5	Snow, ice, slush, or standing water.
6	The Runway Friction Measuring System is inoperable.
7	Change of runway identification
8	Rubber accumulation on the runways.
9	Aircraft Rescue Fire Fighting (ARFF) response restrictions.
10	The commissioning, decommissioning, or outage of the following lighting aids: • ALS • SFL/RAIL • RWY LGTS • RCLS • TDZL • LDIN

11	The commissioning, decommissioning, or outage of the following NAVAIDs:
	• DME
	• ILS – GS
	  • LOC
	  • MARKERS
	• LDA
	MARKERS – IM
	  • LOM
	  • MM
	  • OM
	  • FM
	• SDF
	• RVR
	• MLS/ISMLS – AZM
	  • ELEV
	  • GP
	• NDB
	• VOR – DME
	  • VOICE
	• TACAN AZM

7. Conditions With Special Reporting Requirements

Following are conditions that require special attention when composed and reported in order to receive the maximum benefit of the NOTAM system, or to avoid misleading statements.

Breaking Action

The condition of breaking action as reported by airport management personnel is good, fair, poor, and nil, or some combination of these terms. A breaking action report from a landing aircraft should be processed by the FSS as a Pilot Report (PIREP). Combining airport management and PIREP information should occur only when authorized by the airport management.

Winter Conditions

When reporting winter runway conditions, the following sequence should be used to assist the FSS with the NOTAM format: affected runway, coverage, depth, and condition.

Depth of Precipitation

When reporting the depth of winter precipitation, it should be expressed in terms of thin (less than ½ inch), ½ in, and 1 in. For accumulation greater than 1 inch, multiples should be reported in whole numbers only. If a variable depth exists, such as 3 to 5 inches, the greatest depth should be reported. If a depth in excess of 35 inches is reached, multiples should be reported in whole feet only.

Plowed Runways

When reporting a portion of a plowed runway (PLW), the width plowed and its condition, if not entirely cleared, should be expressed. Describing the plowed portion of the runway in terms of percentages or fractions of the surface is likely to be confusing and should be avoided. A report for plowed conditions is used only when a runway has been partially plowed; PLW is not used for runways that have been completely plowed. However, in such cases other surface conditions may apply.

Treated Runways

When it is reported that runways have been treated with sand, salt, or other substances, it is assumed that the entire published surface dimensions have been treated unless otherwise specified. When de-icing activities are reported the materials used should be indicated as either solid or liquid, as this may have operational significance to the pilot.

Obscured Runway Lights

If reporting runway lighting that is obscured by snow and ice, only those lights that are completely obscured should be reported. It should be explicitly clear which lights are affected.

Runway Thresholds

If reporting the relocation or displacement of a threshold, avoid language that confuses the two. Standard NOTAM phraseology includes a temporary threshold displacement. Report threshold relocation as closure of a portion of the runway until the actual physical appearance is altered so the closed runway segment no longer looks like a landing area. If appropriate, request the FSS to insert a reopening date, and remember that you are obligated to track that date and revise or cancel it as necessary.

Personnel and Equipment Working

Any NOTAM associated with Personnel and Equipment Working (PAEW) on or adjacent to a runway, taxiway, ramp, or apron must begin with one of the following keywords: RWY, TWY, RAMP, or APRON. Additionally, the appropriate direction should be specified. These criteria are used for runway checks and other events of short durations; otherwise the runway should be closed.

8. Facilities and Their Contractions

Movement Area – Airport Surfaces	
Aerodrome (keyword)	AD
Airport	AP
Apron (keyword)	APRON
Safety Area	---
Ramp (keyword)	RAMP
Runway (keyword)	RWY
Taxiway (keyword)	TWY
Movement Area – Surface Composition	
Asphalt/tar	ASPH
Concrete	CONC
Gravel	GRVL
Turf	TURF
Movement Area – Lighting Aids	
Airport Beacon	ABN
Airport Beacon	ABN
Light	LGT
Obstruction	OBST
Obstruction Light	OBST LGT
Omnidirectional Approach Lighting Systems	ODALS
Pilot Controlled Lighting	PCL
Runway End Identifie Lights	REIL
Communicate and Services	
Aeronautical Advisory Station	UNICOM
Aircraft Rescue and Firefightin	ARFF
Airport Traffi Control Tower	TWR
Automatic Terminal Information Service	ATIS
Common Traffi Advisory Frequency	CTAF
Automated/Flight Service Station	FSS
Low Level Wind Shear Alert Systems	LLWAS

Landing Area	
Bird Activity, Landing Area or Approaches	BIRDS ON AND IN VC ARPT
Braking Action Fair	BA FAIR
Braking Action Nil	BA NIL
Braking Action Poor	BA POOR
Closed Commissioned	CLSD
Decommission	DCMSN
Decommissioned	DCMSND
Displaced	DSPLCD
Except	EXC
Runway Friction Value	MU
Friction Measuring Equipment Out of Service	MU OTS
Frozen	FRZN
Ice On Runway(s)	IR
Inches	IN
Light	LGT
Lighted	LGTD
Loose Snow on Runway(s)	LSR
Obscured, Obscure or Obscuring	OBSC
Over	OVR
Packed Snow on Runway	PSR
Packed or Compacted Snow/Ice on Runway(s)	SIR
Patchy	PTCHY
Personnel and Equipment Working	PAEW
Plow, Plowed	PLW
Rough	RUF
Rubber Accumulation	RUBBER ACCUM
Sand or Sanded	SA
Slush on Runway(s)	SLR
Snow	SN
Snowbank(s) Containing Earth/Gravel	BERM
Snowbank(s) Caused by Wind Action	DRFT
Snowbank(s) Caused by Plowing (Windrow/s)	SNBNK
Takeoff	TKOF
Thin	THN
Unlighted	UNLGTD
Water on Runway(s)	WTR
Wet Snow on Runway(s)	WSR

Lighting Aids	
Commissioned	CMSND
Decommission	DCMSN
Decommissioned	DCMSND
Obscured, Obscure or Obscuring	OBSC
Out of Service	OTS
Return to Service	RTS
Unlighted	UNLGTD
Air Navigation Aids, Comm, and Services	
Commissioned	CMSND
Decommission	DCMSN
Decommissioned	DCMSND
Operating Normally	OK
Out of Service	OTS
Return to Service	RTS
Unavailable	UNAVBL
Unmonitored	UNMNT
Unusable	UNUSBL
Special Data Facilities, Situations	
Avoid	AVOID
Except	EXC
Temporary	TEMPO
Unavailable	UNAVBL
Unreliable	UNREL
With Effect From or Effective From	WEF

This supplement has been included to provide general guidance and descriptions of current industry best management practices with respect to airport safety and emergency response. It is strictly informational in nature and should not be interpreted as being standard WSDOT Aviation policy and/or procedures. As noted previously, WSDOT Aviation intends to establish Airport Emergency Plans for the state-managed airports. Plans may vary depending on the specific needs of the airports; however, the following criteria should be used to help develop those plans.

1. Airport Emergency Plan Development

The ultimate objective of accident/incident reporting and investigation is prevention. Delays in reporting, due either to ignorance, confusion, or inadvertence, hamper the investigative process and may prevent timely resolution of significant issues. WSDOT Aviation can make a positive contribution to accident prevention by ensuring that Airport Emergency Plans and notification procedures are understood by airport personnel and prominently displayed for those operating at the airports.

Specifically, per FAA AC 150/5200-31, an Airport Emergency Plan is a document that:

a. Assigns responsibility to organizations and individuals for carrying out specific actions at projected times and places in responding to an emergency.

b. Sets forth lines of authority and organizational relationships, and shows how all actions should be coordinated.

c. Describes how people and property will be protected in emergencies and disasters.

d. Identifies personnel, equipment, facilities, supplies, and other resources available—within the airport or by agreement with communities—for use during response and recovery operations.

e. As a public document, cites its legal basis, states its objectives, and acknowledges assumptions.

f. Facilitates response and short-term recovery to set the stage for successful long-term recovery.

For WSDOT Aviation, the Airport Manager shall be responsible for developing and maintaining airport emergency plans for each state airport. The plan must be comprehensive and meet the functional operational needs of the airport. The Airport Manager is charged with a proactive mission, to work toward the resolution of issues to avoid the occurrence of avoidable problems.

Additionally, it should be understood that virtually no airport has sufficient resources to respond to every emergency situation independently. Each airport must depend to some degree on the resources from its surrounding communities. For this reason, airport operators are encouraged to involve local communities in the development of Airport Emergency Plans and use the collective expertise and resources for the mutual benefit of all parties. Interested parties with respect to the WSDOT Aviation airports would include local police, fire, and other emergency services providers, as well as the FAA, local governmental establishments and any other related agencies, including airport property owners such as the United States Forest Service, the Washington State Parks Department, the United States Army Corps of Engineers, the Bureau of Land Management, and the National Parks Service.

Likewise, airport resources may be incorporated into local/regional emergency plans. For example, airports may be identified as evacuation staging sites or reception sites for outside specialists.

Relationships between on-airport emergency services and all other mutual aid entities should be defined in Memorandums of Understanding (MOUs) and Memorandums of Agreement (MOAs) (see Section 3.5 for additional details). ***Note:*** The airport operator maintains the primary responsibility for all airport emergency response, and airport access should be in accordance with applicable MOUs and MOAs.

As appropriate, consideration should also be given to mutual assistance and coordination between local/regional resources with airport resources. In addition to law enforcement and firefighting aid, contingencies such as, mass evacuation with the airport being the staging and exit point or staging areas for arriving rescue teams should considered. The plans should include designated assembly areas, crowd control, shelter, sanitation, feeding, etc. In all cases, an accurate record of emergency/security contacts and discussions shall be kept.

2. Normal and Emergency Operating Procedures

Due to the unique characteristics exhibited by every airport, normal and emergency operational procedures may vary widely. Normal procedures for one airport may be strange to an itinerant pilot accustomed to different procedures that are considered normal at his home base. For this reason, prominent display of operating rules and procedures facilitates the safe and efficient operation of aircraft under all conditions. These rules and procedures can be made available to pilots through a variety of mediums, including through posting them on a bulletin board at the airport, as well as by posting them on pilot resource websites.

For example, under federal regulation, security procedures are only required at certain airports. A pilot that is unaccustomed to these procedures is more likely to operate within these guidelines if they are posted. This provides proper notification to allow operators to avoid citations for noncompliance. A periodic

review of operating procedures by the Airport Manager will promote efficient airport management and minimizes noncompliance. All safety plans should be reviewed annually and after an incident or accident.

A thorough and critical appraisal of emergency procedures is of equal or greater importance than that of normal procedures. Accident records support the common belief in the familiar axiom that aircraft accidents and incidents always happen to someone else in that those involved are invariably surprised and commonly incapable of rational post-accident actions. Many incidents have developed into accidents because of a lack of planning, preparation, and training. For instance, an accident can easily evolve into a fatality when a rescue vehicle can not find immediate access or is unfamiliar with access points to the final approach and departure paths, both locations where accidents frequently occur.

The Airport Manager is responsible for reviewing accident statistics and trends to identify foreseeable and potentially preventable emergency situations at each of the state-managed airports and to institute preventative measures in coordination with the emergency/security contacts identified for the specific airport and where possible, establish appropriate emergency procedures. The Airport Manager is also responsible for logging and maintaining a record of all known incidents and accidents that occur at the state-managed airports.

A. **Safety Improvement Report** – The Safety Improvement Report (SIR) (FAA Form 8740-5) is widely utilized as a means of preventing accidents. Specifically, the SIR is a postage-free form for suggesting accident prevention program improvements and for reporting any kind of aviation hazard to the nearest Airport District Office. All reports are investigated by an FAA Accident Prevention Specialist, and continued review of these reports is a means of identifying trends indicating the need for preventative action.

   As an example of how the system operates, at one particular airport, four gear-up approaches were prevented within a week's time by alert air traffic control personnel. None of these were reported to the Accident Prevention Specialist and no action was taken to alert Fixed Base Operators to this alarming trend until a gear-up landing occurred the following week. This trend was halted when operators were alerted to reemphasize the importance of pre-landing check lists and proper checkout procedures.

B. **Bulletin Board/Location and Use** – A large bulletin board, conspicuously located in an area where transient operators will likely pass it from the parking ramp, is a useful tool for displaying information of routine or emergency nature. Telephone service near the bulletin board is also helpful for pilots. Items that should be depicted on a bulletin board are telephone numbers, location, and availability where appropriate. Additional information may include the following:

   - Names of Airport Manager and Airport Safety/Security Committee
   - Names of all resident airport activities

- Airport rules and procedures
- Flight planning facilities
- FAA facilities
- Emergency services
- Ground transportation services

The Airport Manager can use an additional bulletin board to promote aviation safety, such as postings from the Accident Prevention Specialist at the FAA Flight Standards District Office or the airport's safety record.

3. Aircraft Accidents

While airports can differ greatly in their complexity, particular environments, and operational levels, the one thing they all have in common is that they are all subject to emergencies and incidents. At any given airport, emergency situations can occur at a moments notice. To facilitate the appropriate handling of and response to such emergencies, a detailed Airport Emergency Plan (AEP) containing the procedures to be followed in such an event should be formulated. For this plan to be effective, it must be not only thoroughly understood by key personnel and agencies (i.e., airport employees, outside officials or agencies with responsibilities at the airport, WSDOT Aviation), the plan should be designed with their input as well.

The following chapter presents a broad overview of what elements an effective AEP should include and the topics that it should address. Since every airport is its own unique entity, each facility should maintain an AEP that is tailored to its specific needs.

It is important to note that WSDOT Aviation has an extensive program for search and rescue operations, many of whose components are directly related to aircraft accident situations.

A. **Overview** – There are two important points to consider when dealing with emergency situations (and specifically aircraft accidents):

(1) All airport accidents will be thoroughly investigated by the FAA and the National Transportation Safety Board (NTSB) to determine causes of the accident.

(2) Local state, county and/or municipalities will have the overall authority in the immediate handling of such accidents. While the FAA's and NTSB's involvement is in the interest of air safety, local law enforcement and emergency responders are trained to deal with emergency situations, including: crowd control, isolation and security of wreckage, providing medical care for any injured persons until medical help arrives, etc.

An airport emergency is any occasion or instance, natural or man-made that warrants action to save lives and protect property and public health. The AEP should address those emergencies that occur on or directly impact, an airport or adjacent property that:

(1) is within the authority and responsibility of the airport to respond; or

(2) may present a threat to the airport because of the proximity of the emergency to the airport; or

(3) have responsibilities under local/regional emergency plans and by mutual aid agreements.

(***Note:*** Throughout this supplement, the terms emergency, incident, accident, disaster, hazard, and crisis are frequently used interchangeably to represent any situation which presents a threat to public health and safety.)

B. **Aircraft Accident Situations** – The overarching approach of an Airport Emergency Plan should be to address two general emergencies: off-airport accidents and on-airport accidents. While some procedures will be similar in both instances, there are different considerations involved in an on-airport plan simply because airport personnel will likely be the first to arrive at the scene of the accident. Both plans should include the following steps.

Step 1 – Establish a Chain of Command for Managing an Emergency

As mentioned previously, the authority at an airport accident is the local law enforcement agency with primary jurisdiction. The Washington State Patrol has law enforcement authority anywhere in the state of Washington, with caveats for federal property and may have limited authority on Indian reservations. For this reason, that agency must be notified promptly after the occurrence of any aircraft accident. Local county and municipal police as well as the Washington State Emergency Management Division should also be notified. Based on the particulars of an accident, notification of one agency first may be preferable, especially if one is located closer to the scene of the accident.

After notifying those agencies which are responsible for managing the accident scene, the FAA should then be informed of the emergency. To facilitate the orderly management of the accident, one individual should be recognized as primary operational commander at all times. This person should remain at the scene until all injured parties have been treated and transported, fires extinguished, and the crowd is dispersed. In some instances, the FAA may request that the accident scene should remain under surveillance to prevent unauthorized tampering with aircraft or facility wreckage until FAA representatives arrive.

Step 2 – Define the Roles/Duties of Participating Agencies and Departments

In the event that an accident occurs on the airport and the scene is immediately accessible by persons not identified in the established chain of command, certain procedures or guidelines should be followed. These procedures are as follows:

- Disturbance of the accident scene should be avoided, except to provide aid to injured parties.
- Control of any crowd should be a priority and should follow methods previously outlined in the AEP.
- A complete record of all accident and response details should be made, such as the time of occurrence, the time notification was given, along with the sequence of events that follows. The location of any part of the wreckage that had to be moved should be identified, as well as the first individual to arrive at the scene. These details will aid in the investigation and may also prove to be of value to the airport in any litigation that may result from an accident.
- Upon the arrival of the law enforcement agency with jurisdictional authority (i.e., State Police), all pertinent information must be transferred to them and continued assistance should be offered at their direction. All individuals and agencies involved should be informed of the chain of command and communications across or between agencies should be encouraged so that the overall effort is efficient and effective.

Step 3 – Informal Impacted Parties of the Plan

A primary focus during the development of an airport emergency plan is to ensure that all concerned parties are aware of the plan. Representatives from the state police, county sheriff, local police, civil defense, local fire departments, and local hospital and ambulance service should be involved in the formulation of emergency procedures to be followed. Written copies of the final plan should be distributed to each of these agencies as well. Additionally, the state must be sure that all airport personnel are aware of the plan and be familiar with their individual roles and responsibilities.

Contact information for the State Police, County Sheriff, local police, local hospital, etc. should be readily available, along with a list indicating the specific emergency response steps that need to be taken. This information should be posted where all employees can quickly reference it in times of emergency. The plan should also be included in any operational handbook for the airport's employees. Ideally, the emergency procedures, the plan document, and all pertinent contact information should be reviewed and revised as appropriate at least once each calendar year.

C. **Media Relations** – In the event of an aircraft accident or emergency incident on the airport, the Airport Manager or spokesperson should anticipate immediate and continued communication with the media. Following are several tips on appropriate methods to deal with the media:

- Coordinate with the law enforcement agency and primary jurisdiction (i.e., state police) and, when appropriate forward media calls to designated source.
- Send Press Release – WSDOT should issue update press releases to keep the media informed with facts and key messages about the incident.
- Be Prepared – Airport Manager or spokesperson should prepare a short statement that includes key messages prior to arriving at the scene of an accident.
- Select a Suitable Site – Airport Manager or spokesperson should conduct media relations in an appropriate location that is easily accessible to the media and preferably removed from the accident scene to avoid close video coverage of the accident.
- Arrange to Have Press Identification Checked – Airport Manager or spokesperson should check for proper identification at media only events.
- Control the Questioning – During the briefings, Airport Manager or spokesperson should call on individuals rather than allow an uncontrolled barrage of questions.
- Project a Professional Image – Airport Manager or spokesperson should remain calm, revealing neither fear nor frustration. Efforts should be made to focus the discussion on established facts only. There should be no speculative responses to questions.
- Refrain From Assuming Responsibility – Culpability for aircraft accidents is determined at the conclusion of the investigations conducted by the local law enforcement, the FAA and the NTSB. Therefore, any admission of responsibility by the airport manager or spokesperson would be imprudent, premature and inappropriate.

4. Accident Prevention and Preparedness

A. **Common Indicators of Incidents and Accidents** – The Airport Manager should be aware of common indicators and contributing factors that will likely result in incidents or accidents if they are not corrected. Each of the items listed below continues to be a contributing factor associated with accidents, and all have resulted in serious injury or fatalities.

- An aircraft must make numerous attempts at a landing before succeeding.
- An aircraft flies a disorganized or erratic traffic pattern.
- An airplane, on either departure or arrival, appears to be improperly loaded.

- Chocks and other material/debris are on runways, ramps, and parking areas.
- Fast and/or erratic taxiing occurs.
- Hand starting or "propping" aircraft with no one at controls and no chocks.
- A display of ignorance or incompetence when obtaining weather briefings or filing flight plans.
- A lack of familiarity with proper radio procedures (COM/NAV) at terminals or en route.
- The observation of damaged or apparent un-airworthy aircraft that are being operated, or which are likely to be operated.
- Questionable aircraft servicing procedures.
- VFR operations in dangerously marginal weather conditions.
- Uncontrolled vehicular traffic in the airport's air operations areas.
- Wind indicators that are inoperative.
- Lights that are inoperative on airport runway, beacon, etc.
- Animals that are on airport operating areas.
- Broken runways, taxiways, ditches, etc.
- Attempting to operate aircraft when physically incapacitated by alcohol or drugs.
- Inadequate or no preflight of aircraft.

B. **Common Types of Aircraft Accidents**. A review of a list of 239 incidents, covering a three-year period, in two New England states shows that over 75 percent of these pilot error mishaps occurred during the approach to land, on the airport, or during the departure phase of flight. In many instances, competent airmen witnessed the numerous aircraft incidents and did nothing to prevent or report them, leading many to understand that these incidents would ultimately result in an accident at one time or another. Reluctance of the individual to take preventative action, concerning another pilot's action or behaviors is common among airmen accustomed to risk and insistent on pilot-in-command responsibility. The irony of this attitude is often expressed by pilots during accident investigations when the question "why didn't somebody tell me before it happened?" is frequently asked.

   However, it is also understood that an individual will take responsibility for preventative action if he acts with known group support. An individual must recognize that most of these incidents are preventable, provided that somebody is willing to accept responsibility for preventative action. Taxi accidents, for example, occur rarely, if ever, at certain airports. At other locations, conditions invite taxi accidents, and they happen with regularity until the conditions are corrected.

The following are several examples of incidents that are most commonly caused by pilot error. The examples are listed in order of frequency of their occurrence, from most common to least common.

- Lost Control – Crosswind (Landing or Ground Collision – Taxi Takeoff)
- Hard Landing
- Ground Collision
- Failed to Extend Landing Gear
- Lost Control – Slick Runway
- Land Long
- Inadvertent Gear Retract
- Misused Engine Controls
- Hit Object – While Airborne
- Unsuitable Terrain
- Fuel Exhaustion
- Improper Preflight
- Land Short
- Hit Ground Object – Taxi
- Mid-air Collision – Two Aircraft
- Spin

C. **Aircraft Disaster Drills** – Disasters require the immediate response of numerous community resources. While community agencies and departments pledge their support in times of emergency need, it remains possibly the most difficult objective to accomplish. As such, it is important that all participating agencies develop similar emergency plans and establish procedures so that each plan may be executed in concert with the others. Once all parties have established emergency plans, disaster drills should be conducted regularly to gauge the effectiveness of established procedures and overall agency readiness.

Drill Guidelines – The following guidelines for aircraft disaster drills and preparedness should be considered:

- Determine practical scope of local disaster planning organizational structure.
- Establish communications network among all participating agencies.
- Designate command authority (an individual) for exercises on-airport and off-airport, along with an alternate and a succession of authority.
- Develop police and/or other law enforcement coordination access to airport, drill scene, and hospital.

- Establish security at the scene and a procedure for the escort of vehicles on the airport.
- Coordinate fire fighters, rescue workers, and emergency medical technicians.
- Designation of a local physician that is oriented to airport activities. Local medical societies and governmental health organizations may also be helpful in carrying out the drill. Medical considerations include the following:
  - Determine hospital capabilities.
  - Designate registrar and recorders to advise hospitals.
  - Designate command post medical director.
  - Establish triage area (on airport only).
  - Establish procedure for stabilizing and classifying casualties.
  - Organize medical supplies.
  - Familiarize drill participants with the local hospital disaster plan.
  - Coordinate so that ambulance and EMTs are familiar with airport.
  - Familiarize those participating in the drill with local laws regarding the coroner's role and procedure for evacuating casualties and fatalities.
- Others with whom advanced coordination is desirable include the following:
  - Control tower
  - Airline personnel
  - News media
- For the drill to minimize public concern, prepare a news release several days prior to exercise and designate a sole media spokesman for the entire exercise.
- There are some items necessary to cope with an aircraft accident that are not normally stocked in a community, or at least in the quantities necessary. These include, but are not limited to the following:
  - Triage kits – Professional guidance in assembling these kits is a necessity.
  - Backboards – must have restraining straps and handles.
  - Body bags – nearby military bases may have an adequate inventory.
  - Identification – ID cards for direct participants; vests, helmets, or arm bands to designate participants.
  - Casualty tags – they should be waterproof.
  - Cordoning materials – these materials are secondary only to personnel.

Emergency Triage – Defined as "the sorting and first aid treatment of casualties in collecting stations before their evacuation to hospitals," triage is critical to any drill or disaster because of its overwhelming impact on the success or failure with respect to life-saving efforts. Persons operating an emergency triage are responsible for determining the severity of injuries, which can include those parties who are critical and in immediate need of transport to a hospital, those who will remain stable for transport after those in most serious condition, and those not experiencing any serious medical problems. Additionally, a triage area should be divided and marked for appropriate categories.

Accident Simulation Guidelines – In order to determine readiness, simulated aircraft disaster drills should be conducted under realistic conditions. To accomplish this, airport operators or managers should use the following suggestions as a guide:

- Attempt to have a realistic number of crash victims. A local amateur theater group or high school and college students would be ideal participants. Volunteers should be informed of the nature of the drill to achieve a realistic scenario.
- The requirements of National Transportation Safety Board (NTSB) Part 430, Subpart C should be considered as an adjunct to the exercise. Evidence should be preserved.
- Determine and safeguard radioactive material on board the downed aircraft.
- Evacuate victims from aircraft to prevent further injuries by an explosion.
- An actual aircraft provides the best prop for the "crash" scene; however, acquiring an aircraft may be difficult as the Air Transport Association (ATA) is sensitive to potential for negative publicity associated with disaster drills.
- Communications are the weakest segment in the alerting phase as well as during the rescue and life-saving operations. Portable public address systems and hand held radios are recommended.
- Adequate perimeter security at the scene should be provided.
- Doctors should be encouraged to use terminology that lay personnel can easily comprehend.
- Command post should be conspicuously marked.
- Alternative planning for adverse weather conditions should be considered.
- Adequate vehicle control and escort capability should be provided.
- Specific duty assignments, particularly for medical personnel, should be considered.
- Information concerning the availability of hospital beds should be available.

Appendix 3-3 Current BMPs for Airport Security

This supplement has been included to provide general guidance and descriptions of current industry best management practices with respect to airport security. It is strictly informational in nature and should not be interpreted as being standard WSDOT Aviation policy and/or procedures. As noted previously, WSDOT Aviation has appropriate airport security guidance and plans currently established. The intent of the information below is that it be utilized as a reference at the time of the next update to those WSDOT Aviation airport security documents.

1. Overview

Airport security has undergone a significant change over the past nine years with security claiming increased significance at all levels of government in the post-9/11 world. As part of the reaction to security priorities, actions were taken by the federal government, the aviation industry, and WSDOT Aviation to significantly increase the level of aviation security. While the most visible of the new security of initiatives has occurred at commercial service airports with respect to commercial aviation, there has been an ebb and flow of calls to regulate the general aviation community. National regulations have been promulgated by both the FAA and Transportation Security Administration (TSA) to the extent of their legislative authority; however, very little other regulatory activity has occurred with regard to general aviation airport security.

However, as reflected above, WSDOT Aviation established a *General Aviation Security Guidelines* manual and Airport Security Plans for all of the state-managed airports in 2003. These plans continue to be utilized and updated by WSDOT Aviation.

A. **Federal Security Requirements** – To date, other than a selected few, general aviation airports have not been subjected to direct federal security regulations. Most regulations affecting general aviation security have been issued within the already established scope of authority by the FAA, which is through the regulation of pilots, flight rules, and airspace. Additional means of restricting activity at airports is through NOTAMs (Notices to Airmen) and Temporary Flight Restrictions. Besides these means, general aviation airports do not fall within the security purview of either the FAA or TSA. The biggest step toward federal involvement in general aviation airport security was the publication of the TSA's Security Guidelines for General Aviation Airports (2004).

B. **State Security Requirements** – While in the immediate post-9/11 wave of legislation and regulation, many state aviation laws applicable to airports were intended to criminalize certain offenses, most state laws enacted since 2002 have not been designed to have applicability for general aviation airports, but to strengthen the security of commercial service airports.

Generally, only a limited number of state laws have been passed that impact general aviation airports. Again, the state of Washington is one of those states that has taken the initiative to establish airport security guidelines and plans for its airports. WSDOT also provides special airport grants strictly for security initiatives, including security cameras, fencing, etc.

2. General Aviation Industry Security Initiatives

A brief summary of material provided by the Transportation Security Administration (TSA), the National Association of State Aviation Officials (NASAO), American Association of Airport Executives (AAAE), and the Aircraft Owners and Pilots Association (AOPA) is provided below.

A. **Transportation Security Administration (TSA)** – Published in May 2004, the TSA's Security Guidelines for General Aviation Airports was developed by representatives from various general aviation groups as members of the Aviation Security Advisory Committee (ASAC). The publication provides a set of federally-endorsed security enhancements and a method for determining which enhancements are appropriate. The purpose of the document is, "to provide owners, operators, sponsors, and other entities charged with oversight of GA airports a set of federally endorsed security enhancements and a method for determining when and where these enhancements may be appropriate."

B. **National Association of State Aviation Officials (NASAO)** – NASAO developed and submitted to state and federal agencies a set of recommendations, which included securing aircraft, the need for the development of a security plan, and the need for a means for reporting suspicious activity. Recommendations also included that airports develop a public awareness campaign, perform regular inspections, and control the movement of vehicles and persons in the aircraft operating area. Also recommended is a new pilot identification card, a means to cross-reference the identity of persons requesting flight lessons with a government watch list, establish a process for categorizing airports, and ensure adequate federal funding for airport security needs.

   Additionally, several state aeronautics departments have established their own security initiatives, including Security Planning for General Aviation Airports (2004) developed by the Florida Airports Council and the Terrorism Protective Measures Resource Guide (2005) assembled by the state of Colorado's Office of Preparedness and Security.

C. **American Association of Airport Executives (AAAE)** – The AAAE General Aviation Airport Security Task Force developed a set of recommendations based on established categories of airports determined by runway length and based aircraft. The recommendations addressed the securing of aircraft, establishing a system for communicating levels of threat, the development of a new pilot license, and the expansion of the FAA contract tower program.

D. **Aircraft Owners and Pilots Association (AOPA)** – AOPA developed the Airport Watch Program, a nationwide aviation watch system that takes full advantage of the nation's pilots as a resource for monitoring activities at airports. Supported by the TSA's toll-free hotline and system for reporting and acting on information from pilots and others at airports, the Airport Watch Program uses warning signs, informational materials, and a training video to make pilots, airport administrators, managers, and staff more aware of ways to improve airport security.

E. **WSDOT Security Program** – WSDOT Aviation currently has not established an airport security program that is comprised of Airport Security Plans for all of the state-managed airports. Generally, the manual provides guidelines on the following topics: Detection and Prevention; Reporting, Communicating, and Disseminating; Unusual or Suspicious Activity; Aircraft Security; Airfield Security; Flight Operations Security; Flight Training Security; Developing an Airport Security Plan; Access Control, Monitoring, and Identification; Security Signage; and Education.

   The individual Airport Security Plans are customized to the individual needs and environments of the airports that they represent. These plans are also confidential and maintained at the WSDOT Aviation administrative offices.

3. Current Security Practices at GA Airports

This section provides a summary of selected security practices currently being pursued at many of the nation's general aviation airports. It should be understood that the degree to which these practices are established at a given airport is largely dependant upon the activity level of that airport. Specifically, larger and/or more active airports typically exhibit a greater need for these security practices and tend to have greater resources for implementing them, as opposed to smaller, less active airports.

Note: The selected practices identified below are taken from the TSA's Security Guidelines for General Aviation Airports (2004) and the Airport Cooperative Research Program's (ACRP) General Aviation Safety and Security Practices reports. Additional information is available in the reference section at the end of this chapter.

A. **Security Planning** – The TSA reports that "the most efficient and cost-effective method of instituting security measures into any facility or operation is through advance planning and continuous monitoring." This advance planning is typically accomplished through the establishment of a security plan specific to the airport. While security plans can vary in size and complexity depending on the airport and threat, they will typically include communications, access control, perimeter control, procedures, and other site specific requirements.

Most airports designate security planning and monitoring responsibilities to an individual or small group to ensure consistency and diligence. However, consideration should also be given to establishing an Airport Security Committee, which could be composed of airport tenants and users drawn from all segments of the airport community, as well as local law enforcement. The main goal of establishing this group is to involve airport stakeholders in developing effective and reasonable security measures and disseminating timely security information. Meetings should be held regularly for the purpose of giving coordinated direction to the overall airport security program.

Depending on the level of complexity required, a security plan can be created through a variety of means, ranging from internal resources to external consultants. Additionally, use of external local law enforcement agencies is advisable in that they can not only bring their own security expertise to the planning effort, but they can also help define the airport's threat environment in comparison to the surrounding community existing crime and incident levels. Typically, at a minimum, a security plan will include an emergency locator map, identifying gates, hydrants, emergency shelters, buildings and hazardous materials sites on a grid map, as well as establishing procedures for handling bomb threats and suspect aircraft.

Once the security plan has been established, an airport should share their plan with appropriate local law enforcement agencies, as well as with their primary tenants (i.e., FBO), the TSA, and the local fire department. Other entities with which airports could share their plans could include federal law enforcement agencies (i.e., Federal Bureau of Investigation, Drug Enforcement Agency, Immigration and Customs Enforcement, etc.), the FAA, state DOTs, Homeland Security representatives, city councils, and airport board members, as appropriate.

B. **Aircraft** – The main goal of enhancing GA airport security is to prevent the intentional misuse of GA aircraft for terrorist purposes. Proper securing of aircraft is the most basic method of enhancing GA airport security. Pilots should employ multiple methods of securing their aircraft to make it as difficult as possible for an unauthorized person to gain access to it. Some basic methods of securing a GA aircraft include the following:

- Ensuring that door locks are consistently used to prevent unauthorized access or tampering with the aircraft.
- Using keyed ignitions where appropriate.
- Storing the aircraft in a hangar, if available, and locking hangar doors.
- Using an auxiliary lock to further protect aircraft from unauthorized use. Commercially available options for auxiliary locks include locks for propellers, throttle, and tie-downs.
- Ensuring that aircraft ignition keys are not stored inside the aircraft.

C. **Perimeter and Access Control** – Similar in purpose, perimeter control keeps unauthorized individuals from the airport itself, while access control methods ensure that only authorized personnel can gain access to airport facilities. Perimeter control mechanisms generally include fencing and other physical barriers, while controlling access to an airport is accomplished through a variety of different means. The National Business Aviation Association (NBAA) developed a series of best practices for their members that provide good guidance for securing buildings on the airport, including the following:

- Ensure home facility perimeter security with effective fencing, lighting, security patrols (as appropriate), gates, and limited access areas.
- Ensure street-side gates and doors are closed and locked at all times.
- Require positive access control for all external gates and doors.
- Close and lock hangar doors when that area is unattended.
- Secure all key storage areas (food and liquor, parts and tools, etc.).
- Have an access control management system for keys and passes.
- Confirm the identity and authority of each passenger, vendor, and visitor before allowing access to facilities and aircraft.
- Escort all visitors on the ramp and in the hangar area.
- Use a government issued photo ID to verify the identity of any visitor or vendor.
- Post emergency numbers prominently around facility.
- Ensure easy access to phones or "panic buttons" in various facility locations (break room, hangar bay, etc.).
- Confirm security of destination facilities.
- Be aware of your surroundings and do not be complacent—challenge strangers.

D. **Hangar Facilities** – Aircraft hangars are one of the most effective means of ensuring aircraft security. However, their level of security is maintained only to the degree that the hangar/personnel doors are secured and monitored when unattended. Some of the basic considerations related to hangar security include the following:

- Hangars should be properly marked and numbered for ease of emergency response. These areas are also a good place to install security and informational signs.
- Hangar locks that have keys that are easily obtained or duplicated should be avoided. Hangar locks should be re-keyed with every new tenant.
- Proper lighting around hangar areas should be installed.
- Additional security measures include alarm and intrusion detection systems.

E. **Airport Tenant Facilities** – Even for those airports with a perimeter fence, nearly all airport tenant facilities have points of access to the airport's aircraft parking and movement through their facilities. While the tenant leasing the facility is typically responsible for maintaining airport security, their access controls may also need to be incorporated into the airport's security procedures and/or alarm and reporting system. Airport operators should coordinate with these tenants to ensure that they maintain airport access and security standards at all times. For example, airport management should coordinate and ensure security procedures exist and are harmonized with maintenance facilities that have access on both the public side of the fence and the aircraft parking and movement areas.

F. **Aircraft and Vehicle Fueling Facilities** – Fuel farms are typically located in remote areas of airports for safety and convenience purposes. If feasible, security fencing, lighting, and access controls should be utilized whenever possible to control movement in these areas. Trucks used to transfer fuel to aircraft should be secured when not in use, including controlling fuel truck keys and not leaving keys in trucks while unattended. Fuel trucks should also be marshaled in easily monitored locations when not in use.

G. **Lighting** – Protective lighting is a primary means of providing a base level of protection from nighttime theft, vandalism, or other illegal activities that is generally inexpensive to maintain, and when properly employed, may provide airport personnel with added protection from surprise by a determined intruder. Since protective lighting requirements at airports depend upon the local conditions as well as the areas to be protected, a careful analysis of security lighting is needed. These requirements should consider the need for good visibility, employee recognition and badge identification, vehicle access identification and control, detection of intruders, and deterrent to illegal entry.

   When developing any security lighting plan, care must be taken to ensure that lighting does not interfere with aircraft operations. However, considerations should be given to how installing outdoor security area lighting could help improve the security of aircraft parking and hangar areas, fuel storage areas, airport access points; and other appropriate areas.

H. **Signage** – The use of signs provides a relatively inexpensive deterrent by warning of facility boundaries as well notifying of the consequences for violation. Some of the basic considerations related to airport security signage include the following:

   - Signs along a fence line should be located such that when standing at one sign, the observer is able to see the next sign in both directions.
   - While signs for security purposes should be designed to draw attention, they also should be coordinated with other airport signs for style and consistency when possible.

- Signs should be constructed of durable materials, contrasting colors, and reflective material where appropriate.
- Use as concise language as possible.
- Wording may include – but is not limited to – warnings against trespassing, unauthorized use of aircraft and tampering with aircraft, and reporting of suspicious activity.
- Signage should include phone numbers of the nearest responding law enforcement agency.
- Many locations with access control or Closed Circuit Television (CCTV) equipment may warrant signage for directional, legal, or law enforcement purposes.
- Refer to FAA AC 150/5360-12D, *Airport Signing and Graphics*.

I. **Airport Community Watch Program** – One of the most effective deterrents in GA airport security is awareness. Typically, the airport user population is familiar with those individuals who have a valid purpose for being on the airport property, and consequently, unfamiliar faces are quickly noticed. Teaching an airport's users and tenants what to look for with regard to unauthorized and potentially illegal activities is essential to effectively utilizing this resource. Airport Managers can either utilize an existing airport watch program or establish their own airport specific plan. Some of the primary elements to be considered when establishing a watch program include the following:

- Coordinate the program with all appropriate stakeholders, including airport officials, pilots, businesses, and/or other airport users.
- Hold periodic meetings with the airport community.
- Develop and circulate reporting procedures to all who have a regular presence on the airport.
- Encourage proactive participation in aircraft and facility security and heightened awareness measures. This should include encouraging airport and line staff to query unknowns on ramps, near aircraft, etc.
- Post signs promoting the program, warning that the airport is watched. Include appropriate emergency phone numbers on the sign.
- Install a bulletin board for posting security information and meeting notices.
- Provide training to all involved for recognizing suspicious activity and appropriate response tactics. This could include the use of a video or other media for training.
- Utilize local law enforcement for airport security community education.
- Encourage tenants to make their staff aware of the airport watch programs.

- Additional resources can be obtained through AOPA's Airport Watch program. Completed in partnership with the TSA, this program encourages pilots to be the "eyes and ears for observing and reporting suspicious activity" and includes warning signs for airports, informational literature, and a training video to teach pilots and airport employees.

J. **Threat/Security Communication System** – The development of a comprehensive contact list is recommended to be included in any airport security procedures with the list distributed to all appropriate individuals. The following phone numbers should be included on the contact list (include after hour contact numbers where appropriate):

- Landing facility operator.
- Landing facility manager.
- Individual with responsibility for facility security.
- Local Police or County Sheriff Department (List all responding LEO Agencies).
- State Aviation Director.
- County/City Emergency Manager.
- State Police.
- Fire Department.
- State Office of Public Safety/Homeland Security.
- FBI.
- Local FAA contact.
- Local TSA contact (that is, Federal Security Director or designee).
- Any other appropriate organization.

Additionally, in the event of a security incident, it is essential that first responders and airport management have the capability to communicate effectively. Where possible, common radio communication frequencies and procedures should be coordinated with local law enforcement.

Finally, the communication process by which all new security policies, procedures, and alerts are communicated to tenants and other airport users is of critical importance. One method of accomplishing this is to conduct regular meetings with airport tenants and the flying public to discuss security issues and challenges, establishing a centralized area for posting of security information, or even developing an email alert system.

Appendix 3-4 General BMPs for Establishing Letters of Agreement (LOA)

A Letter of Agreement (LOA) is a written contract between an airport sponsor and another entity. Since WSDOT Aviation's state-managed airports rely on emergency medical services from local communities, an LOA would serve an important function in providing safety assurance for operators at the airports. The following categories should be included in an LOA.

1. Purpose

The purpose defines the intent of the LOA. For airport emergency support, the LOA set forth procedures between an airport and a local entity on emergency response and recovery. ***Note:*** For the state-managed airport system, it is anticipated that these LOAs could include agreements at a state level (for civil/community disaster response) and at a local level (for individual airport requirements).

2. Scope

The scope outlines specific actions that should be taken to alert emergency medical equipment. For some situations, an aircraft operator may be the only witness on-site to report an actual or potential emergency situation.

3. Responsibilities

Since there are no air traffic control towers at the state-managed airports, WSDOT Aviation would be responsible for airport personnel and aircraft operators who may be involved with the emergency situation. Proper communication should be the primary focus during the initial stages of an emergency situation to reduce any other potential risks.

4. Procedures

Since each emergency situation requires a different response, the proper procedures should be communicated through the LOA prior to an actual incident or accident. For example, the FAA classifies aircraft emergencies into Alert I, Alert II, and Alert III based on the magnitude of the emergency. Each alert should have a defined set of procedures in the LOA making for a quick and efficient response and recovery.

5. Emergency Response Information

Information pertaining to the emergency should be provided to the appropriate emergency response personnel. Such information may include:

- Aircraft identification.
- Aircraft type.
- Nature of emergency.
- Estimated time of arrival.
- Landing runway.
- Number of persons on board.
- Amount of fuel on board.
- Type and location of dangerous cargo on board.

A template for a LOA may be found in FAA AC 150/5200-31, *Airport Emergency Plan*, Appendix 7.

Chapter 4 Airport Maintenance Guidelines

In This Chapter
• What is the annual operational schedule for airports? • What needs to be done at the airports on a seasonal basis? • How should the airports and their airfield be maintained? • What are WSDOT's standards for maintenance? • What is the standard process for removing airspace obstructions?

In order to maintain the highest possible quality of facilities and services for its airport users, WSDOT Aviation's airport maintenance guidelines provide general operating and maintenance procedures for the state-managed airports. The following sections provide specific standards, as well as general guidelines that may be tailored to fit the unique operating characteristics for each individual airport. Most of the airports are rural and low activity with minimal infrastructure.

Airport maintenance is accomplished through various resources including airport volunteers, WSDOT maintenance crews, and maintenance contractors. Additionally, it should be noted that the WSDOT Aviation Airport Manager (also referred to herein as the "Airport Manager") has the ultimate responsibility for ensuring that the sections within this chapter are utilized, maintained and updated. Specifically, the Airport Manager is responsible for the following:

- Review and update each section's current standards and applications as required on an annual basis.
- Review and update this section's checklists, forms, and logs as required on an annual basis.
- Maintain records of all checklists, forms, and logs.

Section Contents

Make Sure
- Check that the sections are current!
- Do they need to be updated?

Key Section Dates

Information is only as good as its current relevance. Therefore, it is important that the information contained within this chapter be updated on a regular basis to ensure that it remains appropriate to current conditions. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
4.1 Describe the WSDOT Aviation Airport Operational Procedures and Schedules	7/1/10	6/1/11
4.2 Describe the WSDOT Aviation Airfiel Maintenance Guidelines	7/1/10	6/1/11
4.3 Describe the WSDOT Aviation Airport Maintenance Guidelines	7/1/10	6/1/11
4.4 What Are Vegetation Control Guidelines	7/1/10	6/1/11
4.5 What Are the Obstruction Identificatio and Removal Practices	7/1/10	6/1/11
4.6 Chapter References and Supporting Documentation	NA	

4.1 Describe the WSDOT Aviation Airport Operational Procedures and Schedules

To provide uniform standards and limit risk, WSDOT Aviation must establish guidelines for annual and seasonal maintenance activities at the state-managed airports. This section will address this issue as well as airport opening and closing procedures, and general system maintenance procedures.

Annual Airport Activities

The following maintenance activities are general guidelines in keeping WSDOT airports operational on a seasonal and annual basis. More specific instructions on seasonal opening and closing procedures are discussed in the later portion of this section. Also note that an Annual Airport Activities form that summarizes the following activities has been provided at the end of this section to help the Airport Manager organize, track, and document this process.

Winter Season Activities (December, January, and February)	
Documentation	
1	Review and update airport 5010s, WSDOT Aviation website and Airport Facilities Directory (AFD).
2	Review and update WSDOT *Aviation Operations Handbook*, as required.
3	Review WSDOT *Aviation General Aviation Security Guidelines* manual for currency.
4	Review Airport Security Plans for each state-managed airport for currency and update as appropriate.
5	Review all property management documentation for currency, including airport leases, special use agreements, through-the-fence (TTF) agreements, rights of entry agreements, easements, and similar documents.
6	Review all WSDOT Adopt-an-Airport agreements to ensure they are up to date and reflec current people/organizations responsible for maintenance.
7	Review airport maintenance program and all associated contracts for currency.
8	Review all established contractor and supply vendor agreements for currency.
9	Review contracts for fertilizer, herbicides and other products to ensure currency for next spring.
10	Review annual airport herbicide applications from the previous year to ensure complete documentation and appropriate personnel licensing.
11	Schedule Spring volunteer work parties and identify priorities for each airport.
12	Meet with WSDOT maintenance supervisors to review maintenance plans and develop maintenance schedules for applicable airports.
Supply Controls	
1	Scope and budget fertilizer, herbicides, and seeding/planting quantities that will be required for the upcoming year.
2	Order fertilizer, herbicides, and seeding/planting quantities required for the upcoming year.
3	Scope and budget requirements for airport-related materials (i.e., windsocks/wind cones, frames, tie-down chain material, other parts and supplies) and place order with vendor.
4	Order airport-related materials required for the upcoming year.
Administration	
1	Meet with WSDOT maintenance supervisors and establish airport maintenance schedule for the upcoming year.
2	Establish WSDOT Adopt-an-Airport maintenance schedule and schedule volunteer work parties for the upcoming year.
3	Establish date for airport caretakers' orientation seminar and notify participants (will include FirstAid/CPR training).
4	Identify capital projects and conduct the necessary cultural resource, environmental, and applicable construction design efforts.

Operations	
1	Conduct any general maintenance and construction activities at available airports (given seasonal access limitations).
2	Conduct any required tree removal activities at available airports (given seasonal access limitations).
3	Conduct required maintenance operations on WSDOT Aviation equipment.

Spring Season Activities (March, April, and May)	
Documentation/Supply Controls/Administration/Operations	
1	Conduct year's initial airfiel inspections to determine that seasonal airports are ready for opening. Includes inspection of all airport buildings to determine what, if any, damage occurred during the winter months. The section on "Seasonal Opening" will provide a reference tool for this activity. (See Airport Maintenance Inspection Form at the end of this section for requirements.)
2	Conduct airport orientation seminar for maintenance personnel (includes First Aid/CPR training).
3	Fertilize airports listed in "Fertilizer" section of this handbook.
4	Apply initial general herbicide application at airports as referenced under Section 4.4 of this handbook. (*Note:* Follow up spot applications will also be made in the summer season during airport inspections.)
5	Inspect and repair applicable irrigation and potable water systems and turn on water at airports having irrigation and/or potable water systems.
6	Conduct mowing operations after completion of fertilizing at available airports (given seasonal access limitations).
7	Conduct any scheduled maintenance and construction activities at available airports (given seasonal access limitations).
8	Install runway edge pavement lights, reflectiv markers and other support tasks.
9	Install airport guest log book.
10	Inspect and refurbish airport markings.

Summer Season Activities (June, July, and August)	
Documentation/Supply Controls/Administration/Operations	
1	Conduct mowing operations after completion of fertilizing at all airports.
2	Conduct routine airfiel inspections at all airports. Inspections are to occur during each airport visit.
3	Conduct routine/scheduled maintenance activities at all airports.
4	Conduct any scheduled construction activities at airports.
5	Initiate and develop special studies, i.e., airport master plan/ALP, vegetation management plan.
6	Initiate project applications, environmental and or cultural resource reviews, and applicable construction design efforts as needed.

Fall Season Activities (September, October, and November)	
Documentation/Supply Controls/Administration/Operations	
1	Conduct annual fall turf seeding and vegetation planting activities.
2	Provide courtesy update/call to FAA to confir the planned closing schedule of airports (typically November 1).
3	Drain and winterize all irrigation and potable water systems.
4	Close all appropriate airports, per the close airports checklist and post on the aviation website.
5	Write letter to airport maintenance volunteers thanking them for their summer activities.
6	Report volunteer hours worked.
7	Remove runway edge pavement lights and reflectiv markers.
8	Identify capital improvements, planning and other needed projects and submit projects to the Director for inclusion in the Statewide Airport Capital Improvement Program (ACIP) for the following year.

Activities Occurring on an Ongoing Basis	
Documentation/Supply Controls/Administration/Operations	
1	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.
2	Conduct any applicable airport planning efforts.

Seasonal Airport Opening Activities

Prior to opening an airport, a WSDOT representative should verify that all aviation, recreational, and maintenance facilities are fully functional and operational for airport users and operators. Depending on the seasonal weather conditions, a seasonal opening date may fluctuate and thus dates should be established on a per airport basis. Some seasonal openings and closures are dictated by the operating agreement with other agencies. For the majority of the seasonal airports, June 1 will be the targeted opening date. The Airport Manager should visit the at least one to three months prior to opening as the following items should be inspected.

A Seasonal Airport Opening Procedure Form has also been included at the end of this chapter to help the Airport Manager organize, track and document this process. This form acts as a supplement to the Airport Maintenance Inspection Form (see below) that should also be completed during the airport opening process.

Airport Opening General Guidelines
Aviation Facilities
The following aviation-related facilities should be examined and inspected prior to openings: • Runways (condition, grass length, debris, damage, weed control, etc.) • Runway Approaches/Obstructions • Runway/Taxiway Lights/Markers • Aircraft Parking (including hangars and tie-down areas) • Aircraft Loading Areas • Helicopter Pads • Aircraft Fueling Areas • Wind Indicators/Segmented Circles • Airport Signage • Fences, Gates, and Locks • Other Structures, Facilities, and Equipment • Cameras, Utilities, etc. • Mailboxes and Guest Sign-in Books
Recreational Facilities
The following recreational facilities should be examined and inspected prior to openings: • Picnic Tables • Shelters • Sanitary Facilities • Trash Disposal Facilities • Drinking Water • Non-Aviation Related Signing (airport identification recreational, directional, etc.) • Ground Vehicle Parking Areas
Maintenance Facilities
The following maintenance facilities should be examined and inspected prior to openings: • Irrigation Systems • On-Site Equipment (tractors and mowers, ATVs, chainsaws, weed cutters, miscellaneous hand tools, etc.) • Equipment Storage Buildings • Airport Access Roads • Materials Stored at Airport for Replacement and Repair (windsocks, signs, posts, fence wire, irrigation system parts, etc.)

Seasonal Airport Closure Activities

Before officially closing an airport for the season, a WSDOT Aviation representative should conduct a final inspection to determine if any necessary maintenance repairs are needed for following year. In addition, a final inspection will allow WSDOT Aviation to ensure that all airport equipment is protected from any winter storms.

A Seasonal Airport Closing Procedure Form has also been included at the end of this section to help the Airport Manager organize, track and document this process. This form acts as a supplement to the Airport Maintenance Inspection Form (see below) that should also be completed during the airport closing process. The following table lists general guidelines in preparing airports for a seasonal closure.

Airport Closure General Guidelines	
1	Store or secure any aircraft tie-down equipment.
2	Close fuel lines if necessary.
3	Cover or store any recreational equipment that may be damaged during winter storms.
4	Remove any remaining trash from the disposal facilities.
5	Follow the procedures for the fall-shut down checklist for sprinkler systems.
6	Store and secure all airport maintenance equipment.
7	Verify if any replacement materials are needed for airport repairs. In this event, there will be sufficien time to order and receive items before seasonal openings.

Regular Airport Inspections

Inspections of the state-managed airports are to be conducted a minimum of three times a year by an authorized WSDOT Aviation representative. Additionally, an inspection is to occur at an airport each time an authorized WSDOT Aviation representative visits the airport.

The WSDOT Aviation representative is to complete an Airport Maintenance Inspection Form (see below) and return it to the Airport Manager for review and filing.

4.2 Describe the WSDOT Aviation Airfield Maintenance Guidelines

Airfield maintenance refers to all maintenance activities directly related to airport areas that accommodate aircraft operations. Proper runway grading, marking, and lighting guidelines should be followed in order to provide users with the safest possible operating environment and all maintenance and repairs shall be noted in the airport maintenance log. Additionally, snow removal procedures will allow those airports open year-round to maintain operations through periods of inclement winter weather. Along with providing runway access, aircraft parking and wind cone maintenance are additional aspects of maintaining a safe and effective airfield to meet the demands of local and transient customers. Also as detailed in Section 3.2, maintenance crews shall comply with all applicable airport rules and regulations. Vehicles operating beyond the aircraft parking areas should have the necessary lights and warning signals (i.e., amber rotating beacon) to operate in the airport movement area that would include the runway environment. Specifically, this section addresses the following items.

- Turf Runways and Runway Safety Area
- Gravel Runways
- Paved Runways
- Runway Pavement Markings
- Runway Lighting
- Runway Edge Markers
- Snow Removal
- Aircraft Parking
- Segmented Circle/Wind Cone Maintenance

Turf Runways, Runway Safety, and Infield Areas

Turf runways and runway safety areas should be mowed at least three times during the growing season to about 2 inches in height in order to maintain a desired overall grass height. It is important that the turf height is uniform and regular maintenance of turf runways will also prevent weeds and other unwanted plant life from developing. Runway shoulders, infields, turf aircraft parking areas, and building foundations should be moved at least once during the growing season to about 6 inches in height depending on desired overall grass height.

Proper fertilizing, weed control, seeding, mowing, and watering will ensure level turf surfaces.

WSDOT Aviation shall have the turf runways fertilized on a regular basis to maintain height uniformity. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water soluble potash. They shall be applied at the rate and to the depth specified herein. (A recommended general fertilizer has a formula of approximately 10-8-6, which is 10 percent nitrogen, 8 percent phosphoric acid, and 6 percent of potash.) However, the specific mix shall be determined by WSDOT Region Maintenance based on local environmental conditions. Seeding dates, species, and seeding rates must be compatible with local climate and soil conditions. Due consideration must be given to longevity of plants, resistance to traffic and erosion, and attraction of birds or large animals. More than one seeding season may be specified, if appropriate.

Keeping the runway turfs properly irrigated will better help pilots identify WSDOT's airports. Due to seasonal fluctuations, sprinkler schedules should be adjusted as needed to ensure proper turf growth. ***Note:*** The water shall be sufficiently free from oil, acid, alkali, salt, or other harmful materials that would inhibit the growth of grass.

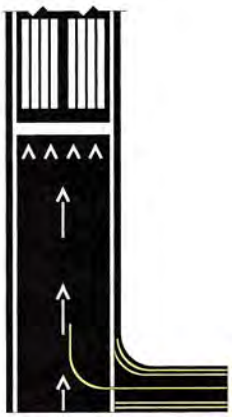
Gravel Runways

Rolling and compacting is required at the state-managed airports having gravel runway surfaces. Each of these runways shall be inspected annually for compaction by the Airport Manager, at whose discretion further scheduling for compacting by a WSDOT Region Maintenance asphalt roller will be arranged. Additionally, at the discretion of the Airport Manager, oiling of the runways to promote compaction shall be conducted on an annual basis or as needed to address airport safety

Paved Runways

The goal of any pavement maintenance program is to provide a safe and operable pavement for the least possible cost. An effective maintenance program will provide the owner with sufficient information to assess how to obtain the greatest return for funds expended. As such, paved runways at the state-managed airports shall be inspected annually for condition assessment to coordinate with the existing WSDOT Aviation Pavement Management Plan. Based on yearly inspections and being consistent with the Pavement Management Plan, preventive maintenance (including crack sealing, pavement markings, fog sealing, slurry seal, etc.) will be scheduled.

Runway Pavement Markings



In general, runway pavement markings are comprised of anything painted on a runway (e.g., runway numbers, thresholds, edges) and are usually painted a minimum of every three to five years. This schedule can be accelerated based on the requirements of the pavement management plan and any associated maintenance. The approved paint and equipment for runway pavement marking maintenance will be provided by WSDOT and will be in accordance to the specifications detailed in FAA AC 150/5340-1J, *Standards for Airport Markings*, as well as any additional WSDOT pavement marking requirements.

Runway Lighting

Runway lighting fixtures whether elevated or in-pavement require a high degree of maintenance. The primary issue with elevated light fixtures is they are more easily susceptible to being run over or damaged. Therefore, broken glass or electric wiring may be exposed creating a hazard to airport users. Of the state-managed airports, three currently have runway lighting, all of which are elevated.

A preventive maintenance scheduled provided by the FAA is shown below and is likewise reflected above in Section 4.1. ***Note:*** Replacement light bulbs at all state-managed airports shall meet the lighting fixture manufacturer technical specification. Additionally, inspection of the state-managed airport lighting systems shall be conducted by the Airport Manager or a qualified person identified by the Airport Manager. Repairs and replacement shall be noted in the maintenance pavement log.

Runway Lighting Preventive Maintenance Schedule
Routine Checks
At those state-managed airports that have a caretaker or local contractor, visually check lights on a weekly basis for dimly lit bulbs, burned out/broken lamps, or dislocated/broken fixtures Record the location of these fixture and make corrections as soon as possible. In addition, check lenses for cleanliness.
Monthly Checks
Check the orientation of all lenses as misaligned lights will either appear dimmer or brighter than those properly aligned. Realign all lights that have been moved out of alignment. Check lamp sockets for cleanliness and a good connection. Lastly, inspect and clean the weep hole in frangible coupling for stake-mounted lights.
Semi-Annual Checks
It is important to check the ground elevation around the light fixture to ensure that the frangible point is approximately 1 inch above the ground. WSDOT shall grade any surfaces that are less than 1 inch above ground elevation. The height of the lights should not exceed 14 inches when located within 5 feet of a runway or taxiway edge. The lights may be raised 2 inches for every foot beyond 5 feet in snow regions of Washington. Therefore, at the 10 foot position lights can be a maximum height of 30 inches. An increase in height may be permitted assuming that an overhanging part of an aircraft expected to use the runway could clear the light by 6 inches. Check light bases and housing for moisture as well as corrosion and check gaskets, seals, and clamps for deterioration and damage.
Annual Checks
For seasonal WSDOT airports, annual checks should be conducted prior to the season's airport opening. A WSDOT representative should check each light carefully for cracking, corrosions, or shorts. In addition, clean contacts to ensure lamp fittin and check the condition of all connections.

Additional maintenance procedures relating to lamp replacement, spare unit replacement, film disc cutouts, inspections, cleaning, and moisture may be found in FAA Advisory Circular 150/5340-26A, *Maintenance of Airport Visual Aid Facilities*. The figure below depicts runway lighting preventative maintenance procedures.

	Maintenance Requirement	Daily	Weekly	Monthly	Semi Annual	Annual	Unscheduled
1.	Inspect for outages; repair as necessary.	X					
2.	Check cleanliness of lenses.	X					
3.	Perform photometric testing (HIRL) and check light alignment and orientation.			X			X
4.	Realign lights as needed.			X			X
5.	Clean fixture and sockets.						X
6.	Check light elevation.				X		
7.	Check for moisture in lights.				X		
8.	Inspect fixtur for rust and deterioration.					X	
9.	Check lamp fittin and clean contacts.					X	
10.	Check gaskets.					X	
11.	Remove snow and/or vegetation from around lights.						X

Runway Edge Markers

Runway edge markers differ from pavement markings in that the former are individual units installed along the edge of a runway, while the latter is simply paint on pavement. ***Note:*** Markers should be present on turf runways where pavement markings are not possible. Keeping runway edge markers functional and visible to airport users increases the level of safety at the state-managed airports. These airfield markers should be inspected at the opening and close of each season as well as on routine airport inspections as described in Section 4.1. The Airport Manager will determine guidelines for replacing runway edge markers on a case-by-case basis.

The markers currently utilized by WSDOT Aviation for all of its applicable airports is Valley Illuminators, L-853 – Markers, Retroreflective, in compliance with FAA AC 150/5345-39C, *Specification for L-853, Runway and Taxiway Retroreflective Markers*.

The installation and removal schedule for these markers is detailed in the Annual Airport Activities form.

Snow Removal

Snow, ice, drifting snow, and reduced visibility at airports in areas subject to below freezing temperatures can severely affect wintertime operational safety. The presence of snow, ice, or slush on paved airport movement surfaces frequently causes hazardous conditions that contribute to aircraft accidents, incidents, and reduced traffic volumes, resulting in delays, diversions, and flight cancellations. Airport management's approach to snow and ice control procedures on paved surfaces will largely determine the extent to which these effects can be minimized.

Note: *For the state-managed airports, only three airports have paved runway surfaces, and of those, only Methow Valley and Woodland have snow removal operations.*

1. **Management** – Since the state-managed airports that conduct snow removal operations are not directly monitored by the Airport Manager, WSDOT Aviation normally utilizes a contractor located on or near those airports to report on snow accumulation. However, it is important to state that the WSDOT Aviation Airport Manager will ultimately determine when snow removal operations shall begin through coordination with those individual contractors.

   Additionally, during winter events, those contractors shall continuously check the runway for snow depth and braking. WSDOT Aviation shall issue a NOTAM if any snow conditions present a hazard to aircraft operations further necessitating closing the airport.

2. **Vehicles** – As detailed in Section 3.2, all snow removal vehicles should be equipped with a two-way radio communication device that shall monitor the airport CTAF at all times. Outside contractors operating snow removal vehicles on the airport shall understand and comply with all applicable airport rules and regulations. Vehicles operating beyond the aircraft parking areas should have the necessary lights and warning signals (i.e., amber rotating beacon) to operate in the airport movement area that would include the runway environment.

3. **Snow Removal Priorities**

Priority 1	Clear the main runway using a continuous circuit pattern starting from leading edges and working towards centerline.
Priority 2	Clear parallel taxiways using a continuous circuit pattern starting from the leading edges and working towards the centerline.
Priority 3	Clear aircraft parking and tie-down areas with snow being relocated to stockpile areas.
Priority 4	Plow airport access roads and public parking lots as the last and fina snow removal priority.

4. **Snow Removal Equipment** – WSDOT Aviation shall maintain a listing of snow removal equipment utilized on its airports.

5. **General Snow Removal Procedures** – While conditions at individual airports vary widely and may require special removal methods or techniques, there are general criteria that should be followed as closely as possible. In general, airport users should be promptly notified, and a NOTAM should be issued immediately, advising of unusual airport conditions. The following should be considered in your snow removal plans.

6. **Initiating Snow and Ice Control Operations** – Start snow and ice control operations on Priority 1 areas beginning with the primary instrument runway or active runway, as soon as snow or frozen precipitation begins to fall. Sweepers, if available, should be used to keep the center bare. As soon as snow has accumulated to a depth that cannot efficiently be handled by the sweepers, displacement plows and rotary plows should be dispatched to remove the build up. If the pavement is warm enough for snow to compact and bond, or if freezing rain is forecast, anti-icing chemicals should be applied prior to the start of precipitation or as soon after its start as possible. When snow has melted or begins to accumulate, or any ice that has formed has been disbonded from the pavement by the chemical, sweepers should remove this residue.

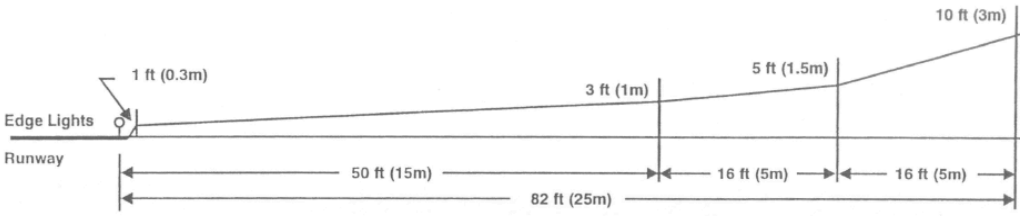
7. **Storm Severity** – The intensity of a snowstorm will determine the extent of the area to be cleared initially. The objective should be to clear the entire Priority 1 area; but should snowfall be too heavy to accomplish this, operations should be reduced to keeping the center of the Priority 1 runway and its taxiway open. If the full width of the runway cannot be cleared, this situation should be reported in a NOTAM giving details of the cleared width to allow each operator to judge the suitability of conducting operations, since aircraft requirements differ. If this width will not meet minimum operational requirements, operations should be reduced further or curtailed, and efforts should be concentrated on satisfying those requirements.

8. **Clearing the Runway** – Clearance of snow from the runway is accomplished most effectively by operating a plow team in echelon, using a number of displacement plows to move the snow with a minimum of rehandling into a windrow which can then be cast beyond the edge lights by a rotary plow. The number of displacement plows to be used should be based on the volume of snow handled and the capacity of the rotary plow. Blades should not be dropped onto the pavement until the equipment is in order to avoid damage to pavement and equipment. A safe distance should be maintained between vehicles operating in a team to avoid accidents resulting from loss of visibility. If visibility suddenly drops to near zero, while plowing operations are in progress, equipment should stop immediately and radio its position to the supervisor or snow desk. No further movement should be attempted until visibility improves.

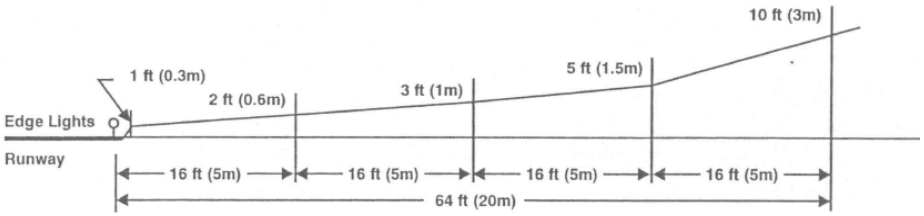
9. **No-Wind Condition** – If no wind is blowing, snow can be cleared to either side of the runway. Selection of casting direction can then be based on storage capacity of the field adjacent to the runway; visibility considerations, avoidance of structures, NAVAID's or other devices; and least effort clearance. If a wind is blowing, however, free choice of clearance direction may not be possible because movement of snow into the wind will result in considerable drifting back onto the cleared areas and will reduce the operator's visibility. In the case of a cross wind, clearance is best accomplished by plowing and casting with the wind regardless of the situation on the side of the runway where the snow will be deposited.

10. **Coordination of Equipment** – Equipment movements must be carefully timed and coordinated to ensure an orderly turnaround and safe reentry at the start of the return pass.

11. **Snow Bank Height** – The height of a snow bank on an area adjacent to a runway, taxiway, or apron should be reduced to provide wing overhang clearance and preclude operational problems caused by ingestion of ice into turbine engines or propellers striking the banks prior to the area being reopened to aircraft operations. (The following figure shows the desired maximum snow height profile which generally should be obtained.) This profile should be checked for the most demanding airplanes used at the airport to ensure that props, wing tips, etc., do not touch the snow with a wheel at the edge of the full-strength pavement. When conditions permit, the profile height should be reduced to facilitate future removal operations and to reduce the possibility of snow ingestion into jet engines. Also note that snow banks should not be allowed within the area between a glideslope and the runway.



a. Runways and Taxiways Used by Airplanes in Design Groups V and VI.*



b. Runways and Taxiways Used by Airplanes in Design Groups I, II, III, and IV.*

* As defined in AC 150/5300 13

12. **Areas of Attention** – Movement areas where aircraft will operate at high speeds such as turnoffs should receive the same snow and ice control attention as runways. Areas of low speed operation such as taxiways and ramps can also be critical under some conditions. Directional control and braking action should be maintained under all conditions.

13. **Runway Lights** – In heavy snow areas, it is helpful to place flags on flexible stakes extending 1 or 2 feet above the edge lights. Visibility is enhanced by using international orange flags. Time and effort in clearing snow from around the lights is minimized by plowing as close as possible to them. The remaining snow can be blown away using a truck-mounted air blast unit, the air blast from a broom, or by spraying with liquid deicing chemical. In some cases, edge lights may be raised. As a last resort, hand shoveling may be necessary.

14. **Airport Signs** – The face of all signs and all lights should be kept clear of snow and in good repair at all times, with priority given to lights and signs associated with instrument approach functions.

    Pavement Markings – Striated pavement markings are useful in reducing ice buildup.

    More detailed information on developing and implementing a snow removal plan during winter operations may be found in the FAA AC 150/5200-30C, *Airport Winter Safety and Operations*.

Aircraft Parking

Aircraft parking provides local and itinerant aircraft users with space to store their aircraft. These designated areas should be maintained to support all aircraft operations. WSDOT Aviation should inspect these spaces for cracking in pavement/ruts in turf or gravel and take corrective action as necessary. In general, remove any type of FOD from aircraft parking areas.

Segmented Circle/Wind Cone Maintenance

Segmented circles aid pilots in locating obscure airports and provide a centralized location for such indicators and signal devices as may be required on a particular airport. Typically co-located with the segmented circle are wind cones or windsocks that provide wind surface conditions at airports. These should be located in a position that affords maximum visibility to pilots in the air and on the ground.

These structures should be carefully checked during opening, closing, and routine inspections for any imperfections. FAA specifies certain requirements for the wind cone and segmented circle equipment, which can be found in FAA AC 150/5340-5C, *Segmented Circle Airport Marker System*, and FAA AC 150/5345-27D, *Specification for Wind Cone Assemblies*. The FAA also lists preventative maintenance procedures in FAA AC 150/5340-26A, *Maintenance of Airport Visual Aid Facilities*, for lighted wind cones which are outlined below. (***Note:*** These are also reflected in Section 4.1.)

Segmented Circle/Wind Cone Preventive Maintenance Schedule
Routine Checks
At those state-managed airports that have a caretaker or local contractor, visually check bulbs on a weekly basis to ensure they are burning each night. If the lights are not burning at full capacity, check to see that the voltage is not too low by verifying with the manufacturer's specifications If the wind cone is not lighted, then ust check the integrity of the structure.
Monthly Checks
Since weekly checks are unlikely to be performed at every state-managed airport, monthly checks have a greater priority. The wind cone assembly should swing freely in a 360 degree position without encountering any obstructions, and the condition of the fabric should be examined at close range. Replace fabric that is badly worn or faded in color and remove any obstructions blocking wind cone movement.
Bi-Monthly Checks
If the wind cone is lighted, replace lamps after 80 percent of the rated life prior to 90 percent of rate lamp life. A schedule of necessary lamp replacements should be established and updated periodically. When replacing lamps, clean globes as well.
Semi-Annual Checks
Clean and lubricate wind cone bearings as cold weather conditions may cause the wind cone to be sluggish. Also, take insulation reading to ensure that power is not being lost as a result of insulation deterioration.
Annual Checks
Annual checks should be conducted at the opening for seasonally active WSDOT airports. During this inspection, secure and tighten the assembly bolts as needed. In addition, check the electrical wiring and the ground system. The ground system should be checked for loose connections as well as resistance. Repaint wind cones/ segmented circles as necessary.

The figure below depicts lighted wind cone preventative maintenance procedures.

	Maintenance Requirement	Daily	Weekly	Monthly	Bimonthly	Semi Annual	Annual	Unscheduled
1.	Check lamp operation.	X						
2.	Check photocell operation.	X						
3.	Check for freedom of motion of wind cone frame.			X				
4.	Check condition of wind cone fabric.			X				
5.	Check lamp age for scheduled replacement.				X			
6.	Clean glassware.				X			
7.	Check paint on segmented circle.				X			
8.	Clean and grease bearings.					X		
9.	Read insulation resistance.					X		
10.	Check mounting bolts.						X	
11.	Check wiring at hinge.						X	
12.	Check grounding system resistance.						X	
13.	Check paint on wind cone structure.						X	
14.	Remove vegetation and check condition at foundation.							X

4.3 Describe the WSDOT Aviation Airport Maintenance Guidelines

This section addresses specific airport maintenance guidelines that are not exclusive to airfield activities. Specifically, this section addresses the following items.

- **Airport Signage** – Highway/road, landside and airside airport signage provide direction to airport users and operators. It is essential that signage is maintained and complies with current standards mandated by WSDOT and/or FAA.
- **Sprinkler Maintenance** – Maintenance of the sprinkler systems is a crucial aspect of most airports given the turf runways and surrounding landscapes. The proper sprinkler or irrigation procedures will provide users with a safe and aesthetically pleasing operating environment.
- **Access Road Maintenance** – It is incumbent upon WSDOT Aviation to provide safe access to its state-managed airports through proper inspection and maintenance of access roads.
- **Fencing and Gate Maintenance** – The proper inspection and maintenance of airport fencing and gates are essential in maintaining the safety and security of airport.

Sign Maintenance

All airport signage should serve as a visual identifier for airport users. Directional and location signs should adhere to WSDOT Aviation and FAA specifications. Some general guidelines of sign maintenance include:

- Remove any obstructions from signage that may cause it to be unreadable.
- Repaint any signs that have faded due to age and weathering.
- Replace signs that no longer serve any airport function.
- Verify that signage is securely grounded either to a facility structure or natural base.
- Review any updated FAA or WSDOT regulations to ensure that signage is compliant with current standards.

For those signs that require replacement, the following procedure shall be observed.

Sign Replacement Procedure	
1	Airport Manager identifies/establishe specification for sign to be replaced. *Note:* Due to the potentially wide variety of signs in use at the state-managed airports, it will be incumbent upon the Airport Manager to utilize appropriate sign design specifications These may be found within WSDOT Aviation, WSDOT, or FAA (see references below).
2	Airport Manager or WSDOT Region Maintenance contacts WSDOT Yakima Sign Shop, places order and supplies shipping information.
3	WSDOT Yakima Sign Shop completes order and ships to WSDOT Region Maintenance or local airport caretaker/sub-contractor.
4	WSDOT Region Maintenance or local airport caretaker/sub-contractor replaces sign.

Sprinkler Maintenance

Proper sprinkler maintenance is an important aspect of landscaping and water conservation. WSDOT Aviation shall follow the manufacturers' maintenance specifications for all airport irrigation systems in order to appropriately maintain those systems. For basic sprinkler systems, the following preventive maintenance schedule should be utilized. (***Note:*** This is also reflected in Section 4.1.)

Spring Checklist
It is important to properly test the sprinkler system during the spring season in preparation for the peak summer season when the system will need to be fully functional and operational. Below are a few considerations: • Close all manual drains. • Open up the main valve allowing water to fil between cross connection prevention assembly. • Pressurize the mainline from backflo prevention. Assemble and have one valve open to allow trapped air to escape through the sprinkler heads. • Run the entire sprinkler system. – Be mindful of signs of leakage or damage to the sprinkler heads. – Make sure that spray patterns are adjusted accordingly and are not blocked by any other materials. – Clean any clogged sprinkler heads or nozzles. – Replace any worn or damaged heads or nozzles.
Summer Checklist
The automatic sprinkler systems should be adjusted to a base schedule with possible fluctuation depending on seasonal rainfall patterns. WSDOT Aviation should specify an objective growth pattern to determine the necessary usage of water and to control maintenance budget costs. In addition, WSDOT Aviation should check for broken and misguided heads during routine inspections.
Fall Shut-down Checklist
WSDOT Aviation should winterize the sprinkler system prior to the winter season. The following procedures should be followed: • Turn off the system. • Follow manufacturers' recommended procedures for draining the system.

Stormwater Management Maintenance

Stormwater control systems at the state-managed airports are comprised primarily of drainage ditches, culverts, cross-culverts, detention ponds, bio-swales and stormwater drains. WSDOT Aviation shall inspect all stormwater management facilities and systems prior to spring opening of the airports for debris, clogs, and dams (as reflected in Section 4.1).

Any required maintenance of the systems will be coordinated by WSDOT Aviation with WSDOT Region Maintenance or appropriate sub-contractors to ensure proper operation of the system. All such maintenance operations shall follow applicable state environmental, construction, and safety standards (see WSDOT *Aviation Stormwater Design Manual* and the WSDOT *Regional Roadway Maintenance Program Manual* reference below).

Access Road Maintenance

In terms of maintenance, WSDOT Aviation considers access roads at the state-managed airports to be the equivalent as roads within the WSDOT *Regional Roadway Maintenance Program Manual*. Therefore, the Airport Manager shall utilize the latest edition of the manual for access road maintenance requirements.

Fencing and Gate Maintenance

In terms of maintenance, WSDOT Aviation considers fencing and gates at the state-managed airports to be the equivalent as fencing and gates within the WSDOT *Regional Roadway Maintenance Program Manual* and the WSDOT *Design Manual* M 22-01, Chapter 560. Therefore, the Airport Manager shall utilize the latest edition of the manual for fencing and gates maintenance requirements.

4.4 What Are Vegetation Control Guidelines

Vegetation control serves dual functions by providing users with some degree of native aesthetics and reducing wildlife hazards at airports. Additionally, effective and appropriate vegetation control can help reduce the development of obstructions on and around an airport, a critical factor for maintaining safe airport operations (see Section 4.5).

Note: WSDOT Aviation is currently working to update its specific vegetation control guidelines by formally establishing an aviation component within each region's Vegetation Management Plan (VMP). See Section 6.4.

For the purposes of the state-managed airports, vegetation includes all native and nonnative species of plant life. It is the responsibility of WSDOT Aviation to limit growth of vegetation in identified areas on and around an airport that may create airspace obstructions or hazards, or otherwise attract unwanted wildlife. Noxious weeds on airports shall also be addressed and controlled. The type and growth of each vegetative species will vary at different airports and further research is needed to develop and integrate a vegetation management practice for state-managed airports.

Due to the importance of appropriate vegetation control, WSDOT Aviation, in coordination with other resource agencies and land owners (where applicable), will be developing and integrating vegetation management plans for the state-managed airports located within one of nine WSDOT regions. Currently, WSDOT has adopted Vegetation Management Plans (VMP) for each WSDOT region within the state and have indicated that the VMP's were designed to incorporate other transportation assets such as rest areas and scenic vistas. As indicated above, it is the intent of WSDOT Aviation to develop an aviation component within each region's VMP. See Section 6.4 for additional information.

The primary work effort will be developed during the development of the Airport Master Planning process, other planning functions initiated at the state-managed airports or WSDOT regional updates. The VMP aviation component should include a typical cross section of the airport operations area and vegetation management zones that described maintenance considerations similar to the Roadside Vegetation Management Zones described in Figure 2 of the manual. The aviation component will also identify standards and specifications unique to airports. Once the draft aviation component has been completed, it will be circulated to the appropriate local organization, state, and/or federal agency for review and comment.

In the absence of a VMP, general vegetation control best management practices established within WSDOT should be utilized. The following sections include WSDOT Aviation's current standard approach/procedures with respect to vegetation control. These are described and/or referenced below.

General Vegetation Control

All vegetation control activities at the state-managed airports shall utilize appropriate existing vegetation procedures and specifications as detailed by WSDOT guidelines, standards, and manuals (see references below). Control methods must fully consider impacts to the airport and aircraft operations as well as address hazardous wildlife issues and vegetation obstructions that may impact critical airspace surfaces.

As stated above, WSDOT will utilize VMPs to determine the most appropriate tools, techniques and timing, for accomplishing prioritized vegetation maintenance activities. These plans, once developed, become the basis of an ongoing process of refinement and crew training, using annually documented experience of each area's proven success and lessons learned. Further information is provided in Section 6.5.

Note: One of the primary components of a VMP is the establishment of vegetation that is appropriate within an airport environment. With respect to this, WSDOT Aviation has already compiled a listing of appropriate native plants for use on the state-managed airports. This listing, Vegetation Recommendations for Airport Settings, has been provided at the end of this section for reference purposes.

Herbicide Use

Herbicides are efficient and effective tools for vegetation management and weed control. However, WSDOT recognizes there may be potential impacts to health and the environment, and minimizes herbicide use wherever possible. WSDOT uses herbicides in the following ways.

WSDOT Herbicide Use Purposes	
1	Maintain a vegetation-free strip at the edge of the pavement where necessary.
2	Maintain a vegetation-free paved or gravel runway or to control vegetation and noxious weeds on a turf runway.
3	Selectively control and eliminate undesirable plants within the airport operating environment.

Historically, about 60 percent of the herbicides used by WSDOT were for annual maintenance of a vegetation-free strip at the edge of pavement. For herbicides used to control weeds and other unwanted plants, WSDOT follows a process that helps ensure herbicides are used appropriately and only when necessary in combination with other effective control measures. The ultimate goal in any treatment is to replace unwanted vegetation with appropriate native plants. In many cases, herbicides are an effective tool for initial control of a problem that does not attract hazardous wildlife. When combined with other control measures, herbicide use can be minimized or eliminated over time.

Two important factors in herbicide selection and application are potential risks to human health and the environment. It is a current WSDOT policy that any herbicide used on state highway right of way be screened through a scientific risk assessment specific to application rates and methods used by the agency. This policy is reasonably applicable to state airports, as well. If certain herbicides are found to have a potential for higher toxicity to human health or the environment, their use on state airports may be limited, phased out, or immediately eliminated.

Important

- WSDOT has a very robust vegetative management program and support network established.

Findings from a 2005 WSDOT study indicated that for most herbicides in most situations, WSDOT's use of herbicides pose a low to very low potential risk to human and environmental health. In cases where the potential risks were calculated to be above low, WSDOT has placed limitations on use to further minimize potential for exposure. A table following this section (Herbicides Approved for use on WSDOT Rights of Way) outlines WSDOT use for individual herbicide including precautions and restrictions where they apply.

General Mowing and Trimming

WSDOT Region Maintenance or designated sub-contractor shall conduct mowing operations based on an approved airport-specific schedule and plan, see subsection 4.2.1. More frequent mowing operations will include turf runways, runway safety areas, turf taxiways, and all navigational aids, including wind socks, segmented circles, and runway lights, as appropriate. Additional areas, although on a less frequent schedule will include runway shoulders, infields, turf aircraft parking areas, and building foundations.

It is anticipated that all state-managed airport runways and safety areas (as appropriate) will be mowed a minimum of three times annually. All mowing and trimming operations shall abide by WSDOT standards, referenced below. Based on seasonal weather patterns, a mowing schedule will fluctuate based on monthly actual rainfall totals. It is important to inspect each airport on a regular basis to determine when mowing is needed and to anticipate such conditions based on weather forecasts.

General Vegetation Control

WSDOT Region Maintenance or designated sub-contractor shall also conduct general vegetation control activities at the state-managed airports in conjunction with the regularly scheduled mowing operations. These vegetation control activities will be based on an approved airport-specific plan. While a formal herbicide program will be developed as part of the upcoming VMPs, it should be noted that there is a general prioritization at the state-managed airports in terms of weed clearance as shown in the following table.

Airport Weed Clearance Priority	
1	Runway
2	Runway edge/shoulders
3	Runway lights
4	NAVAIDs (including wind socks, segmented circles, weather reporting equipment, etc.)
5	Helipads
6	Taxiways

Secondary clearance zones at the state-managed airports would include, but not be limited to, the following areas.

Airport Secondary Weed Clearance Zones	
1	Runway safety areas
2	Runway approach areas
3	Aircraft parking areas
4	Airport access drive
5	Automobile parking areas
6	Building foundations

4.5 What Are the Obstruction Identification and Removal Practices

Regardless of their size and operational levels, all airports have airspace surfaces established around them through a variety of regulatory means. The primary purpose of these airspace surfaces at a given airport is to ensure the safety of aircraft operating at or around that airport. This is particularly applicable for aircraft transitioning from air to ground and/or ground to air, when aircraft are typically most vulnerable to conflicts with ground-based objects. While the processes and requirements associated with these surfaces can be extremely complex (further detail is provided in Section 6.2 and Section 6.4), the critical consideration associated with all of them is that it is generally best for aircraft safety that these surfaces are kept clear of all man-made and natural obstructions.

It is a critical mission of WSDOT Aviation to protect the airspace above and surrounding the state-managed airports in order to help ensure the safety of aircraft transitioning from ground to air and vice versa. In the event of a natural or artificial obstruction to navigable airspace, WSDOT Aviation should follow FAA FAR Part 77 guidelines in identifying, reporting, and removing the obstruction. ***Note:*** The potential for such natural hazards (i.e., trees) is even more likely in remote parts of Washington where native plant life may pose the biggest threat to runway approach surfaces.

Important
- It is *critical* for safety to mainain airspaces that are clear!

This section describes the overall obstruction identification and removal process established by WSDOT Aviation for the state-managed airport system. It should be noted that this process will typically involve several levels of analysis, coordination, and action within WSDOT Aviation, WSDOT, and oftentimes other agencies, including FAA. As such, the process described below will include references to other related sections within this handbook that further describe other specific components of this process.

The following section encompasses WSDOT Aviation's current standard airport obstruction evaluation and removal process for the state-managed airports. ***Note:*** All of these steps shall be coordinated directly with the WSDOT Aviation Airport Manager.

Phase 1 – Identification and Planning	
1	Potential obstructions at the state-managed airports are identifie through one or more of the following processes: • Annual airport 5010 inspections. • Routine WSDOT Aviation airport inspections (see Section 4.1). • Routine WSDOT Aviation airport maintenance as part of a Vegetation Management Program. • Airport Master Plan and airport layout plan. • Notification from pilots and/or other agencies (including FAA).
2	Following the identificatio of potential obstructions, the Airport Manager will make a determination as to whether the potential obstructions: • Are not critical to airport operations and therefore no further action is required. • Are not critical to airport operations at that time, but require monitoring. • Warrant additional analysis. • Require remediation. The Airport Manager will make this determination through coordination within WSDOT Aviation, and with other interested agencies, as required.

Phase 2 – Design	
For obstructions that potentially require remediation, the Airport Manager will initiate the following planning and coordination efforts. (*Note:* Some of these will have to be conducted through a dedicated airport planning effort.)	
1	Identity obstruction type(s) and quantities.
2	Identify obstruction location(s) (on-airport/off-airport).
3	Coordinate with WSDOT Environmental, as required.
4	Coordinate with local jurisdictions, the USDA, and the FAA, as required.
5	Identify property considerations for off-airport obstructions (including property acquisition, avigation easements, etc.).
6	Identify and scope environmental considerations based on obstruction locations, including permitting requirements.
7	Negotiate and resolve considerations for off-airport obstructions (including real property values, property acquisition, acquiring avigation easements, etc.).
8	Determine if obstruction removal meets criteria for maintenance activity (WSDOT Region Maintenance) or capital project (competitive bid process).

Phase 3 – Permitting	
The Airport Manager will initiate the following processes for remediating the identifie obstructions if identifie as a capital project	
1	Coordinate with WSDOT Environmental Services to determine if removal would be exempt from environmental regulations.
2	Coordinate with local, state and federal jurisdictions, to determine permits and other requirements, as appropriate.
3	Coordinate with appropriate representatives and agencies to obtain appropriate environmental permits.
4	Obtain appropriate easements/access/right-of-entry permits.
5	Coordinate with other appropriate agencies having jurisdictional authority within the airport environment, including land owners.

Phase 4 – Construction	
The Airport Manager will initiate the following processes for remediating the identifie obstructions	
1	Determine if remediation can be removed by WSDOT or if a qualifie contractor should remove the obstruction.
2	If a qualifie contractor is required to remove the obstruction WSDOT shall conduct a competitive bid process or other type of agreement as required to comply with WSDOT contracting standards (WSDOT *Advertising and Award Manual* M 27-02), resulting in the selection of a qualifie contractor.
3	Service Agreement or On Call agreements may be easier for smaller projects
4	Conduct obstruction removal in compliance with established WSDOT standards, per WSDOT *Regional Roadway Maintenance Program Manual*.

Note: WSDOT Aviation must evaluate obstruction removal projects on an airport by airport basis as budget constraints and clearance requirements may adjust the priority level of such initiatives.

4.6 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

4.2 Describe the WSDOT Aviation Airfield Maintenance Guideline
• FAA AC 150/5200-30C, *Airport Winter Safety Operations*. FAA. 9 December 2008
• FAA AC 150/5340-26A, *Maintenance of Airport Visual Aid Facilities*. FAA. 4 April 2005
• FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*. FAA. 30 June 1999
• FAA AC 150/5380-6B, *Guidelines and Procedures for Maintenance of Airport Pavements*. FAA. 28 September 2007
• FAA AC 150/5340-1J, *Standards for Airport Markings*. FAA. 29 April 2005
• FAA AC 150/5345-39C, *Specification for L-853, Runway and Taxiway Retroreflective Markers*. FAA. 14 September 2006
• FAA AC 150/5340-5C, *Segmented Circle Airport Marker System*. FAA. 14 September 2007
• FAA AC 150/5345-27D, *Specification for Wind Cone Assemblies*. FAA. 2 June 2004

4.3 Describe the WSDOT Aviation Airport Maintenance Guidelines
• WSDOT *Regional Roadway Maintenance Program Manual* (RRMP) M 51-01 www.wsdot.wa.gov/publications/manuals/fulltext/m51-01/maintenance.pdf
• WSDOT *Aviation Stormwater Design Manual*, 9/15/2009 www.wsdot.wa.gov/aviation/airportstormwaterguidancemanual.htm
• WSDOT *Sign Fabrication Manual* M 55-05 www.wsdot.wa.gov/publications/manuals/m55-05.htm
• FAA AC 150/5340-18E, *Standards for Airport Sign Systems*, 09/12/08
• FAA AC 150/5360-12E, *Airport Signing and Graphics*, 09/18/08
• WSDOT *Design Manua*l M 22-01 www.wsdot.wa.gov/publications/manuals/m22-01.htm

4.4 What Are Vegetation Control Guidelines
• WSDOT *Regional Roadway Maintenance Program Manual* (RRMP) M 51-01 www.wsdot.wa.gov/publications/manuals/fulltext/m51-01/maintenance.pdf
• WSDOT *Design Manual* M 22-01 www.wsdot.wa.gov/publications/manuals/m22-01.htm
• WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction* M 41-10 www.wsdot.wa.gov/publications/manuals/m41-10.htm
• WSDOT *Airport Stormwater Guidance Manual* www.wsdot.wa.gov/aviation/airportstormwaterguidancemanual.htm

4.5 What Are the Obstruction Identification and Removal Practice
• Federal Air Regulation (FAR) Part 77 – *Objects Affecting Navigable Airspace*. FAA. 30 April, 2009
• FAA AC 150/5300-13, ch. 14, *Airport Design*. FAA. 1 November 2008
• FAA AC 70/7460-1K, *Obstruction Marking and Lighting*. FAA. 1 February, 2007
• FAA AC 150/5345-43F, *Specification for Obstruction Lighting Equipment*. FAA. 12 September, 2006
• FAA AC 150/5190-4A, *Model Zoning Ordinance to Limit Height of Objects Around Airports*. FAA. 14 December, 1987

Supporting Documentation

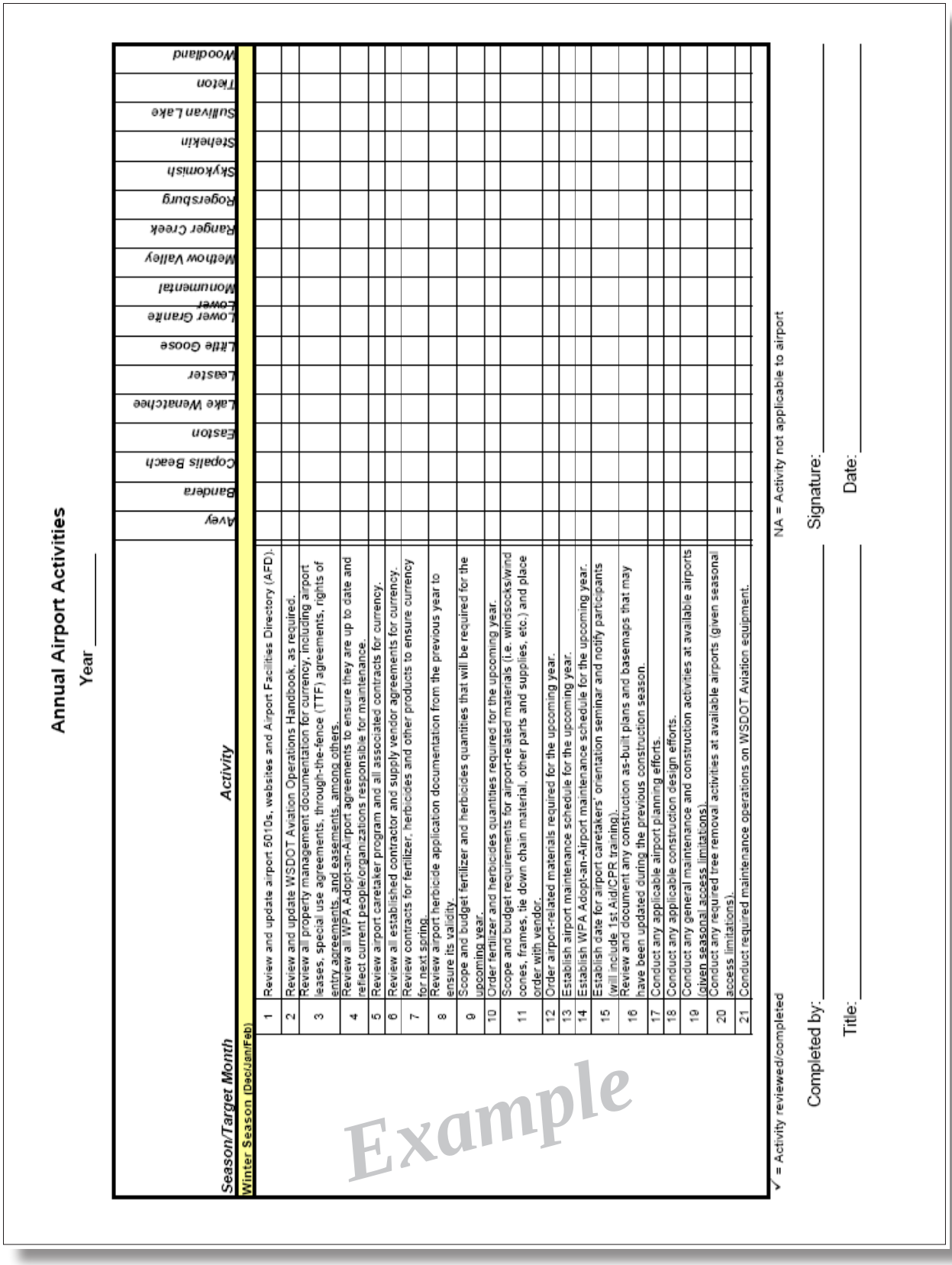
The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

4.1 Describe the WSDOT Aviation Airport Operational Procedures and Schedules
• Annual Airport Activities Form
• Airport Maintenance Inspection Form
• Seasonal Airport Opening Procedure Form
• Seasonal Airport Closing Procedure Form

4.2 Describe the WSDOT Aviation Airfield Maintenance Guideline
• WSDOT Aviation Pavement Management Plan

4.4 What Are Vegetation Control Guidelines
• Herbicides Approved for Use on WSDOT Rights of Way
• Vegetation Recommendations for Airport Settings

4.5 What Are the Obstruction Identification and Removal Practice
• FAA Form 7460-1



Annual Airport Activities

Year _____

Season/Target Month		Activity	Avey	Bandera	Copalis Beach	Easton	Lake Wenatchee	Leaster	Little Goose	Lower Granite Lower	Monumental	Methow Valley	Ranger Creek	Rogersburg	Skykomish	Stehekin	Sullivan Lake	Triton	Woodland
Winter Season (Dec/Jan/Feb)	1	Review and update airport 5010s, websites and Airport Facilities Directory (AFD).																	
	2	Review and update WSDOT Aviation Operations Handbook, as required.																	
	3	Review all property management documentation for currency, including airport leases, special use agreements, through-the-fence (TTF) agreements, rights of entry agreements, and easements, among others.																	
	4	Review all WPA Adopt-an-Airport agreements to ensure they are up to date and reflect current people/organizations responsible for maintenance.																	
	5	Review airport caretaker program and all associated contracts for currency.																	
	6	Review all established contractor and supply vendor agreements for currency.																	
	7	Review contracts for fertilizer, herbicides and other products to ensure currency for next spring.																	
	8	Review airport herbicide application documentation from the previous year to ensure its validity.																	
	9	Scope and budget fertilizer and herbicides quantities that will be required for the upcoming year.																	
	10	Order fertilizer and herbicides quantities required for the upcoming year.																	
	11	Scope and budget requirements for airport-related materials (i.e. windsocks/wind cones, frames, tie down chain material, other parts and supplies, etc.) and place order with vendor.																	
	12	Order airport-related materials required for the upcoming year.																	
	13	Establish airport maintenance schedule for the upcoming year.																	
	14	Establish WPA Adopt-an-Airport maintenance schedule for the upcoming year.																	
	15	Establish date for airport caretakers' orientation seminar and notify participants (will include 1st Aid/CPR training).																	
	16	Review and document any construction as-built plans and basemaps that may have been updated during the previous construction season.																	
	17	Conduct any applicable airport planning efforts.																	
	18	Conduct any applicable construction design efforts.																	
	19	Conduct any general maintenance and construction activities at available airports (given seasonal access limitations).																	
	20	Conduct any required tree removal activities at available airports (given seasonal access limitations).																	
	21	Conduct required maintenance operations on WSDOT Aviation equipment.																	

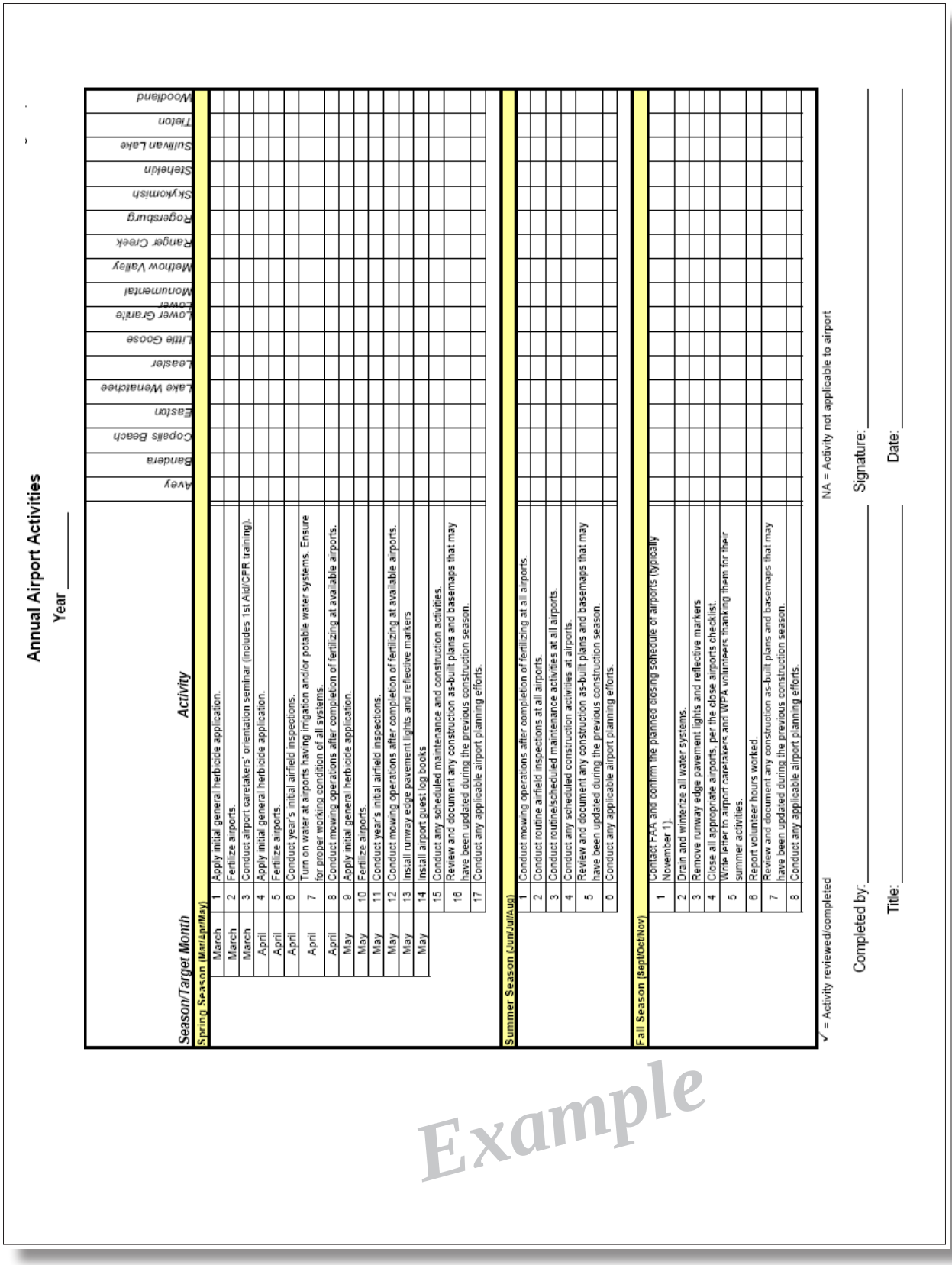
Example

✓ = Activity reviewed/completed NA = Activity not applicable to airport

Completed by: _____ Signature: _____

Title: _____ Date: _____

Annual Airport Activities Form



Annual Airport Activities Form

Airport Maintenance Inspection Form

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Inspection Type	Action Required	Action Due Date	Notes
Runway Surface				
Paved Runway *(condition, cracking, damage, sub-surface failures, weeds, debris, etc.)*	Visual			
Turf Runway *(grass length, weeds, debris, damage, erosion, rutting, rodents, etc.)*	Visual			
Gravel Runway *(condition, compaction, damage, erosion, rutting, weeds, etc.)*	Visual			
Additional Notes:				
Runway Obstructions				
Runway Approach Ends (use back of sheet for sketches of conditions)	Visual & Instrument			
Runway Area (use back of sheet for sketches of conditions)	Visual & Instrument			
Runway Sides (use back of sheet for sketches of conditions)	Visual & Instrument			
Additional Notes:				
Runway Critical Areas				
Runway Safety Areas (condition, debris, damage, erosion, rutting, etc.)	Visual			
Runway Object Free Areas (condition, obstructions, debris, etc.)	Visual			
Runway Obstacle Free Areas (condition, obstructions, debris, etc.)	Visual			
Additional Notes:				
Miscellaneous Runway Factors				
Runway Lights (condition, bulbs, damage, etc.)	Visual			
Runway Markers (condition, damage, etc.)	Visual			
Runway Paint Condition (condition, damage, fading, etc.)	Visual			
Additional Notes:				

Example

Airport Maintenance Inspection Form

Airport Maintenance Inspection Form

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Inspection Type	Action Required	Action Due Date	Notes
NAVAIDS				
Secmented Circle *(condition, damage, etc.)*	Visual			
Windsock Indicator *(condition, damage, etc.)*	Visual			
Weather Station *(condition, damage, etc.)*	Visual & Operational			
Aircraft Transceiver (radio) & Antenna	Visual & Operational			
Additional Notes:				
Other Airfield Facilities				
Paved Taxiway *(condition, cracking, damage, sub-surface failures, weeds, debris, etc.)*	Visual			
Turf/Gravel Taxiway *(grass length, compaction, weeds, debris, damage, erosion, rutting, etc.)*	Visual			
Paved Aircraft Parking *(condition, cracking, damage, sub-surface failures, weeds, tiedowns, etc.)*	Visual			
Turf/Gravel Aircraft Parking *(grass length, compaction, weeds, debris, damage, erosion, rutting, etc.)*	Visual			
Aircraft Hangars (condition, damage, etc.)	Visual			
Additional Notes:				
Other Airport Facilities				
Drainage Facilities (culverts, ditches, etc.)	Visual			
Fences, Gates & Guard Rails (condition, damage, etc.)	Visual			
Airport Buildings (condition, damage, etc.)	Visual			
Access Road / Parking Area (condition, damage, etc.)	Visual			
Signage (condition, damage, etc.)	Visual			
Misc Airport Items (cameras, guest books, etc.)	Visual & Operational			
Irragation System (condition, damage, etc.)	Visual & Operational			
Additional Notes:				

Example

Airport Maintenance Inspection Form

Airport Maintenance Inspection Form

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Inspection Type	Action Required	Action Due Date	Notes
Miscellaneous				
Public (potable) Water System *(condition, damage, etc.)*	Visual & Operational			
Public Restrooms *(condition, damage, etc.)*	Visual & Operational			
Campground Facilities (tables, fire pits, bbq stands, etc.) *(condition, damage, etc.)*	Visual & Operational			
Telephone (public and private) *(condition, damage, etc.)*	Visual & Operational			
Miscellaneous Equipment	Visual & Operational			
Projects	Visual			
Additional Notes:				

This completed form is to be submitted to the WSDOT Aviation Airport Manager for review and filing.

Example

Airport Maintenance Inspection Form

Seasonal Airport Opening Procedure Form

(This form is to be filled out and attached to the standard airport inspection form when seasonal airports are opened.)

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Notes
Conduct Standard Airport Maintenance Inspection	
Preform General Airport Area Clean-Up	
Activate Irrigation System (if appropriate)	
Additional Notes:	

This completed form is to be submitted to the WSDOT Aviation Airport Manager for review and filing.

Example

Seasonal Airport Opening Procedure Form

Seasonal Airport Closing Procedure Form

(This form is to be filled out and attached to the standard airport inspection form when seasonal airports are opened.)

Airport: _____

Inspection Date: _____

Inspector's Name: _____

Item	Notes
Conduct Standard Airport Inspection	
Preform General Airport Area Clean-Up	
Store or secure any aircraft tie-down equipment.	
Remove and store runway markers (if appropriate)	
Cover or store any recreational equipment which may be damaged during winter storms.	
Remove any remaining trash from the disposal facilities	
Follow the procedures for the fall-shut down checklist for sprinkler systems (if appropriate)	
Store and secure all airport maintenance equipment.	
Identifiy any replacement materials needed for airport repairs to open the next season.	
Additional Notes:	

This completed form is to be submitted to the WSDOT Aviation Airport Manager for review and filing.

Example

Seasonal Airport Opening Procedure Form

Chapter 5 Airport Construction Guidelines

In This Chapter
• What are the standard procedures for initiating a construction project at the state-managed airports? • What are the airport security guidelines? • What are some of the specifi design requirements for airside facilities on the airports? • What are some of the specifi design requirements for landside facilities on the airports? • How do we deal with vegetation on the state-managed airports? • Where can more information about these topics be found?

As the Washington State Department of Transportation (WSDOT) continues to improve its existing infrastructure and services, the department must be mindful of local, state, and federal considerations and requirements. Construction and alteration guidelines applicable to WSDOT's state-managed airports are discussed within the following sections in this chapter. Reference material and specific procedures are clearly noted.

It should also be noted that the WSDOT Aviation Airport Manager (referred to herein as the Airport Manager) has the ultimate responsibility for ensuring that the sections within this chapter are practiced, maintained and updated.

Additionally, it is important to note that construction on and around the state-managed airports could require construction permits, environmental permits, etc. As such, it is critical that prior to any construction project occurring at any of the state-managed airports, the Airport Manager must coordinate with the WSDOT Aviation Planner and WSDOT Environmental Services to ensure that all required permits are considered and appropriately obtained.

Section Contents

Make Sure

- Check that the sections are current!
- Do they need to be updated?

Key Section Dates

Information is only as good as its current relevance. Therefore, it is important that the information contained within this chapter be updated on a regular basis to ensure that it remains appropriate to current conditions. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
5.1 What Are WSDOT Aviation's General Design Development Considerations	7/1/10	6/1/11
5.2 What Are the Airport Security Design Guidelines	7/1/10	6/1/11
5.3 What Are the Airport Design Guidelines for Airside Facilities	7/1/10	6/1/11
5.4 What Are the Airport Design Guidelines for Landside Facilities	7/1/10	6/1/11
5.5 What Are the Airport Vegetation Design Guidelines	7/1/10	6/1/11
5.6 What Are the Airport Aids to Airman Design Guidelines	7/1/10	6/1/11
5.7 Chapter References and Supporting Documentation	NA	

5.1 What Are WSDOT Aviation's General Design Development Considerations

Construction activities on and around the state-managed airports involve a number of processes and considerations that must be examined as part of any WSDOT Aviation project. This section generally describes or provides references for key considerations involved in construction activities.

WSDOT Aviation Standard Procedures
1. Project Scoping
Scoping of a construction project requires a thorough review by WSDOT Aviation. Specifi details related to project scoping procedures can be found under Section 7.4.
2. Purchasing and Procurement
Any construction-related purchasing or procurement related to a construction scope of work shall abide by standard WSDOT Aviation procedures. Specifi details related to purchasing and procurement can be found under Section 7.4.
3. Environmental Considerations
All construction projects shall appropriately consider relevant environmental factors per WSDOT Aviation requirements. Specifi details related to environmental considerations can be found under Section 6.3.

4. Building Construction or Modification

Compliance with all building construction or modificatio will meet the standards and requirements of RCW 19.27.031 to include:

a. (1) The International Building Code, published by the International Code Council[,] Inc.

(2) The International Residential Code, published by the International Code Council, Inc.

b. The International Mechanical Code, published by the International Code Council[,] Inc., except that the standards for liquifie petroleum gas installations shall be NFPA 58 (Storage and Handling of Liquifie Petroleum Gases) and ANSI Z223.1/ NFPA 54 (National Fuel Gas Code).

c. The International Fire Code, published by the International Code Council[,] Inc., including those standards of the National Fire Protection Association specificall referenced in the International Fire Code: PROVIDED, That, notwithstanding any wording in this code, participants in religious ceremonies shall not be precluded from carrying hand-held candles.

d. Except as provided in RCW 19.27.170, the Uniform Plumbing Code and Uniform Plumbing Code Standards, published by the International Association of Plumbing and Mechanical Officials PROVIDED, That any provisions of such code affecting sewers or fuel gas piping are not adopted.

e. The rules adopted by the council establishing standards for making buildings and facilities accessible to and usable by the physically disabled or elderly persons as provided in RCW 70.92.100 through 70.92.160. In case of conflic among the codes enumerated in subsections a., b., c., and d. of this section, the firs named code shall govern over those following.

5. Electrical Work, Maintenance, and Installation

All electrical work, apparatus, maintenance, and installations shall meet the requirements of WAC 296-46B. All electrical work performed shall also be inspected by the WA Dept of L&I or local authority having jurisdiction.

6. Specifications Overview

WSDOT Aviation does not have any state-managed airport-specifi construction specification or requirements currently established. This is due primarily to the fact that there are multiple federal, state, and industry resources currently available for such specification and that these types of specification can change rapidly, given the constantly evolving airport regulatory environment. As such, WSDOT Aviation has elected to utilize current federal, state and industry specification to the greatest extent possible; this is reflecte in the following sections of this chapter. If appropriate specification are not available from any of these resources, WSDOT Aviation will establish additional specification on an as-needed basis.

The following sections within this chapter contain references to appropriate construction specifications *Note:* Unless there is a specifi WSDOT Aviation specificatio established, employment of the specification listings will be at the discretion of WSDOT Aviation.

7. General Standardized Engineering Drawings

The WSDOT Design Standards Team provides graphical support and develops and maintains *Standard Plans* M 21-01 and a Plan Sheet Library. These support documents contain general standardized engineering drawings for a range of applications including fence and sign installation, drainage structures and roadways. Each drawing has been prepared under the direct supervision of a professional engineer, licensed in the state of Washington, knowledgeable in the specialized fiel of civil engineering depicted in that drawing. The Washington State Department of Transportation (WSDOT) makes these documents available on an “as is” basis. All warranties and representations of any kind with regard to said documents are disclaimed, including the implied warranties of merchantability and fitnes for a particular use. All CAD file were created with Bentley MicroStation (*.dgn files) WSDOT does not warrant the documents against deficiencie of any kind. Although the *Standard Plans* and Plan Sheet Library do not include specifi airport-related construction drawings, this is a resource that should be reviewed by WSDOT Aviation when developing construction plans and projects.

5.2 What Are the Airport Security Design Guidelines

In order to provide airport users with safe and secure facilities, careful attention should be made regarding the design of access controls such as perimeter fencing and gates. It is important for WSDOT Aviation to utilize specific procedures in determining the type, size, and number of access controls (fencing and gates) at their airports. ***Note:*** The type and extent of these controls will be dependent on the type of airport, its location, and the perceived security risk.

State-managed airports that are included in the FAA National Plan of Integrated Airport Systems (NPIAS) are obligated to abide by FAA design specifications, as reflected below. While it would be ideal for the non-NPIAS state-managed airports to abide by the same requirements, this is not always practicable. As such, some additional WSDOT Aviation design specifications are provided below.

Note: All construction related to airport security shall be consistent with the WSDOT Airport Security Guidelines and applicable airport security plan developed pursuant to Section 3.6.

Wildlife and Security Fencing

Wildlife and security fencing, the most common means of securing an airport perimeter, can vary in design, height, and type depending on airport needs. Typically, fences are low-maintenance, provide clear visibility, and can be installed in almost any environment. Barbed wire, razor wire, and other available features increase intrusion difficulty.

While fencing is normally the most effective physical barrier for securing the airside, fencing an entire perimeter may not be economically feasible or even necessary for many airports. Partial fencing of sensitive areas such as the terminal area, aircraft storage, or maintenance areas may be more appropriate and can prove to be just as effective. The physical security barrier provided by a fence provides the functions listed in the following table.

Wildlife and Security Fencing Primary Functions	
A	Gives notice of the legal boundary of the outermost limits of a facility or security sensitive area.
B	Assists in controlling wildlife intrusion and or screening authorized entries into a secured area by deterring entry elsewhere along the boundary.
C	Supports surveillance, detection, assessment, and other functions by providing a zone for installing detection equipment and closed-circuit television (CCTV).
D	Deters wildlife and/or casual intruders from penetrating a secured area by presenting a barrier to the airfield
E	For security it demonstrates the intent of an intruder by their overt action of gaining entry.
F	Creates a psychological deterrent.
G	Demonstrates a corporate concern for facility security.
H	Provides a cost effective method of protecting facilities.

Following are fencing features that address wildlife and/or enhance security.

Security Fencing Enhancements	
A	***Height*** – The higher the barrier, the more difficul and time consuming to breach.
B	***Barbed Wire*** – Adding barbed wire at the top of the fence increases the level of difficult .
C	***Eliminating Handholds*** – Omitting a rail at the top of the fence makes the fence more difficul to climb.
D	***Burying the Bottom of the Fencing*** – Eliminates the possibility of forcing the mesh up so that wildlife or individuals can crawl under.
E	***Signage*** – Installed along the fence line, signs are important to indicate private secured areas and the presence of security patrols, alarms, or monitoring systems.
F	***Clear Areas*** – Security effectiveness of perimeter fencing is materially improved by the provision of clear areas on both sides of the fence, particularly in the vicinity of the terminal and any other critical facilities. Such clearance areas facilitate surveillance and maintenance of fencing and deny cover to wildlife and trespassers. Suggested clear distances range from 10 to 30 feet, within which there should be no climbable objects, trees, or utility poles abutting the fence line nor areas for stackable crates, pallets, storage containers, or other materials. Likewise, the parking of vehicles along the fence should also be minimized. In addition, landscaping within the clear area should be minimized or eliminated to reduce potential hidden locations for persons, objects, fence damage, and vandalism.

For the purposes of constructing security fencing at state-managed airports, WSDOT Aviation shall utilize the design specifications detailed in FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item F-162 – *Chain Link Fences*. For wildlife issues, WSDOT Aviation should consult with the USDA and other wildlife agencies on the best method to wildlife impacts to the airport.

Access Points/Gates

Access points for personnel and vehicles through security fencing and lines, such as gates, doors, and electronically controlled or monitored access points should not only be able to control or prevent access, but also the number of access points should be minimized for both security and cost efficiency. As may be appropriate for the security plans/requirements for each of the individual state-managed airports, the following provides general construction guidance for access gates.

Gates are the only moveable part of a fence and therefore should be properly constructed with appropriate fittings. Gates should be constructed and installed to the same or greater standard of security as any adjacent fencing in order to maintain the integrity of the area. All gates should have self-closures and be equipped so that they can be secured should enhanced security conditions require it. All gates should be sufficiently lighted. Swing gate hinges should be of the non-liftoff type or provided with additional welding to prevent the gates from being removed. Security provided by gates can be improved if they are designed and installed with no more than 4 to 6 inches of ground clearance beneath the gate and minimal gaps on both sides of the gate.

For vehicle access, limiting the size of the opening increases security, reduces the possibility of one vehicle passing another and shortens the open close cycle time. The cantilever slide gate is the most effective for vehicle security, especially one that is electrically operated and tied into an access control system.

Pedestrian/personnel gates can be constructed using a basic padlock or designed with an electrical or mechanical lock or a keypad/card key system tied into an access control system. Pre-hung pedestrian gates/portals installed independent of the fence line are available to isolate the gate from fence lines containing sensor systems, thus reducing possible false alarms.

For the purposes of constructing access gates at the state-managed airports, WSDOT Aviation shall utilize the design specifications detailed in FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item F-162 – *Chain Link Fence*s.

Guardrails

WSDOT Aviation will also utilize guardrails as another means of establishing a security perimeter around the state-managed airports. Due to the remote nature of many of these airports, the cost/benefit of security fencing construction and maintenance is sometimes deemed to be excessive. Under such circumstances, WSDOT Aviation has elected to utilize guardrails as a means of establishing a perimeter that prevents access to unauthorized vehicles to the airport. These have proven to be particularly effective in preventing access to vehicles that are common within these remote areas (i.e., four-wheel drive trucks, all-terrain vehicles, motorcycles) and that have occasionally been found to be operating on state-managed airport property.

For the purposes of constructing guardrails at the state-managed airports, WSDOT Aviation shall utilize the design specifications detailed in WSDOT *Design Manual* M 22-01.

5.3 What Are the Airport Design Guidelines for Airside Facilities

This section includes design guidelines applied to the construction and alteration of facilities directly tied to aircraft operations on the airfield itself, including the following:

- Airfield Surface Design and Grades
- Runway and Taxiway Surfaces (Pavement)
- Runway and Taxiway Surfaces (Turf and Gravel)
- Runway Marking
- Runway Lighting
- Runway Markers

- Additional Visual Aids for Airmen
- Aircraft Parking and Tie-Downs
- Heliports

Airfield Surface Design and Grades

The layout and design of the various airport surfaces are subject to the standards established within FAA AC 150/5300-13, *Airport Design*. WSDOT Aviation shall utilize this standard for all NPIAS state-managed airports. For those non-NPIAS state-managed airports, WSDOT Aviation will utilize those FAA standards to the greatest extend practicable. Questions related to the FAA standards applicability to non-NPIAS state-managed airports will be resolved through coordination with the Airport Manager, the WSDOT Aviation Planner, as well as all other relevant WSDOT Aviation stakeholders.

Surface gradient standards include standards for runway and runway safety area grades, taxiway and taxiway safety area grades, apron grades, and line of sight. WSDOT Aviation utilizes the standards established within FAA AC 150/5300-13, *Airport Design*, which are generally discussed in the following table.

WSDOT Aviation Standard Procedures
1. Runway Grades
The current longitudinal and transverse gradient standards for runways are presented below. • The maximum longitudinal grade is +2 percent. It is desirable to keep longitudinal grades to a minimum. • The maximum allowable grade change is +2 percent. Use longitudinal grade changes only when absolutely necessary. • Vertical curves for longitudinal grade changes are parabolic. The length of the vertical curve is a minimum of 300 feet for each 1 percent of change. No vertical curve is necessary when the grade change is less than 0.4 percent. • The minimum allowable distance between the points of intersection of vertical curves is 250 feet multiplied by the sum of the grade changes (in percent) associated with the two vertical curves. • Figures are presented within FAA AC 150/5300-13 that reflec the maximum and minimum transverse grades for runways. In all cases, transverse grades must be kept to a minimum, but consistent with local drainage requirements.

2. Runway Safety Area Grades

Longitudinal grades, longitudinal grade changes, vertical curves, and distance between changes in grades for that part of the runway safety area between the runway ends are the same as the comparable standards for the runway. Exceptions are allowed when necessary because of taxiways within the area. In such cases, modify the longitudinal grades of the runway safety area by the use of smooth curves. For the firs 200 feet of the runway safety area beyond the runway ends, the longitudinal grade is between 0 and 3 percent, with any slope being downward from the ends. For the remainder of the safety area, the maximum longitudinal grade is such that no part of the runway safety area penetrates the approach surface. The maximum allowable negative grade is 5 percent. Limitations on longitudinal grade changes are plus or minus 2 percent per 100 feet. Use parabolic vertical curves where practical.

3. Taxiway and Taxiway Safety Area Grades

The longitudinal and transverse gradient standards for taxiways and taxiway safety areas are as follows:

- The maximum longitudinal grade is 2 percent. Minimum longitudinal grades are desirable.
- Avoid changes in longitudinal grades unless no other reasonable alternative is available. The maximum longitudinal grade change is 3 percent.
- When longitudinal grade changes are necessary, the vertical curves are parabolic. The minimum length of the vertical curve is 100 feet (30 m) for each 1 percent of change. The minimum distance between points of intersection of vertical curves is 100 feet (30 m) multiplied by the sum of the grade changes (in percent) associated with the two vertical curves.
- At any point on a taxiway centerline, the allowable difference in elevation between the taxiway and the corresponding point on the associated runway is 1.5 percent of the shortest distance between the points.
- Figures are presented within FAA AC 150/5300-13, *Airport Design*, that reflec the maximum and minimum transverse grades for taxiways and taxiway safety areas. In all cases, transverse grades must be kept to a minimum, but consistent with local drainage requirements.

4. Aprons

To ease aircraft towing and taxiing, apron grades should be at a minimum, consistent with local drainage requirements. The maximum allowable grade in any direction is 2 percent. Where possible, design apron grades to direct drainage away from any building, especially in fueling areas.

5. Runway Line of Sight

An acceptable runway profil permits any two points fiv feet above the runway centerline to be mutually visible for the entire runway length. However, if the runway has a full length parallel taxiway, the runway profil may be such that an unobstructed line of sight will exist from any point fiv feet above the runway centerline to any other point fiv feet above the runway centerline for one-half the runway length.

6. Taxiway Line of Sight
There are no line of sight requirements for taxiways. However, the sight distance along a runway from an intersecting taxiway needs to be sufficien to allow a taxiing aircraft to enter safely or cross the runway.

Runway and Taxiway Surfaces (Pavement)

Runway and taxiway pavements can be designed using the American Association of State Highway and Transportation Officials (AASHTO) or FAA methodologies. Specifically, the FAA design methodology employs design curves in FAA AC 150/5320-6, *Airport Pavement Design and Evaluation*, the FAA pavement design computer program, *Flexible Pavement Design*, and FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*.

WSDOT Aviation will utilize the FAA methodology, specifications and standard materials for all NPIAS state-managed airports. For the non-NPIAS state-managed airports, WSDOT Aviation will utilize the FAA design methodology, but will utilize AASHTO/WSDOT standard materials. This has been decided since aircraft design weights can be used directly without converting from highway axle loads to aircraft loads. Additionally, the FAA methodology is less complex and easier to use. However, pavements designed using the FAA methodology while utilizing AASHTO/WSDOT standard materials will require the following thickness adjustments.

Thickness Adjustment for WSDOT Materials	
Aircraft Weight Category	Recommended Equivalent Pavement Section when using State Highway Materials and Specification
12,500 lb. and Under	• AC = FAA design thickness plus ¼ inch • 50-blow Marshall equivalent • Base = FAA design thickness plus 1 inch • Subbase = thickness required to meet FAA design total thickness

Also note that there are several inputs into the AASHTO methodology that are not easily obtained for airport design.

Pavement Design for Grant Application

The following table considers pavement sections for three different soil conditions: poor, average, and good. Poor soils would have a California Bearing Ratio (CBR) of 3 and would be characterized as fine graded, clay and organic

soils, poorly drained and very susceptible to moisture. Average soils would have a CBR of 7, would consist of sandy silt, and would be somewhat poorly drained. Good soils would have a CBR of 13, would be fairly well drained and would consist of silty, gravelly sand. This table can be used to approximate a pavement design section for preliminary cost estimating and grant application purposes.

Estimating Pavement Section Thickness for Grant Application Purposes			
Design Weight	***Soil Bearing Capability***	***Pavement Section***	
12,500 lb. (SWG)	3	WSDOT Class B Asphalt	2¼ inches
		WSDOT Crushed Surfacing Base Course	14 inches
	7	WSDOT Class B Asphalt	2¼ inches
		WSDOT Crushed Surfacing Base Course	9 inches
	13	WSDOT Class B Asphalt	2¼ inches
		WSDOT Crushed Surfacing Base Course	6 inches

Contract Document Pavement Design

Design of airfield pavement is a complex process that includes design considerations that vary widely and interact with and affect each other. Pavement sections for contract and construction purposes therefore need to be designed by a professional engineer with experience in airfield pavement design.

There may be loads on the pavement that are more demanding than the 12,500 lb. aircraft loads, such as snow plows and emergency vehicles. If this is the case, the pavement must be designed for these heavier loads.

It is also important to take seasonal frost effects into account in the pavement design. The designer should refer to FAA AC 150/5320-6, *Airport Pavement Design and Evaluation*, for seasonal frost considerations.

Runway and Taxiway Surfaces (Turf and Gravel)

Most of the state-managed airports are based on turf or gravel/aggregate runway and taxiway surfaces. Due to the unique nature of these surfaces and their associated uses, WSDOT Aviation will utilize FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item P-217, *Aggregate-Turf Pavement*, for all such runway and taxiway construction design specifications.

Runway Pavement Markings

WSDOT Aviation will utilize the most current FAA standards for pavement markings with respect to the state-managed airports. FAA AC 150/5340-1J, *Standards for Airport Markings*, provides the standards for surface markings used on paved airfield pavements (runways, taxiways, aprons) and paved airfield roadways. The promulgated standards for the surface markings assume that runways, taxiways, and aprons are built in accordance to the dimensions and layouts (e.g., clearances, fillets) in FAA AC 150/5300-13, *Airport Design*. Otherwise, the Airport Manager should expect difficulties when painting surface markings on non-standard infrastructure, such as a runway with a non-standard width. To offer assistance to airport operators, this advisory circular offers workable solutions for a few situations. ***Note:*** FAA also intends to establish surface markings for unpaved airfield runways in additional chapters at a future date.

Runway Lighting

WSDOT Aviation will utilize the most current FAA standards for runway lighting with respect to those state-managed airports that have runway lighting. Specifically, lighting fixtures utilized on the state-managed airports shall comply with the requirements of FAA AC 150/5345-46, *Specification for Runway and Taxiway Light Fixtures*. Any such lighting fixtures at any of state-managed airports shall be installed in compliance with FAA AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*, as well as FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*.

It should be noted that compliance with these advisory circulars is the standard goal of WSDOT Aviation with respect to the state-managed airports. However, it is also understood that achieving this goal at some of these airports may not be deemed to be practicable. Therefore, under those circumstances, the Airport Manager shall coordinate with the WSDOT Aviation Planner and Airport Engineer to establish a reasonable alternative.

Runway Markers

Those state-managed airports without a runway lighting system utilize runway retroreflective markers instead. For those airports with runway markers, WSDOT Aviation will utilize the most current FAA standards for runway retroreflective markers, FAA AC 150/5345-39, *Specification L-853, Runway and Taxiway Retroreflective Markers*.

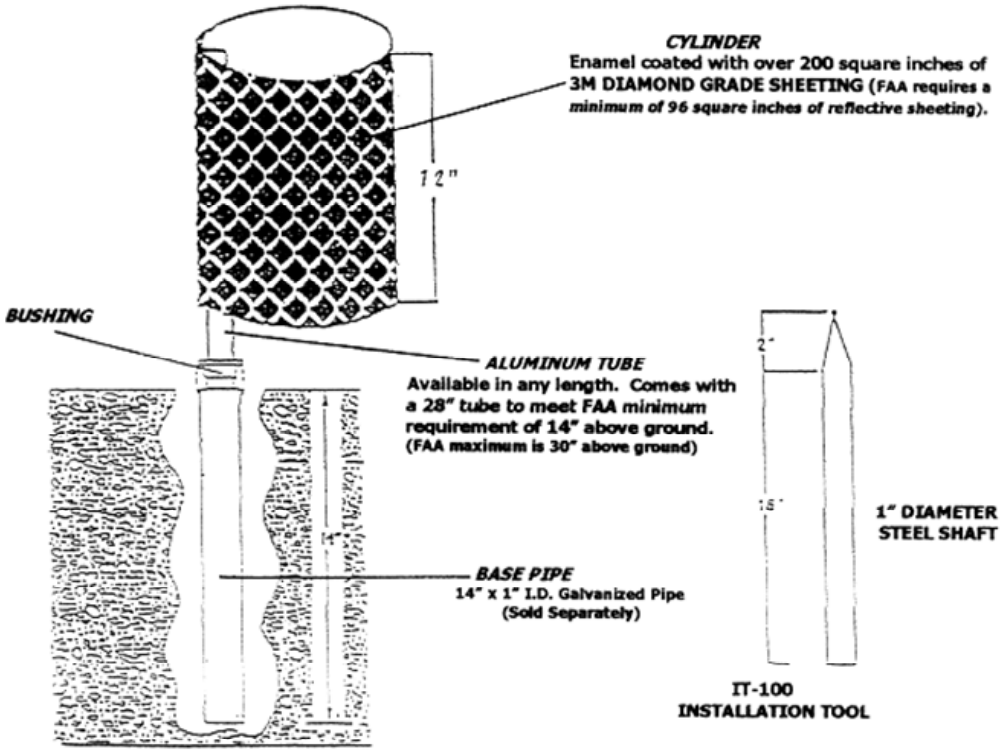
Specifically, WSDOT Aviation has adopted the following marker as being the standard for the state-managed airports:

AR100 Retroreflective Airport Marker L-853
Valley Illuminators
PO Box 3001
Federal Way, WA 98063-3001
Phone: 253-833-3016
Fax: 253-735-5414

The following figure provides a description of the standard installation procedure for these markers. It should be noted that several of the state-managed airports still utilize older, large wooden markers on their runways. WSDOT Aviation is currently in the process of eliminating those wooden markers and will replace them with the AR100 Retroreflective Airport Marker L-853.

Retroreflective Airport Marker Installation

VALLEY ILLUMINATORS
AR-100 RETROREFLECTIVE MARKER INSTALLATION
L-853



THE BASE PIPE IS EASILY INSTALLED, USING THE IT-100 INSTALLATION TOOL. MOST SURFACES CAN BE EASILY PENETRATED, EITHER DRIVING IT WITH A SLEDGE HAMMER OR WITH THE AID OF AN AIR HAMMER. SIMPLY INSERT THE TOOL IN THE BASE PIPE AND DRIVE THEM BOTH INTO THE GROUND AT THE SAME TIME. REMOVE THE INSTALLATION TOOL AND PUT ASSEMBLED ILLUMINATOR AND BUSHING IN BASE PIPE.

USING 3 STAINLESS STEEL NUTS, BOLTS AND WASHERS, ATTACH THE CYLINDER TO THE ALUMINUM TUBE BY LINING UP THE 3 PRE-DRILLED AND PRE-PUNCHED HOLES IN CYLINDER AND ALUMINUM TUBE, SLIP ON BUSHING AND SET IN BASE PIPE. THE BUSHING ALLOWS THE ILLUMINATOR TO WEATHERVANE, OR ROTATE RELATIVE TO WIND DIRECTION AND JET BLAST. THE ALUMINUM TUBE ACTS AS THE BREAKAWAY COUPLING, DESIGNED TO FLATTEN, RATHER THAN SPREAD DEBRIS (FOD) ON THE AIRPORT.

THERE WILL BE 1 TO 2 FULLY ASSEMBLED REFLECTORS IN EVERY BOX TO USE AS A VISUAL AID OR FIELD GUIDE. REFLECTORS ARE SHIPPED 25 PER BOX WITH 2 FULLY ASSEMBLED AND 23 UNASSEMBLED.

Additional Visual Aids for Airmen

At the state-managed airports, additional visual aids for airmen generally include wind cones and segmented circles.

Wind Cones

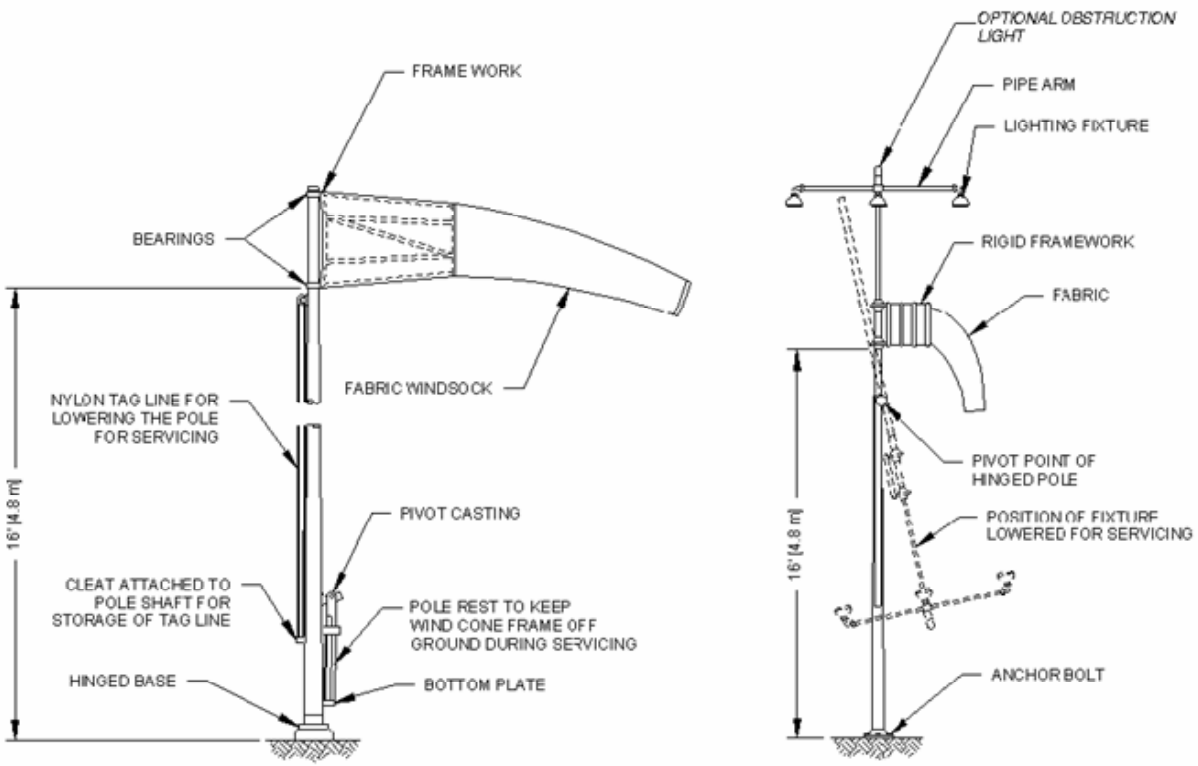
Wind cones are used to visually indicate wind direction at airports and heliports and can include both a primary wind cone, as well as supplemental wind cones (depending on the local need and wind variability). ***Note:*** The primary wind cone should be installed so that it is readily visible to pilots and will likely be located within a segmented circle. In addition, the primary wind cone should be installed so there is no conflict with airport design criteria requirements in FAA AC 150/5300-13, *Airport Design*, or CFR Part 77, *Objects Affecting Navigable Airspace*.

WSDOT Aviation will utilize the current FAA specifications and requirements for the installation of wind cones as detailed in included in the following:

- FAA AC 150/5340-30D, *Design and Installation Details for Airport Visual Aids*
- FAA AC 150/5345-27D, *Specification for Wind Cone Assemblies*

Locally fabricated or commercially available supplemental wind cones may be used, provided they meet the criteria in FAA AC 150/5345-27. For reference purposes, the following figure represents a typical wind cone installation as currently defined by the FAA.

Typical Wind Cone Installation (L-807)

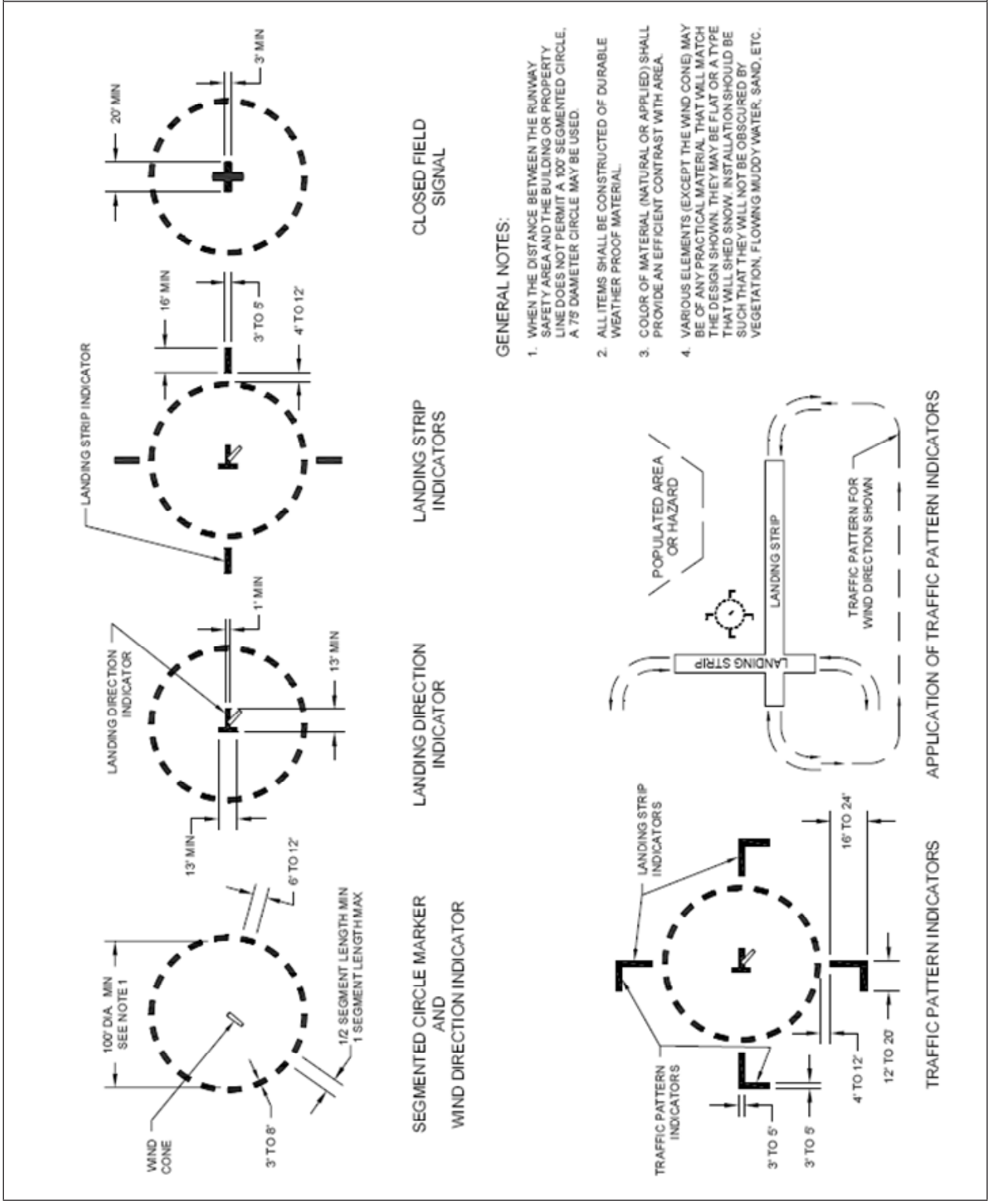


Segmented Circle Airport Marker System

Segmented circles provide for a minimum installation consisting of a segmented circle located off the traffic area with a conventional wind cone located at its center. To this minimum installation, other pilot aids and traffic control devices are added as required to meet the conditions existing at a particular airport. The types of devices to be used, the purpose they must serve, and their construction and installation must be as described in the following table.

WSDOT Aviation Standard Procedures
Segmented Circle
The segmented circle is the basic element of the system and performs two primary functions: it aids the pilot in locating obscure airports, and it provides a centralized location for such indicators and signal devices as may be required on a particular airport. Installation of the circle should be in a position that affords maximum visibility to pilots in the air and on the ground. Segmentation of the circle is necessary so that from a reasonable distance it can be readily distinguished from a solid circle, which is sometimes used to mark the center of a landing area. (See figur below for standard installation description.)
Wind Direction Indicator
Install a conventional wind cone (as described above and shown below) to be used as the wind direction indicator.
Landing Direction Indicator
When conditions at an airport warrant its use, install a landing direction indicator, as located on the drawing, for the purpose of showing pilots in the air and on the ground the direction in which landings and takeoffs are to be made. This indicator may be so designed that it can be made free-swinging when left unattended.
Landing Strip Indicators
Landing strip indicators are used to show the orientation of landing strips and/or to give a positive indication of the strip specifie for use. When used, they must be arranged in pairs as shown on the drawing.
Traffic Pattern Indicators
Install these indicators for the purpose of controlling the direction of the traffi pattern when there is any variation from the normal left-hand pattern. When the traffi pattern indicators are included in an installation, they must be arranged in pairs in conjunction with landing strip indicators.
Right-Turn Indicators
The use of the segmented circle airport marker system is encouraged.
Closed Field Signal
Place panels in the center of the circle in the form of a cross to signify that a fiel is permanently closed to all traffic When this signal is used, the wind cone and the landing direction indicator are removed from the circle. Other indicators may remain in place.

Segmented Circle Installations



WSDOT Aviation shall utilize the specifications and requirements for the installation of segmented circles at the state-managed airports as detailed by FAA AC 150/5340-5C, *Segmented Circle Airport Marker System*.

Aircraft Parking and Tie-Downs

As noted above, the design and layout of aircraft parking areas shall be dictated by the requirements of FAA AC 150/5300-13, *Airport Design*. Additionally, surface grades and surface construction shall reflect those of runways and taxiways, described above.

With respect to the furnishing and installing aircraft tie-down anchors, these assemblies shall have a minimum tensile breaking strength of 6,000 pounds and minimum field pull-out capacity of 3,000 pounds. Each anchor assembly shall include a 1½-inch inside diameter by ⅜-inch lap link connector attached to a ⅜-inch galvanized chain.

- Soil anchors shall be Duckbill model 88-DB1 or Manta Ray model MR-88, as manufactured by Foresight Products, Commerce City, CO, or an approved equal.
- Rock anchors shall be ½-inch diameter Williams Solid Bar Spin Lock Rock Bolts, Williams Titan Injection Anchor 30/16, or an approved equal.
- Temporary tie-down anchors shall provide a minimum 500 pounds of resistance to uplift per anchor.

See following graphic for example of typical tiedown installation.

Tie-Down Anchors (Typical)

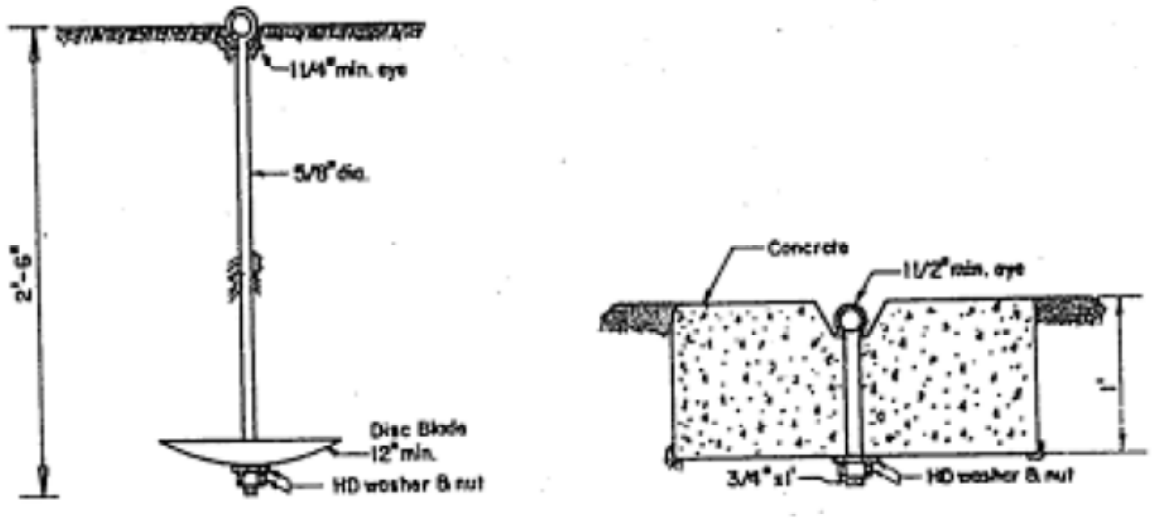


FIGURE E-4

Heliports

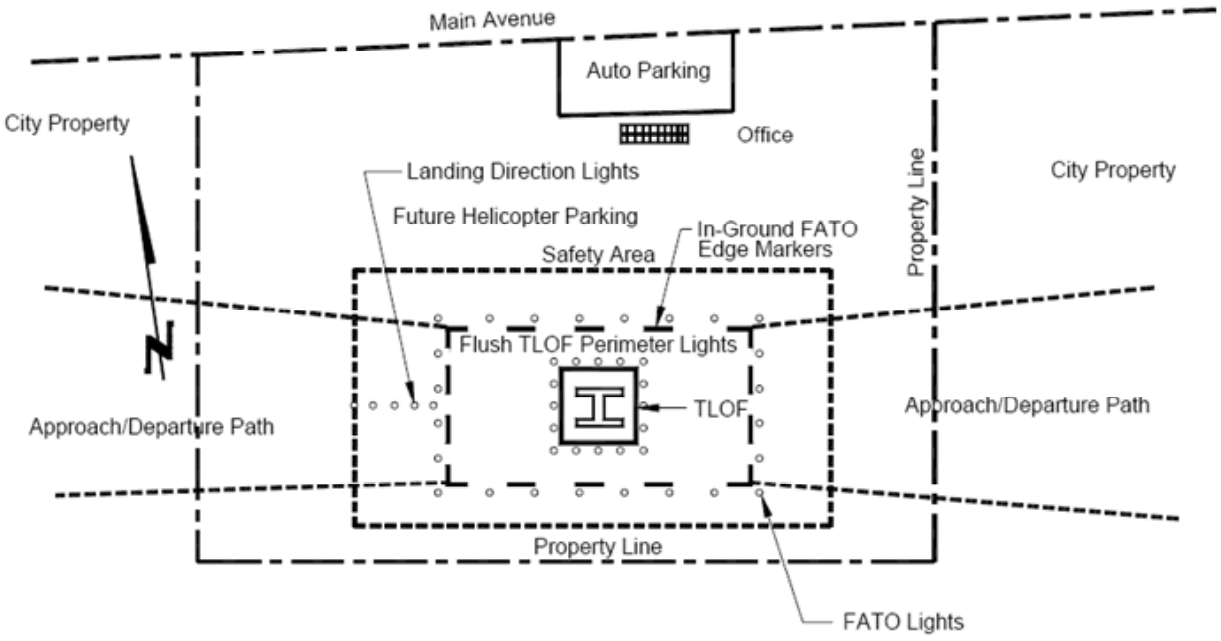
A heliport is defined as an area of land, water, or a structure used or intended to be used for the landing and takeoff of helicopters, together with appurtenant buildings and facilities. Heliports are frequently co-located with airports, since they share many of the same characteristics and requirements needed to accommodate aircraft. This is the case with the state-managed airport system where WSDOT Aviation, as required and appropriate, will typically designate specific areas on a given airport for helicopter operations.

Heliport design and construction requriements for the state-managed airport system should follow the specifications detailed in FAA AC 150/5390-2, *Heliport Design*, to the greatest extent practicable. Similar to aiports and runways, heliports have a variety of setback standards and airspace requirements (see Chapter 6 for WSDOT Aviation heliport design standard dimensions). For the purposes of this section, three of the primary heliport design components are defined below:

- **Touchdown and Lift-off Area (TLOF)** – A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.
- **Final Approach and Takeoff Area (FATO)** – A defined area over which the final phase of the approach to a hover, or a landing is completed and from which the takeoff is initiated.
- **Safety Area** – A defined area on a heliport surrounding the FATO intended to reduce the risk of damage to helicopters accidentally diverging from the FATO. This area should be free of objects, other than those frangible mounted objects required for air navigation purposes.

The following figure provides an example of a typical heliport design.

Example Heliport Layout



Heliport Gradients and Pavement Design

This section provides guidance on designing heliport pavements, including design loads, and addresses soil stabilization as a method of treating non paved operational surfaces. Operational surfaces such as the TLOF, FATO, and Safety Areas should present a reasonably smooth, uniformly graded surface. The surfaces of a heliport should be designed to provide positive drainage.

Heliport Gradients
TLOF Gradients
To ensure drainage, the TLOF should have a minimum gradient of 0.5 percent and a maximum gradient of 2.0 percent.
FATO Gradients
The recommended gradients for a load bearing FATO range from a minimum of 0.5 percent to a maximum of 5.0 percent. FATO grades in any areas where a helicopter is expected to land should not exceed 2.0 percent. To ensure TLOF drainage, gradients of rapid runoff shoulders should range between 3.0 and 5.0 percent.
Safety Area Gradients
The surface of the Safety Area should not be steeper than a downward slope of 2:1 (2 units horizontal in 1 unit vertical). In addition, the surface of the Safety Area should not be higher than the FATO edge.

With respect to design loads, the TLOF and any load-bearing surfaces should be designed and constructed to support the weight of the design helicopter and any ground support vehicles. Loads are applied through the contact area of the tires for wheel-equipped helicopters or the contact area of the skid for skid equipped helicopters.

Pavements distribute the helicopters' weight over a larger area of the subsurface as well as provide a water-impervious, skid-resistant wearing surface. Paving TLOFs and FATOs is encouraged to improve their load carrying ability, minimize the erosive effects of rotor wash, and facilitate surface runoff. Stabilizing unpaved portions of the FATO and taxi routes subjected to rotor wash is recommended. It should be noted that the majority of heliports within the state-managed system are non-paved and therefore should be subject to the following soil stabilization practices:

- **Turf** – A well-drained and well-established turf that presents a smooth, dense surface is generally considered to be the most cost-effective surface stabilization available. In some combinations of climates and weather conditions, turf surfaces are capable of supporting the weight of many of the smaller helicopters for low frequency use by private and corporate operators during much of the year. Turf surfaces also provide reasonable protection against wind, rotor wash, or water erosion. Climatic and soil conditions dictate the appropriate grass species to use at the site.
- **Aggregate Turf** – Heliports located on soils that have poor load-carrying capabilities when wet may be able to overcome this deficiency by mixing selected granular materials into the upper 12 inches of the soil. Suitable granular materials for this purpose are crushed stone, pit-run gravel, coarse sand, or oyster shells. The ratio of aggregate to soil should be sufficient to improve the stability of the soil yet retain the soil's ability to support grass.

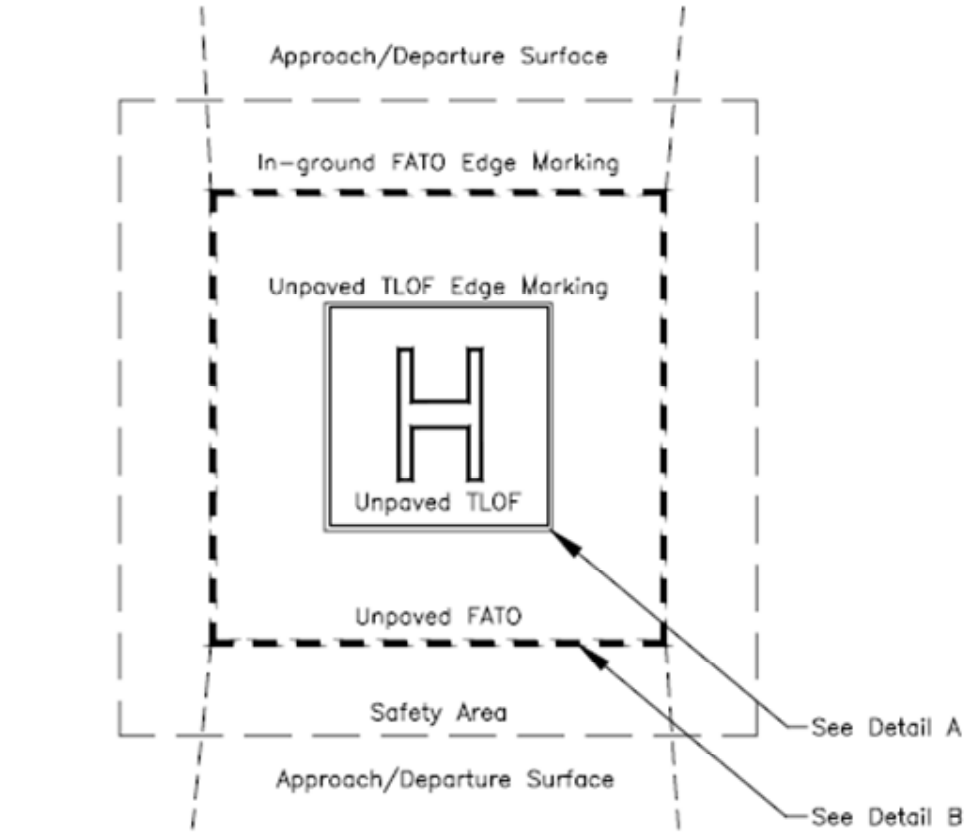
Heliport Markings

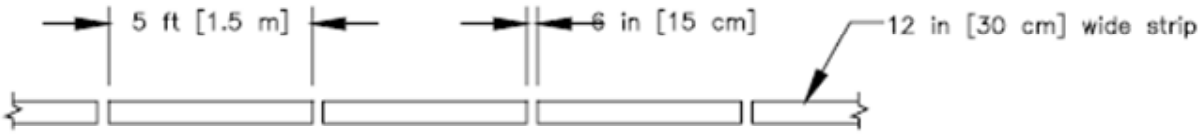
Markers and/or surface markings should identify the facility as a heliport. Surface markings may be paint, reflective paint, reflective markers, or preformed material. Lines/markings may be outlined with a 6-inch-wide line of a contrasting color to enhance conspicuity. The following markers and markings should be used:

- **TLOF and FATO Perimeter Markings** – The perimeter of the TLOF and/or the FATO should be marked. The perimeter of the FATO should be defined with markers and/or lines. It is suggested that the TLOF perimeter should also be defined with markers and/or lines since this provides a greater safety margin than marking only one perimeter.
- **Standard Heliport Identification Symbol** – A white H marking with a contrasting border if required should mark the TLOF.

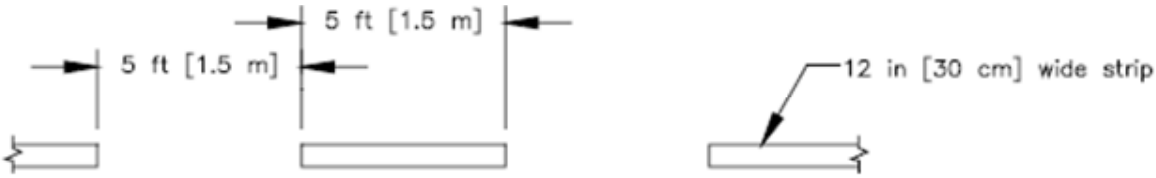
The following graphic shows example heliport markings. Refer to FAA AC 150/5390-2, *Heliport Design*, for more specific information.

Example Heliport Markings (Unpaved)





Detail A TLOF Flush Inground Marking Detail



Detail B FATO Inground Marking Detail

5.4 What Are the Airport Design Guidelines for Landside Facilities

This section includes general airport design guidelines applied to the construction and alteration of landside facilities on the airport, which are unrelated to the airside or airfield itself, including the following:

- Airport Signage
- Hangar Construction
- Irrigation and Sprinkler Systems
- Stormwater Management
- Fuel Systems
- Airport Access and Auto Parking

Airport Signage

Airport signage at the state-managed airports meets a diverse mix of needs ranging from airfield to airside operations. As such, there are several sources of design specifications that must be considered, including federal (FAA), state (WSDOT), and possibly local. ***Note:*** The FAA specifications related to on-airport signs shall take president over any WSDOT or other state/local specifications.

For the state-managed airports, all sign design and installation shall conform to the specifications and requirements of each of the following:

- FAA AC 150/5340-18E, *Standards for Airport Sign Systems*
- WSDOT *Traffic Manual* M 51-02, Chapter 2
- WSDOT *Sign Fabrication Manual* M 55-05
- Any applicable state and local standards and requirements.

Similar to that of the sign maintenance process described in Section 4.3, those signs that require installation, the Airport Manager shall observe the procedures in the following table.

Sign Installation Procedures	
1	Airport Manager identifies/establishe specification for sign to be installed. *Note:* Due to the potentially wide variety of signs in use at the state-managed airports, it will be incumbent upon the Airport Manager to utilize appropriate sign design specifications These may be found within WSDOT Aviation, WSDOT, or FAA (see references above).
2	Airport Manager or WSDOT Region Maintenance contacts WSDOT Yakima Sign Shop, places order and supplies shipping information.
3	WSDOT Yakima Sign Shop completes order and ships to WSDOT Region Maintenance or local airport caretaker/sub-contractor.
4	WSDOT Region Maintenance or local airport caretaker/sub-contractor replaces sign.

Hangar Construction

Hangar construction at state airports is dependent on a number of factors which include:

- Airport has an approved ALP.
- There is sufficient developable land area set-aside on airport for hangar development.
- The airport has established rates and charges.
- The airport has established minimum standards.
- The airport has established rules and regulations.

Construction of hangars can be driven by a variety of forces at an airport and typically a hangar developer will have their own design specifications. Regardless of this, all hangar building and associated construction at the state-managed airports is subject to WSDOT review and approval, and shall conform to the specifications and requirements of each of the following:

- Federal standards of the 2006 (or most recent) International Code Council (ICC) International Building Code (IBC), as adopted by the state of Washington.
- National Fire Protection Association (NFPA) 409 – *Standard on Aircraft Hangars*.
- WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction* M 41-10.
- Any applicable state and local standards and requirements.

Note: WSDOT Aviation intends to establish parameters for hangar construction specifications and requirements that will reflect the federal and state codes. This WSDOT Aviation specification will supplement the requirements noted above. The following represents an example of hangar specifications that could be utilized by WSDOT Aviation until such time as official specifications and requirements are established.

WSDOT Aviation Specifications and Requirements for Hangar Construction

The following specifications must be adhered to when constructing aircraft hangars on any WSDOT Aviation owned/operated airport.

Hangar Design and Construction – General Standards	
1	Buildings must be of steel design, including primary and secondary structural framing, walls and roofing and placed on concrete slabs (see Concrete and Steel Structure requirements in this document).
2	Electrical, if installed shall be installed in accordance with local, state, and federal requirements and comply with the National Electric Code (NEC); all work must be performed by an electrician currently licensed to do work in the state of Washington.
3	All hangars must be a minimum size of 50′ wide x 40′ deep, with a maximum size of 60′ wide x 50′ deep. Hangars will not be approved on airports operated via easements or leases from other governmental agencies unless expressly permitted by that agency.
4	Aircraft access bay doors may be of the slider, overhead, stack, or bi-fold type, and must be at least 40′ wide. Height of hangar doors cannot exceed 14′.
5	No living quarters shall be constructed within hangars, nor will hangar owners, lessees, or others be permitted to live in such hangars.
6	Site preparation, drainage, and ongoing site maintenance will be the responsibility of the proponent.
7	No individual septic tanks or drain field shall be constructed on any state-managed airport property without prior approval of WSDOT Aviation.
8	Hangars are permitted to be constructed for indoor storage of aircraft and aviation related items only. In no instance will outside storage of personal items be allowed.
9	No commercial operations shall be permitted on state-managed airports without written approval of WSDOT Aviation.
10	Plowing of snow to gain access to hangars during winter months must have prior written approval from WSDOT Aviation.

Hangar Design and Construction – Concrete Standards	
1	Concrete design shall be by a professional engineer registered in the state of Washington.
2	Portland cement concrete shall meet the requirements of class 30 with 3000 PSI minimum compression strength. • Minimum Cement Content 560 lb • Maximum Water Cement Ration .49 • Maximum Slump Inches 5 • Air Content Percent 6.5 + 1.5%
3	Vapor barrier shall be 10 mil polyethylene fil (Visqueen) or approved equal. Lap 3″ minimum and tape tight at all seams and protect from damage. Vapor barrier shall provide total underslab coverage.
4	All floo slabs must be a minimum of 4″ thick.
5	Interior concrete slabs shall receive a smooth steel trowel finish Exterior concrete slabs shall receive a surface finis using a soft bristle broom. Concrete slabs shall be water cured a minimum of one day.
6	The dimensions of exterior aprons or ramps must be pre-approved by WSDOT Aviation.

Hangar Design and Construction – Steel Structure Standards	
1	The building manufacturer shall furnish complete erection drawings showing anchor-bolt settings, sidewalls, roof framing, transverse cross-sections, covering and trim details, and accessory installation details to clearly indicate the proper assembly of all building parts. The manufacturer shall also furnish a letter of certificatio by a registered professional engineer, verifying that the building design meets the specifie loading requirements. The erection of the metal building and the installation of accessories shall be performed in accordance with building manufacturer's erection drawings using proper tools and equipment.
2	The materials furnished and installed shall include, but not be limited to the structural rigid framing, end wall columns, anchor bolts, rafter extensions, girts, purlins, window and door frames, canopy frames, wind bracing rods, eave struts, girt sag rods, purlin bridging, diaphragm bracing, stirrups, flang bracing, webb stiffeners, roofing siding, exterior trim, fasteners, bolts, sealants, caulking, and any other component parts as needed for the metal building as specified
3	The following standards and criteria (of most recent issue) shall be used where applicable in the structural design of the building covered by these specifications • RECOMMENDED DESIGN PRACTICES MANUAL – Metal Building Manufacturers Association • STEEL CONSTRUCTION MANUAL – American Institute of Steel Construction • COLD FORMED STEEL DESIGN MANUAL – American Iron and Steel Institute • CODE FOR WELDING IN BUILDING CONSTRUCTION – American Welding Society

4	High Profil (HP) or straight column designates a clear span rigid frame building with a gabled roof slope of 4:12 minimum for hanger building.
5	Exterior roof covering shall be 24 gauge minimum thickness, galvanized, factory painted panels, and standing seam with concealed clips.
6	Exterior wall covering shall be 26 gauge minimum thickness, galvanized, factory painted, and steel ribbed panels. All panels shall be attached to secondary frame with #14 Type A self- tapping screws with cadmium plated carbon steel head and shank and domed washer with neoprene sealing element. Panels shall be properly fastened to every girt and purlin. The minimum spacing of the panel fasteners on the girt and purlin lines shall be 12″ on centers. The minimum spacing of the side lap fasteners shall be 24″ on centers, but properly designed and variable spaced to meet the snow and wind load requirements. Heads of all fasteners for colored panel and trim shall be pre-painted to match color of adjacent surface.
7	Exterior building color is limited to Ivory with Kelly or Forest Green trim. Shades of each color must be pre-approved by WSDOT Aviation.

Irrigation and Sprinkler Systems

Irrigation and sprinkler system installation efforts at any of the state-managed airports will likely be unique to each airport. As such, design and construction specifications will depend on the specific airport under consideration. All irrigation and sprinkler systems design and installation at the state-managed airports should consider the specifications and requirements of each of the following:

- WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction*, 8-03 Irrigation Systems
- FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*
- Any applicable state and local standards and requirements.

Note: Any construction of an above-ground system shall consider the requirements of FAA AC 150/5300-13, *Airport Design*, in terms of maintaining appropriate clearances of relevant safety areas, object free areas, obstacle free areas, threshold siting surfaces, etc.

Stormwater Management

The construction of all stormwater management facilities at the state-managed airports shall meet the requirements and specifications as detailed in the following:

- WSDOT *Aviation Stormwater Design Manual*, 2008, M 3041
- FAA 150/5370-10D, *Standards for Specifying Construction of Airports*
- Any applicable state and local standards and requirements.

Note: The *Aviation Stormwater Design Manual* provides design guidance for best management practices (BMPs) for stormwater flow control and water quality treatment at or near airports (within the airport influence areas) that protect receiving waters and meet federal and state water quality standards in a safe manner.

Specifically, the manual was developed to assist with the planning and design of stormwater management facilities on and around existing and new airports in the state of Washington, including those owned or operated by WSDOT. Airports are required to comply with federal, state, and local regulations to protect water resources by treating and controlling flow rates of stormwater runoff for new development and facility upgrades. However, airports are different from other industrial or commercial sites and must manage stormwater in a way that will not compromise aircraft safety. Many traditional stormwater BMPs, such as ponds, attract wildlife that may be hazardous to aircraft. As a result, some traditional BMPs must be altered for use in the airport environment. This manual was developed to identify ways to treat and control stormwater without creating hazardous wildlife attractants. The manual focuses on technical issues related to stormwater management within the airport environment.

Obstruction Marking and Lighting

All marking and lighting installation and construction associated with airspace obstructions at the state-managed airports shall conform to the specifications and requirements of each of the following:

- FAA AC 70/7460-1K, *Obstruction Marking and Lighting*
- FAA AC 150/5345-43F, *Specification for Obstruction Lighting Equipment*
- FAA AC 150/5340-1J, *Standards for Airport Markings*
- Any applicable state and local standards and requirements.

Note: The FAA specifications related to airport-related obstruction marking and lighting shall take president over other state/local specifications due to their critical nature with respect to aviation activities.

Fuel Systems

Construction of a fueling system at an airport is an extremely complicated and rigorous endeavor that would have to be addressed on an airport-by-airport basis. This would also require extensive coordination with a wide variety of stakeholders, each of which could have their own design specifications/requirements. However, generally speaking, any fuel system design and installation at the state-managed airports shall conform to the specifications and requirements of each of the following:

- FAA AC 150/5230-4A, *Aircraft Fuel Storage, Handling, and Dispensing on Airports*
- National Fire Protection Association (NFPA) 30 – *Flammable and Combustible Liquids Code*
- National Fire Protection Association (NFPA) 415 – *Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways*
- National Air Transportation Association (NATA) Refueling and Quality Control Procedures for Airport Service and Support Operations
- Air Transport Association Specification 103: *Standards for Jet Fuel Quality Control at Airports*
- American Petroleum Institute – Standard 1581: *Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators*
- American Petroleum Institute – Standard 1500: *Storage and Handling of Aviation Fuels at Airports*
- Any applicable state and local standards and requirements.

Airport Access and Auto Parking

Automobile access drives andparking areas are fundamental elements of an airport's landside component. However, if these elements are removed from the aircraft operations area, the FAA does not have any specifications for auto access and parking other than the basic requirements involved with construction on an airport. Therefore, for the state-managed airports, WSDOT Aviation will primarily

utilize the specifications and requirements established by WSDOT and applicable local standards and requirements. As such, the following specifications and requirements shall be considered with respect to automobile access and parking at the state-managed airports:

- WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction*
- WSDOT *Roadside Manual*
- WSDOT *Traffic Manual*
- FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*
- Any applicable state and local standards and requirements.

5.5 What Are the Airport Vegetation Design Guidelines

In order to preserve and gentrify the airport landscape, WSDOT has certain guidelines regarding the installation of vegetation. Each new species of plant life introduced into the airport property should be thoroughly reviewed to ensure that proper environmental conditions will allow growth and not pose a safety threat by attracting unwanted wildlife. In considering vegetative design, vegetative maintenance must also be high priority as it will be WSDOT's responsibility.

Additionally, there are times on and around airports where vegetation that is incompatible with the airport environment must be removed. Such incompatibility typically results from conflicts with designated airport safety and object free areas, as well as with airport airspace surfaces. Ideally, the identification of such incompatible vegetation will be part of a Vegetation Management Plan (VMP) established by WSDOT Aviation (see Section 6.4) and wildlife management plans as approved by the department.

Vegetation Installation

Installation of vegetation (turf, shrubs, trees, etc.) at the state-managed airports may be required by a variety of projects. All such installation of vegetation shall conform to the specifications and requirements of any VMP established by WSDOT Aviation for the state-managed airports. Additionally, WSDOT Aviation will utilize the established specifications and requirements set forth by WSDOT

and the FAA when installing vegetation at the state-managed airports. These can be found in the following:

- WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction*, 8-01.3(2) Seeding, Fertilizing and Mulching
- WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction*, 9-14.6 Plant Materials
- WSDOT *Aviation Stormwater Design Manual*, 2008, M 3041, Appendix A, Vegetation Recommendations for Airport Settings
- FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*, Part X – Turfing
- Any applicable state and local standards and requirements.

Note: The FAA specifications related to airport-related obstruction marking and lighting shall take precedence over other state/local specifications due to their critical nature with respect to aviation activities.

Vegetation Control and Removal

Removal of existing vegetation on and around the state-managed airports may be required to ensure safe operations at the airport, obstruction clearance, and other construction efforts, etc. In all cases, vegetation removal efforts shall comply with applicable local, state and federal specifications and procedures. Additionally, WSDOT Aviation will utilize the established specifications and requirements established by WSDOT and the FAA when removing vegetation at the state-managed airports. These can be found in the following:

- WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction*, 2-01 Clearing, Grubbing, and Roadside Cleanup
- FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*, Item P-151 Clearing and Grubbing
- Any applicable state and local standards and requirements.

Section 4.4, Vegetation Control Guidelines, also contains additional information and detail on vegetation control in terms of maintenance.

Note: The FAA specifications related to airport-related obstruction marking and lighting shall take precedence over other state/local specifications due to their critical nature with respect to aviation activities.

5.6 What Are the Airport Aids to Airman Design Guidelines

In the future, WSDOT Aviation may consider improving navigation and weather detection coverage at the state-managed airports. Several weather observation systems are available; however, an Automated Weather Observation System (AWOS) is the preferred option. Other systems may be used as appropriate for the level of activity at and around the airport.

Automated Weather Observation System (AWOS)

An AWOS automatically measures meteorological parameters, reduces, and analyzes the data via computer, and broadcasts weather reports which can be received by aircraft operating up to 10,000 feet above ground level and 25 nautical miles from the AWOS. Pilots may use weather information provided by the AWOS to partially fulfill the requirements of various FARs.

When WSDOT Aviation elects to install weather reporting facilities at one or more of the state-managed airports, it shall conform to the specifications and requirements of each of the following:

- FAA AC 150/5220-16C, *Automated Weather Observing Systems (AWOS) for Non-Federal Applications*
- FAA Order 6560.20B, *Siting Criteria for Automated Weather Observing Systems (AWOS)*
- Any applicable state and local standards and requirements.

Note: The FAA specifications related to the installation of automated weather obstruction systems shall take precedence over any WSDOT or other state/local specifications due to their critical nature with respect to aviation activities.

5.7 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

5.1 What Are WSDOT Aviation's General Design Development Considerations
• Washington State Department of Transportation. *Standard Plans* www.wsdot.wa.gov/publications/manuals/m21-01.htm

5.2 What Are the Airport Security Design Guidelines
• Transportation Security Administration. *Security Guidelines for General Aviation Airports*, 2004 www.tsa.gov/what_we_do/tsnm/general_aviation/airport_security_guidelines.shtm
• FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*. FAA. 29 September 2007
• WSDOT *Design Manual* M 22-01. WSDOT. 6 May, 2009 www.wsdot.wa.gov/publications/manuals/m22-01.htm

5.3 What Are the Airport Design Guidelines for Airside Facilities
• FAA AC 150/5300-13, *Airport Design*. FAA. 1 November 2008
• FAA AC 150/5320-6D, *Airport Pavement Design and Evaluation*. FAA. 23 June 2006
• FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*. FAA. 29 September 2007
• FAA AC 150/5340-1J, *Standards for Airport Markings*. FAA. 6 June 2008
• FAA AC 150/5345-46D, *Specification for Runway and Taxiway Light Fixtures*. FAA. 19 May 2009
• FAA AC 150/5340-30D, *Design and Installation Details for Airport Visual Aids*. FAA. 30 September 2008
• FAA AC 150/5345-39C, *Specification for L-853, Runway and Taxiway Retroreflective Markers*. FAA. 14 September 2006
• FAA AC 150/5340-18E, *Standards for Airport Sign Systems*. FAA. 12 September 2008
• FAA AC 150/5345-27D, *Specification for Wind Cone Assemblies*. FAA. 2 June 2004
• FAA AC 150/5340-5C, *Segmented Circle Airport Marker System*. FAA. 14 September 2007
• FAA AC 150/5390-2B, *Heliport Design*. FAA. 30 September 2004
• Washington Department of Transportation. *General Aviation Construction Guidelines*. WSDOT. 6 May 2009 www.wsdot.wa.gov/nr/rdonlyres/c0048f45-1ce3-46c8-87e7-bcf52bfd41f9/0/constguidelines.pdf
• Washington Department of Transportation. WSDOT *Pavement Guide*. WSDOT. 6 May 2009 www.wsdot.wa.gov/biz/mats/pavement/wsdot_volume1pavementpolicy.pdf

5.4 What Are the Airport Design Guidelines for Landside Facilities
• FAA AC 150/5340-18E, *Standard for Airport Sign Systems*. FAA. 12 September 2008
• FAA AC 70/7460-1K, *Obstruction Marking and Lighting*. FAA. 1 February, 2007
• FAA AC 150/5300-13 CHG 2, *Airport Design*. FAA. 1 November, 2008
• FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*. FAA. 29 September 2007
• FAA AC 150/5345-43F, *Specification for Obstruction Lighting Equipment*. FAA. 12 September 2006
• WSDOT *Traffic Manual* M 51-02.01. WSDOT. August 2008 www.wsdot.wa.gov/publications/manuals/m51-02.htm
• WSDOT *Sign Fabrication Manual* M 55-05. WSDOT. April 2007 www.wsdot.wa.gov/publications/manuals/m55-05.htm
• National Fire Protection Association. NFPA 409 – *Standard on Aircraft Hangars*. NFPA. 2004 www.nfpa.org
• WSDOT *Standard Specifications* M 41-10. WSDOT. 6 May, 2009 www.wsdot.wa.gov/publications/manuals/m41-10.htm
• WSDOT *Airport Stormwater Design Manual*. WSDOT. 6 May, 2009 www.wsdot.wa.gov/aviation/airportstormwaterguidancemanual.htm
• WSDOT *Roadside Manual* M 25-30. WSDOT. 6 May, 2009 www.wsdot.wa.gov/publications/manuals/m25-30.htm

5.5 What Are the Airport Vegetation Design Guidelines
• WSDOT *Standard Specifications* M 41-10. WSDOT. 6 May, 2009 www.wsdot.wa.gov/publications/manuals/m41-10.htm
• FAA AC 150/5370-10D, *Standards for Specifying Construction of Airports*. FAA. 29 September 2007

5.6 What Are the Airport Aids to Airman Design Guidelines
• FAA AC 150/5220-16C, *Automated Weather Observing Systems (AWOS) for Non-Federal Applications*. FAA. 13 December, 1999
• FAA Order 6560.20B, *Siting Criteria for Automated Weather Observing Systems (AWOS),* 20 July 1998

Supporting Documentation

None.

Chapter 6 Airport Planning Guidelines

In This Chapter
• Why is effective airport planning important? • What are the different types and levels of airport planning? • Why is planning important for the state-managed airports? • What are the design standards for the state-managed airports? • How do we communicate effectively about airport planning?

As the state-managed airports' sponsor, the Washington State Department of Transportation (WSDOT) Aviation Division (WSDOT Aviation) has a key role in advocating for:

- The preservation and long-term development of appropriate aviation facilities.
- Safe air transportation.
- Airport capacity to meet demand.
- Mitigation of environmental impacts.

As such, WSDOT Aviation actively provides the technical resources required to support these goals. WSDOT Aviation employs a strategic approach of working cooperatively with airports, communities, and planning organizations to set the policy direction for the state-managed airport system.

WSDOT Aviation recognizes that it is critical that appropriate airport planning practices be established and maintained for the state-managed airport system in order to sustain its relevance and long-term viability. This chapter discusses the specific planning standards and processes that WSDOT should use to ensure that the system is reaching its full potential. These efforts must be conducted proactively, efficiently, and professionally in order for the system to be maintained as a viable and adequate mode of transportation for the state and its citizens.

Section Contents

Make Sure
- Check that the sections are current!
- Do they need to be updated?

Key Section Dates

Out-of-date information is not good information. Therefore, it is important that the information contained within this chapter be updated on a regular basis. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
6.1 What is the Importance of Airport Planning Studies	7/1/10	6/1/11
6.2 What Are the Airport Design Standards	7/1/10	6/1/11
6.3 What About Environmental Planning	7/1/10	6/1/11
6.4 What Are the Vegetation Management Procedures	7/1/10	6/1/11
6.5 What is the Airport Land Use Compatibility Program	7/1/10	6/1/11
6.6 How to Plan for Public Communications	7/1/10	6/1/11
6.7 Chapter References and Supporting Documentation	NA	

6.1 What is the Importance of Airport Planning Studies

Airport planning ensures the long-term viability of individual facilities and the system as a whole. Airport planning can include a wide variety of studies and efforts, including airport facility planning, air capacity and system planning, obstruction analyses, financial planning, traffic and markets, economic studies, environmental studies, etc. It is generally recognized that there are three primary levels at which airport planning can be performed:

Airport Planning Levels	Description
Strategic-Level	Examines long-term structures and determines how well various structures fi with identifie goals and objectives. A strategic plan sets out procedures to follow which will lead to an optimal long-term structure. The primary example of this level of airport planning is that of an aviation system plan.
Tactical-Level	Determines short- and medium-term courses of action that best fi into overall strategic plans and goals. Additionally, tactical plans identify the best manner of carrying out these courses of actions. The primary example of this level of airport planning is an airport master plan.
Project-Level	Identifie a define aspect of a tactical plan and determines the optimum manner of executing this aspect in project form. An example of this level of airport planning is a vegetation management plan.

Airport planning can be an extremely complex process since an airport encompasses a wide range of activities that often have inherently different and, sometimes, conflicting requirements. Additionally, there are multiple industry,

federal and international regulations and best management practices that are commonly employed. As such, while this section contains current WSDOT Aviation airport planning guidelines, additional industry resources should be considered as required by WSDOT Aviation.

System Planning

An airport system plan is a representation of the aviation facilities required to meet the immediate and future needs of a metropolitan area, region, state or country. The overall purpose of a system plan is to determine the extent, type, nature, location, and timing of airport development needed to establish a viable, balanced, and integrated system of airports. It also provides the basis for definitive and detailed airport planning such as that contained in an airport master plan. Specifically, a system plan:

- Identifies the aviation role of existing and future airports and facilities.
- Recommends the general location and characteristics of new airports and the nature of expansion for existing ones to meet forecasts of aggregate demand.
- Includes the timing and estimated costs of development.
- Relates the planning effort to the policy and objectives of the state, region, or relevant jurisdiction.

The following table describes the principle objectives of an airport system plan.

Principal Objectives of Airport System Planning	
1	The orderly and timely development of a system of airports adequate to meet present and future aviation needs and to promote the desired pattern of regional growth relative to industrial, employment, social, environmental, and recreational goals.
2	The development of aviation to meet its role in a balanced and multimodal transportation system and to foster the overall goals of the area as reflecte in the transportation system plan and comprehensive development plan.
3	The protection and enhancement of the environment through the location and expansion of aviation facilities in a manner which avoids ecological and environmental impairment.
4	The provision of the framework within which specifi airport programs may be developed consistent with the short- and long-range airport system requirements.
5	The implementation of land-use and airspace plans which optimize these resources in an often constrained environment.
6	The development of long-range fisca plans and the establishment of priorities for airport financin within the government budgeting process.
7	The establishment of the mechanism for the implementation of the system plan through the normal political framework, including the necessary coordination between governmental agencies, involvement of both public and private aviation and non-aviation interests, and compatibility with the content, standards, and criteria of existing legislation.

Washington State Long-Term Air Transportation Study (LATS)

The most recent update of the Washington Aviation System Plan (WASP) was completed in 2009 as part of the Washington State Long-Term Air Transportation Study (LATS). This was the first comprehensive aviation system planning effort in Washington State in over 20 years. Initiated in 2005 through Engrossed Senate Substitute Bill (ESSB) 5121, the LATS legislation authorized WSDOT Aviation to conduct a long-term air transportation planning study of general aviation and commercial aviation airports. The purpose of LATS was to understand what capacity currently exists for commercial and general aviation facilities and what would be needed to meet future demand for air transportation in the state. In addition to the standard elements of an airport system plan, this study focused on four special emphasis regions identified in the legislation: Tri-cities, Spokane, Puget Sound, and Southwest Washington.

The completed LATS effort includes an analysis of existing capacity, aviation trends, system performance, market demand, and system needs within the Washington State public airport system. The study also includes an assessment of air cargo and a review and evaluation of high speed passenger rail transportation.

LATS study recommendations and findings will be integrated into the Washington Transportation Plan (WTP), the Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS), and regional and local transportation plans. The study will also assist in aligning federal, state, and regional priorities and help to clarify airport sponsor objectives. Ultimately, recommendations from the study will assist the state in managing the Washington public airports as an integrated system, in order to strategically invest the public resources necessary to preserve aviation capacity and provide facilities that effectively accommodate future demand.

A complete copy of LATS can be found in the WSDOT Aviation administrative offices or online on the WSDOT Aviation public website at www.wsdot.wa.gov/aviation/lats/default.htm.

WSDOT-Managed Airports: System Evaluation and Strategic Plan

During the LATS effort, it became apparent that there was a need for more detail regarding the purpose and role of the 17 state-managed airports within Washington State. Specifically, due to growing uncertainty in traditional airport funding sources, it had become necessary for WSDOT Aviation to examine why it maintained these airports and what role they served in the statewide aviation system. As such, WSDOT Aviation requested that an additional planning study be conducted to evaluate, analyze and develop a strategic plan for those 17 state-managed airports. Completed in 2008, the WSDOT-Managed Airports: System Evaluation and Strategic Plan was integrated into LATS and final recommendations of the Washington Aviation System Plan and Aviation Planning Council recommendations.

A complete copy of the *WSDOT-Managed Airports: System Evaluation and Strategic Plan* can be found in the WSDOT Aviation administrative offices or online on the WSDOT Aviation public website at www.wsdot.wa.gov/aviation.

Airport Master Planning

An airport master plan is a conceptual plan that reflects the ultimate development goal of a specific airport over a given period of time (typically 20 years). According to the FAA, the goal of an airport master plan is to provide guidelines for future airport development that will satisfy aviation demand in a financially feasible manner, while at the same time resolving the aviation, environmental, and socioeconomic issues existing in the community. The following table describes the principle objectives of an airport master plan.

Principal Objectives of Airport Master Planning	
1	Developing or modifying physical facilities on an airport to meet existing and projected demand.
2	Developing or modifying land on and/or adjacent to an airport, including establishing land use/zoning controls on lands adjacent to an airport.
3	Determining the environmental effects of airport development and operations.
4	Supporting the plan technically and procedurally through a thorough investigation of concepts and options of a technical, economic, or environmental nature.
5	Establishing airport access requirements.
6	Establishing a realistic schedule for the implementation of the development plan proposed in the plan, particularly for the short-term capital improvement program (CIP).
7	Proposing an achievable financia plan to support the implementation schedule.
8	Establishing a mechanism for formal communications with key airport stakeholders.
9	Presenting for public consideration, in a convincing and candid manner, a plan that adequately addresses the issues and satisfie local, state, and federal regulations.
10	Documenting policies and future aeronautical demand for reference in municipal deliberations on spending, debt incurrence, and land use controls.
11	Providing an effective graphic presentation of the future development of the airport and future land uses in the vicinity of the airport.

The content of an airport master plan varies in both level of detail and specific requirements, depending upon the type of planning effort undertaken. However, the master plan should include at least the following elements:

Primary Airport Master Planning Elements	
1	An inventory of existing airport facilities, current conditions, and issues related to the airport, and an identificatio of other planning studies that may impact the airport plan.
2	The demand forecast including aircraft operations, number of passengers, volume of cargo and mail, and vehicular traffic The forecast should be made not only on an annual basis but also for the busiest hours of the day. Typically, the forecast is for a period of 20 years.
3	An analysis of the interaction between the various demand parameters and the capacity of the relevant airport facilities, including those that affect airfield terminal, and ground access system operations.
4	The development of alternative concepts and solutions to reasonably satisfy forecasted demand by taking into account such factors as the functional role of the airport under study and the impact on the environment, safety, economy, and fisca resources of the area. An examination of alternative sites, including land-use and ground access plans and development concepts, is essential for the proper consideration and identificatio of viable alternatives.
5	The determination of the cost-effectiveness of alternative concepts and recommended solutions, including both tangible and intangible benefit and costs. Many important benefit are significan in the decision-making process but which are also difficul to quantify.
6	A financia feasibility analysis which differs from economic feasibility, for there is no guarantee that if a proposed development is economically feasible, it is also feasible to financ that development. Investment priorities must be established among the various individual airport improvements. Frequently airport planning is separated from financia and management planning. The latter may be undertaken only after a physical plan is adopted. Because of financia constraints, financia planning should be undertaken concurrently with planning of the physical facilities.
7	The environmental impact of alternative concepts and recommended solutions must be considered and incorporated into the cost-effectiveness analysis. Although aircraft noise is the principal environmental problem faced by airport authorities, other factors must be considered.
8	The preparation of implementation schedules and costs and sources of revenue for the various phases of proposed development.
9	The preparation of an associated airport layout plan (ALP) that graphically represents the key existing and proposed elements of the airport in terms of facilities, properties, land use/zoning, airspace, etc.

Make Sure

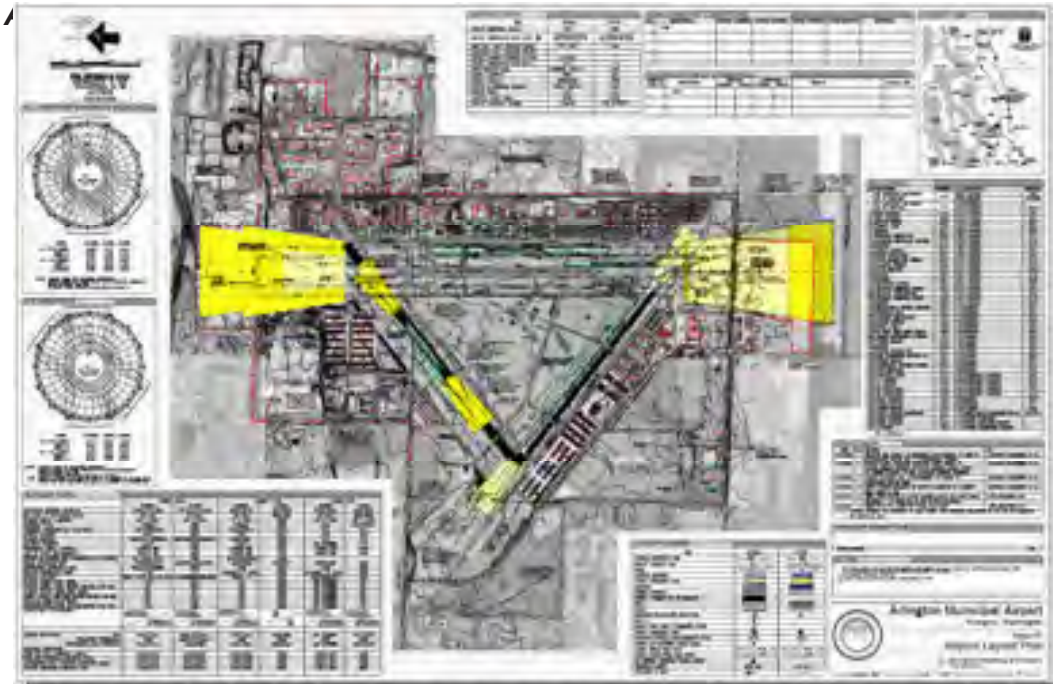
- Check the current FAA Advisory Circulars.

For the state-managed airport system, WSDOT Aviation will establish formal airport master plans that comply with all related FAA regulations for all airports listed within the NPIAS. For non-NPIAS Airport, WSDOT Aviation will utilize airport design standards that are similar to those used by other states. These standards generally follow the FAA's framework, but recognize that the State-Managed Airports are relatively small unimproved airports located in rural and

or mountainous regions of the state, and are operated under Visual Flight Rules (VFR). These master plans should be reviewed by WSDOT every five years, and updated as needed to reflect the management objectives set forth in Chapter I of this document. The specific federal regulations that should be reviewed and considered include the following:

- FAA AC 150/5070-6, *Airport Master Plans*
- FAA AC 150/5300-13, *Airport Design*
- FAA Order 5100.38, *Airport Improvement Program Handbook*

During the development of the master planning documents, WSDOT Aviation will develop a public outreach and communication plan to ensure that all stakeholders and the public can participate in the planning effort.



An Airport Layout Plan (ALP) drawing set depicts existing airport facilities and proposed developments as determined from the planners' review of the aviation activity forecasts, facility requirements, and alternatives analysis. It is typically prepared as part of a complete airport master plan effort; however, it can also be prepared as part of a stand-alone planning effort that may include supporting documentation and narrative.

Airport Layout Plans are prepared either as first time ALPs, formal revisions based on changes to the airport, or informal revisions based on minor improvements to the airport. Informal revisions, often referred to as pen-and-ink revisions, can be made to individual sheets of the ALP drawing set, although the responsibility for review and approval must still be coordinated with the state and if a NPIAS Airport, the FAA. These and other requirements are discussed in FAA Order 5100.38, *Airport Improvement Program Handbook* and WSDOT *Airport Aid Grant Procedures Manual*.

The preparer of the ALP must work closely with the WSDOT Airport Manager, airport owner, and if appropriate, the responsible FAA office, to define the requirements, standards, and criteria to be employed. To ensure that the ALP is comprehensive, all parties must agree to its content and standards.

Principal Functions of an Airport Layout Plan	
1	An ALP depicts existing airside and landside facilities, traffi pattern and future facility needs and improvements. The plan is used as a tool for financia planning and assistance.
2	An ALP creates a blueprint for airport development by depicting proposed facility improvements that should be consistent with the state aviation system plan, airport master plan and community plans.
3	The ALP is a public document that serves as a record of aeronautical requirements, both present and future, and as a reference for community deliberations on transportation and land use proposals as well as budget resource planning.
4	The approved ALP enables the airport sponsor, the state and the FAA to plan for facility improvements at the airport. It also allows for anticipation of budgetary and procedural needs. The approved ALP will also allow the FAA to protect the airspace required for facility or approach procedure improvements.
5	The ALP can be a working tool for the airport sponsor, including its development and maintenance staff.

Note: The ALP drawing set is a set of planning drawings and is not intended to provide design engineering accuracy. Individual items such as runway coordinates, obstruction survey data, and application of airport design standards must comply with Federal survey standards.

The minimum elements of the ALP drawing set for NPIAS airports are defined in Appendix F, Airport Layout Plan, of FAA AC 150/5070-6B, *Airport Master Plans*. (For non-NPIAS Airports refer to Appendix A, WSDOT *Airport Aid Grant Procedures Manual*.)

For each of the state-managed airports, WSDOT Aviation has some flexibility on what specific sheets shall be required to comprise an ALP set. However, regardless of the actual sheets included, WSDOT Aviation shall establish and maintain current ALP sets whose individual sheets meet the current FAA standards. (See FAA AC 150/5070-6B, *Airport Master Plans*, Appendix F.)

For those state-managed airports included in the NPIAS, WSDOT Aviation shall establish and maintain an ALP plan set in full compliance with FAA and WSDOT requirements. Drawings that should be included in the ALP drawing set are described in the following table.

Drawings Typically Included in an Airport Layout Plan	
Cover Sheet	A separate cover sheet, with approval signature blocks, airport location maps, and other pertinent information as required by the local FAA Airports office (As required)
Airport Layout Plan	A drawing depicting the existing and future airport facilities. The drawing should include required facility identifications description labels, imaginary surfaces, Runway Protection Zones, Runway Safety Areas and basic airport and runway data tables. It may be necessary to include the data tables on a separate sheet. (Required)
Terminal Area Plan	This plan consists of one or more drawings that present a large-scale depiction of areas with significan terminal facility development. (As required)
Airport Airspace Drawing	14 CFR Part 77, Objects Affecting Navigable Airspace, define this as a drawing depicting obstacle identificatio surfaces for the full extent of all airport development. It should also depict airspace obstructions for the portions of the surfaces excluded from the Inner Portion of the Approach Surface Drawing. (Required)
Inner Portion of the Approach Surface Drawing	Drawings containing the plan and profil view of the inner portion of the approach surface to the runway and a tabular listing of all surface penetrations. The drawing will depict the obstacle identificatio approach surfaces contained in 14 CFR Part 77, Objects Affecting Navigable Airspace. The drawing may also depict other approach surfaces, including the threshold-siting surface, those surfaces associated with United States Standards for Instrument Procedures (TERPS), or those required by the local FAA offic or state agency. The extent of the approach surface and the number of airspace obstructions shown may restrict each sheet to only one runway end or approach. (Required)
Airport Land Use Drawing	A drawing depicting land uses and zoning in the area on and around the airport. Where applicable include the urban growth boundary, any land encumbrances such as lands held in trust, open space, and avigation easements. (Required)
Airport Property Map	A drawing depicting the airport property boundary, the various tracts of land that were acquired to develop the airport, and the method of acquisition. (As required)

At a minimum for all state-managed airports, WSDOT Aviation shall establish and maintain an Inventory Summary Report of each airport. This information may be similar to the information found in the Airport Master Plan or as an addendum to supplement existing information in the master plan.

Inventory Summary Report Elements	
Airport Facility and Operations Description	This element of the Inventory is generally comprised of a brief summary of airport facilities, operations and planned improvements intended for use in local land use and transportation planning. Specificall , it should include the following elements: • Location • Elevation • Runway: length, width, surface • Based aircraft: number, type • Lighting • Approach • Navigation systems • Annual operations – existing and future • On-site facilities • ARC • Summary of ALP recommendations
Airport Setting Description	This component of the inventory should include a summary review of the comprehensive plans and development regulations for each affected community within the airport influenc areas under the airport traffi pattern/approach. In many cases this will include neighboring communities with no direct jurisdiction over the airport itself. Include a land use matrix with applicable development regulations and comprehensive plan policies.

Other Planning Efforts

There are a wide variety of other potential airport planning efforts that could potentially be undertaken by WSDOT Aviation with respect to the state-managed airports. For those studies not addressed within this handbook, it will be incumbent upon the WSDOT Aviation Airport Manager to coordinate with the WSDOT Aviation Planning staff to ensure that appropriate guidelines and requirements are followed.

6.2 What Are the Airport Design Standards

In order to ensure that airports are developed appropriately, systems of standards and recommendations for the design of airports has been developed by a variety of regulatory agencies so as to support this public charge, including the FAA, state aeronautical agencies, and other local agencies.

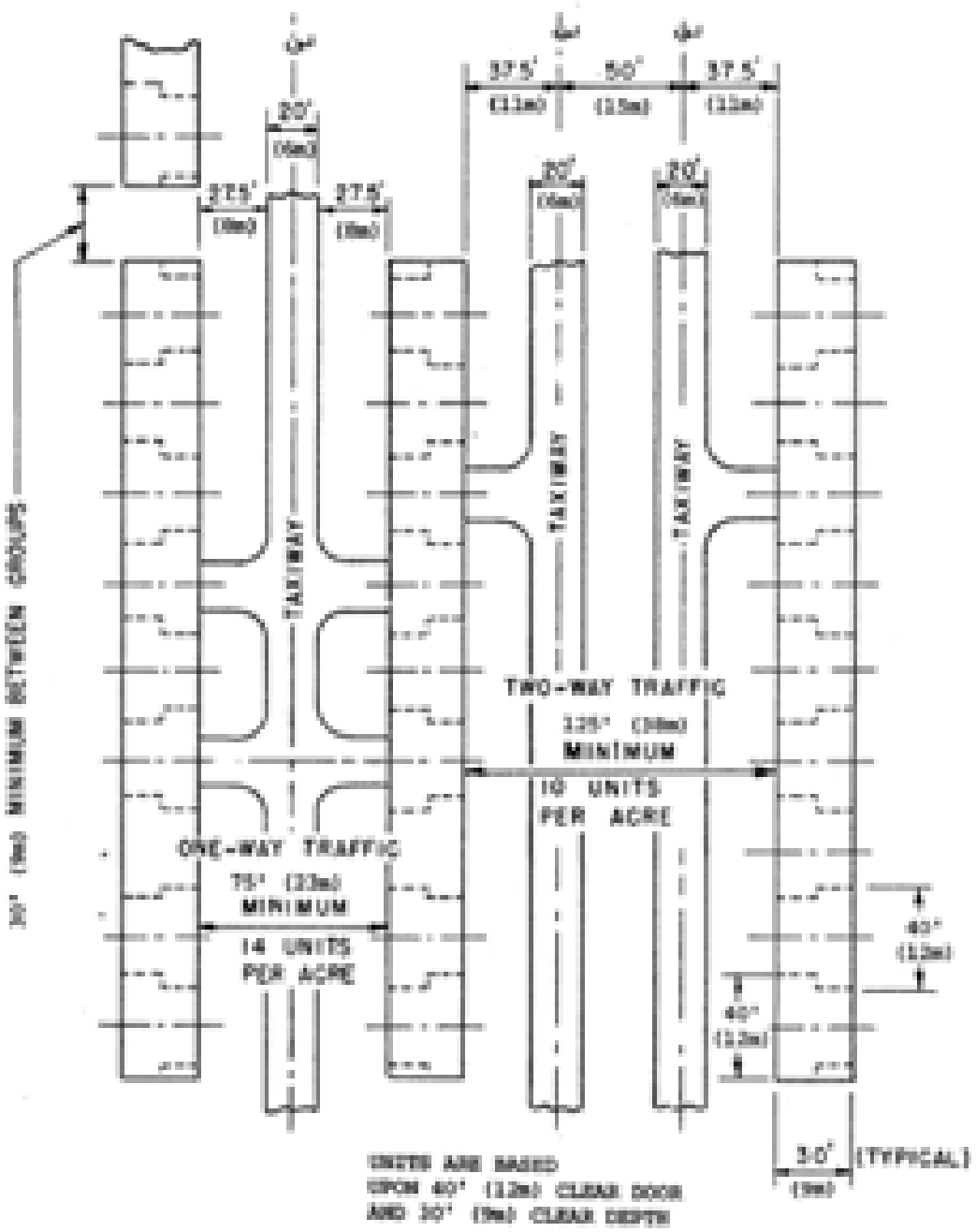


Figure A5-3. T-hangar layout

Section 103 of the Federal Aviation Act of 1958 states in part, "In the exercise and performance of his power and duties under this Act, the Secretary of Transportation shall consider the following, among other things, as being in the public interest: (a) The regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of defense; (b) The promotion, encouragement, and development of civil aeronautics . . ."

This public charge, in effect, requires the development and maintenance of a system of safe, delay-free, and cost-effective airports. The application of FAA standards for the state-managed airports versus that of state standards is often a function of whether the particular airport has been included in the FAA NPIAS. In terms of airport design standards, these distinctions are discussed in the following sections.

State-Managed Airports Within the NPIAS

Important
- The only state-managed airport currently in the NPIAS is Methow Valley State Airport.

The state-managed airports that are included in the FAA NPIAS make them eligible for federal funding assistance. In accepting such financial assistance in the form of federal grants, WSDOT Aviation must abide by the specific grant assurances established by the FAA. In such cases, WSDOT Aviation shall comply with all federal aviation design standards established by the FAA. A partial listing of the most common design standards includes the following:

- FAA AC 150/5300-13, *Airport Design*
- FAA AC 150/5070-6, *Airport Master Plans*
- FAA Order 5100.38, *Airport Improvement Program Handbook*
- FAR Part 77, *Objects Affecting Navigable Airspace*
- FAA Order 5050.4B, *Environmental Handbook*
- FAA Order 8260.3B, *United States Standard for Terminal Instrument Procedures (TERPS)*
- FAA AC 150/5390-2, *Heliport Design*

State-Managed Airports Not Within the NPIAS

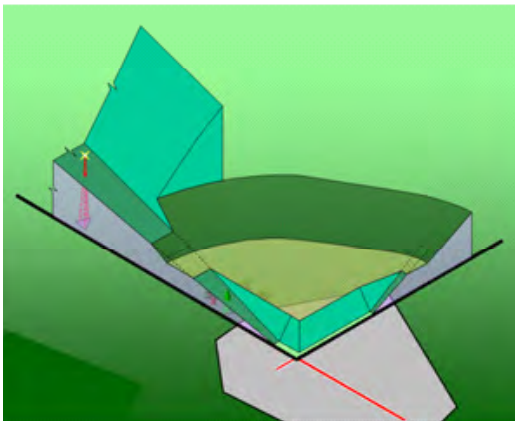
Important
- Includes all other state-managed airports.

State-managed airports that are not included in the FAA NPIAS and are not bound by federal grant assurances should be managed in a safe, cost-effective manner consistent with industry best management practices.

Based on the above factors, WSDOT Aviation has elected to utilize airport design standards that are similar to those used in other states. These standards will follow the FAA's framework, but also may be modified to reflect the smaller nature of Washington's airports. Again note that these standards are only applicable for non-NPIAS state-managed airports that are operated under Visual Flight Rules (VFR). The following table reflects these standards. (***Note:*** For a greater definition of the meaning of each design feature, refer to FAA AC 150/5300-13, *Airport Design*, and FAA AC 150/5390-2, *Heliport Design*.)

WSDOT Aviation VFR Airport Design Standard Dimensions	
Design Features	**Criteria**
General Airport Dimensions	
Runway Width – paved or prepared hard surface	50′
Runway Width – turf or gravel surface	100′
Runway shoulder width	10′
Runway Safety Area (RSA) width	100′
Runway Safety Area length beyond RW end	200′
Runway Object Free Area (ROFA) width	200′
Runway Object Free Area length beyond RW end	200′
Runway Protection Zone (RPZ) – width of inner surface	200′
Runway Protection Zone – width of outer surface	300′
Runway Protection Zone – length from inner to outer surface	1,000′
RW end to property line	200′
Runway Centerline (RW C/L) to hold line	100′
RW C/L to Parallel Taxiway (PTW) C/L	125′
RW C/L to edge of tie-down area	125′
RW C/L to property or building line	200′
RW C/L to helipad	300′ to 500′
TW C/L to Building Restriction or Property Line	75′
TW C/L to tie-down area or object	38′
Longitudinal runway grade (effective runway gradient)	0 to 2%
Longitudinal runway grade change	2% maximum
Length of vertical curves for RW each l% grade change	300′ (#1)
#1 Vertical curve not required for less than 0.4% change in grade.	
Distance between points of intersection for runway vertical curves	250′ x Sum of adjacent changes of grade in %
Transverse runway grade – paved	1% to 2%
Transverse runway grade – gravel	3%
Minimum site distance	Runway Length ÷ 2 or 2,000′ (whichever is less)
Distance between points of intersection for runway vertical curves	250′ x Sum of adjacent changes of grade in %.
Transverse runway grade – paved	1% to 2%
Transverse runway grade – gravel	3%
Minimum site distance	Runway Length ÷ 2 or 2,000′ (whichever is less)
#2 Unobstructed line of site from any point fiv feet above the runway.	
Longitudinal taxiway grade	0-2%
Transverse taxiway grade	1½% to 3%
General Heliport Dimensions	
Touchdown and Lift-off area (TLOF) – Minimum Length and Width	1.0 Rotor Dimension of design helicopter
Final Approach and Takeoff area (FATO) – Minimum Length and Width	1.5 Rotor Dimension of design helicopter

WSDOT Aviation VFR Airport Airspace Standard Dimensions



Regardless of their size and operational levels, all airports have airspace surfaces established around them through a variety of regulatory means. The primary purpose of these airspace surfaces is to ensure the safety of aircraft operating at or around that airport. This is particularly applicable for aircraft transitioning from air to ground and/or ground to air, when aircraft are typically most vulnerable to conflicts with ground-based objects. While the processes and requirements associated with these surfaces can be extremely complex, the critical consideration associated with all of them is that it is generally best for aircraft safety that these surfaces are kept clear of all man-made and natural obstructions.

In identifying relevant airspace it is noted that non-NPIAS airports are not obligated under federal grant assurances and therefore are not technically required to meet all the FAA requirements. However, it cannot be understated that the FAA's airspace requirements are regarded as the industry standard for airports and therefore should be considered appropriately. As such, WSDOT Aviation has utilized the framework of those standards while modifying them somewhat to appropriately reflect the needs of the non-NPIAS state-managed airports.

The size, location, topography, elevation, natural obstructions, and operational patterns at the state-managed airports varies considerably. To address these issues, two primary sources of airspace surfaces are utilized: FAR Part 77, *Objects Affecting Navigable Airspace*, and FAA Advisory Circular 150/5300-13, *Airport Design*. The State's primary interests are in maintaining the Airport runway environment and its associated approach areas. Therefore, it was determined that FAA standard Threshold Siting Criteria, as detailed in Table A2-1 of FAA AC 150/5300-13, *Airport Design*, be utilized as the basis for the Airport's airspace surfaces when the State's has minimum control over removing obstructions in mountainous and forested regions.

Note: While highest priority is rightly placed on obstructions located directly on the approach/departure paths on either end of the runway, it is still very important that secondary consideration be given to obstructions located in areas along the sides of the runway. As such, a design methodology was employed for establishing a non-standard runway primary surface and non-standard transitional surfaces that was generally based on FAR Part 77. Specifically, the following assumptions were made in establishing these non-standard surfaces:

- The non-standard runway primary surface width is based on the inner width of the Threshold Siting Criteria surface (120′) and not the standard widths based on approach surfaces defined in FAR Part 77.

- The non-standard transitional surfaces start at the runway primary surface and climb at a rate of 7:1 (similar to FAR Part 77) – however, these surfaces only climb to 45′ AGL, limiting their lateral width to 315′.
- The non-standard transitional surfaces intersect the Threshold Siting Criteria surfaces at appropriate elevations (i.e., the 45′ AGL contour of the transitional surface meets the 45′ AGL contour of the Threshold Siting Criteria surface.).

The following table provides a summary of the surfaces utilized and/or created as well as a graphical representation (Stehekin State Airport is shown in the example).

WSDOT Aviation VFR Airport Airspace Standard Dimensions	
Threshold Siting Criteria	Reference: FAA AC 150/5300-13, *Airport Design*, Table A2-1 Runway Type: 1 Surface Start Location: directly at RW end/threshold Surface Start Elevation: respective RW end elevation Inner Surface Width: 120′ Outer Surface Width: 300′ Inner Trapezoid Length: 500′ Overall surface Length: 3,000′ Surface Slope: 15:1 (horizontal: vertical)
Runway Primary Surface	Surface Start: at Threshold Siting Criteria surface Surface Width: same as Threshold Siting Criteria inner surface width (120′) Surface Length: 2,651′ Surface Elevation: RW centerline elevation at any given point
Runway Transitional Surface	Surface Start: at Threshold Siting Criteria surface and Runway Primary Surface Surface Width: 315′ Surface Slope: 7:1 Surface Elevation: starts at runway primary surface elevation and climbs to 45′ above that level

WSDOT Aviation VFR Airport Airspace Standard Dimensions Exhibit

It should be noted that while these are the standards established by WSDOT Aviation, each airport should be reviewed individually to determine if these standards are appropriate for that airport. In such cases where standards may not be appropriate, WSDOT Aviation shall modify them to fit the requirements of that particular airport.

6.3 What About Environmental Planning

As directed by its Environmental Policy Statement, all WSDOT employees shall follow sound environmental protection practices in the planning, design, construction, operation, and maintenance of WSDOT's transportation systems and facilities. This includes, but is not limited to, pollution prevention, energy conservation, environmental impact avoidance and mitigation, and compliance with environmental laws.

WSDOT is a positive force in support of the state's efforts to protect and preserve the quality of our environment, support healthy communities and sustainable economic growth, conserve natural resources, and respond to climate change by meeting the greenhouse gas emissions reduction and clean energy economy goals for Washington State. Responsibilities of WSDOT personnel with respect to its Environmental Policy Statement are summarized in the following table.

WSDOT Personnel Responsibilities	
Executive Responsibilities	• Executives must ensure that environmental compliance plans are current and compliance commitments tracked. • Executives are encouraged to look for opportunities to align the public's need for a healthy environment and a safe and reliable transportation system.
Employee Responsibilities	• Each employee must ensure that he or she is familiar with the environmental protection policies and procedures associated with his or her work. • Each employee will be proactive in communicating environmental compliance concerns to his or her supervisor and, as appropriate, consulting the region or modal environmental compliance plans. • Safety first Each employee must be familiar with the safety plans for their workplace, site visits, and other safety measures necessary to execute this order.

Similarly, in compliance with the Environmental Policy Statement, WSDOT Aviation recognizes the importance of and appropriately addressing environmental considerations associated with respect to planning, design, engineering, maintenance and construction activities at the state-managed airports. This section provides general guidance for environmental considerations related to the state-managed airports.

Environmental considerations are often very complicated and can encompass a wide variety of federal, state and local regulatory requirements. As such, while this section cannot address all of those possibilities, it does present general guidelines for how the WSDOT Aviation Airport Manager shall approach environmental planning issues at the state-managed airports as they arise. ***Note:*** The Airport Manager should consult with appropriate WSDOT Aviation and/or WSDOT Environmental Services, as required.

Important
- Recognize and understand.

SEPA Compliance Considerations

The State Environmental Policy Act (SEPA) is a Washington state policy that requires state and local agencies to consider the likely environmental consequences of a proposal before approving or denying the proposal. It is administered by a dedicated SEPA unit as part of the Washington State Department of Ecology.

WSDOT Compliance Manuals

The WSDOT *Environmental Procedures Manual* M 31-11 defines the procedures WSDOT will use to ensure compliance with all applicable environmental laws and regulations throughout the WSDOT Transportation Decision-Making Process. ***Note:*** This manual is generally updated on an annual basis.

Additionally, WSDOT has developed an Environmental Compliance Assurance Procedure (ECAP) for construction projects, and the procedure has since been incorporated into the WSDOT *Construction Manual* M 41-01. It is designed to enable WSDOT to recognize and eliminate environmental violations during the construction phase on WSDOT construction sites, and to ensure prompt notification to WSDOT management and agencies. Likewise, WSDOT has also developed an Environmental Compliance Assurance Procedure for maintenance projects. It may be found in Chapter 790 of the WSDOT *Environmental Procedures Manual*. The procedure is also incorporated into several Regional Environmental Compliance Plans applicable to maintenance.

WSDOT Project Scoping Guidance

WSDOT recognizes that environmental compliance must be weighed as early as project scoping. As such, during project scoping, it is important to conduct the following actions:

- Define the purpose and need for a project.
- Identify alternative design solutions and evaluate them from an engineering and environmental standpoint.
- Prepare a Project Summary to document the results and define the overall scope and cost of the proposed solution.

The Environmental Review Summary form is used to identify the potential environmental issues and impacts, any proposed mitigation, and any NEPA/SEPA documents and environmental permits that are likely to be required for the project.

If a NEPA Documented Categorical Exclusion (DCE) is required for the project, the Environmental Review Summary (ERS) will later get changed to an Environmental Classification Summary (ECS) for approval by the lead federal agency to document completion of the Environmental Review Process.

NEPA Environmental Reviews

The National Environmental Policy Act (NEPA) guidance is provided in the latest version of FAA Order 5050.4B to determine project environmental requirements for each proposed airport development project. The order provides detailed guidelines for determining a project's environmental requirements and for proper and complete environmental documents preparation.

1. **Categorical Exclusion** – A Categorical Exclusion (CE) is the type of environmental clearance required for those standalone airport development projects that do not require an Environmental Assessment (EA) or an Environmental Impact Statement (EIS).

   - These projects generally involve the repair or improvement of existing airport features such as runway, taxiway, and apron rehabilitation, constructing a heliport on an existing airport, pavement strengthening, reconstruction, runway extensions, and other airport development projects that will not significantly change the operation or function of the airport will usually qualify for a CE. Runway and taxiway lighting, pavement marking, installation of beacons, and visual approach aids, if they are not a part of a larger airport development plan that requires an Environmental Assessment or Environmental Impact Statement, would also qualify for a CE.
   - Grading or removal of obstructions on existing airport property that does not have off-airport environmental impacts can be classified as a CE. Land acquisition associated with projects such as those stated above will also fall within the limits of a CE.

   CEs are not to be used as a means of circumventing the need for either an EA or EIS. Proper planning should provide sufficient information in the early planning stages to determine the environmental requirements for all of the proposed airport development. A Categorical Exclusion Checklist (see example following section) should be completed and reviewed to determine if the proposed project can be classed as a CE or if further environmental work will be required before the proposed development can be approved.

2. **Environmental Assessment** – All proposed airport development projects that do not qualify for a Categorical Exclusion will require, as a minimum, an Environmental Assessment (EA). The ultimate purpose of an EA is to either support a Finding of No Significant Impact (FONSI) or to show the need for an Environmental Impact Statement (EIS). Any airport development that significantly changes the airport operations or the airport aircraft approach category will require an EA. The EA must satisfactorily address all of the areas of potential impact as noted in the current version of FAA

Order 5050.4B. Of particular concern is early public involvement in the planning and environmental process for any proposed airport development that will require an EA. Preparation of an EA requires that the sponsor advertise for the opportunity for a public hearing after a Draft EA is approved. The Draft EA must be made available for public review a minimum of thirty (30) days in advance of a public hearing in places that are readily accessible to the public during reasonable hours.

The Draft EA becomes an official environmental document when it is approved for public review. The scope, format, and depth of review of the individual effected environments are of particular importance in the preparation of an EA. The sponsor should have a clear idea of the ultimate development that is expected to occur on their airport and should select a consultant with sufficient expertise and experience to be able to successfully prepare all planning documents to support the EA and to prepare the EA in a manner that meets all of the guidelines in the current version of FAA Order 5050.4.

The EA is the sponsor's document and a very important part of the sponsor's planning documentation. It is their official statement that they have met all of the requirements of the environmental laws that pertain to the use of federal funds in the development of their airport. Until all environmental requirements are cleared none of the proposed development can take place. The FAA is responsible for reviewing the draft documents and for providing comments to the sponsor and their consultant as to the adequacy of the document. It also must approve the Draft EA and the advertisement and timing for a formal public hearing and to ensure that the public hearing is conducted in a satisfactory manner. Ultimately, it is FAA's responsibility to either approve a FONSI or determine the need for an Environmental Impact Statement after all review comments and EA requirements have been met.

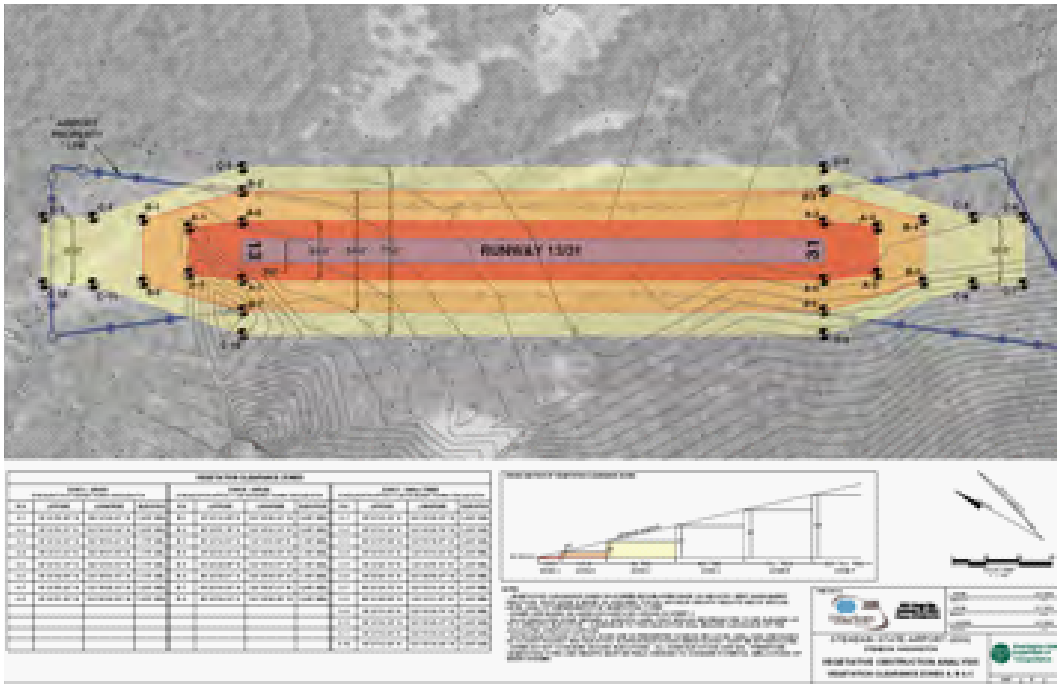
As stated above, careful consultant selection and early public involvement in the planning and environmental process can greatly enhance the successful outcome of these efforts. Public information meetings with businesses, citizens, and other governmental units that are likely to be impacted by the proposed development should be conducted throughout the planning period. Public planning and information meetings do not satisfy the need for the public's opportunity to request an official public hearing after the Draft EA is approved.

3. **Environmental Impact Statement** – Development on general aviation airports usually will not require the preparation of an Environmental Impact Statement (EIS). In most instances the need for an EIS will result from the findings during the preparation of an Environmental Assessment; therefore, an EA would normally be prepared prior to the development of an EIS. Prior to proceeding with an EIS the sponsor should review all previous planning and environmental work to determine if modifications to the proposed

development plans can be made that will eliminate the need for an EIS. The FAA is responsible for meeting all federal agency notifications, federal circulation requirements, scoping, review, administration and final federal approval of an EIS.

6.4 What Are the Vegetation Management Procedures

Vegetation management involves caring for and/or controlling plants on or near transportation facilities, such as airports. If managed properly, vegetation on and near such facilities can become self-sustaining over time, ultimately requiring less maintenance. This would help reduce costs, improve control results and minimize environmental impacts, including herbicide use.



As described previously, safety is of the highest priority for WSDOT Aviation. Vegetation that includes plants as small as weeds and as large as trees will grow out of control if left alone. This would ultimately block visibility (signs, etc.) and create airspace obstructions, or attract wildlife, endangering aircraft and pilots that operate at the state-managed airports. As such, a plan needs to be established for how to manage that vegetation in a responsible manner that promotes safe operational conditions, while minimizing environmental impacts.

A vegetation management plan (VMP) is a “how to” guide for the best way to manage vegetation around airports in any given area. Washington State has diverse climates and the state-managed airports have many neighbors, so the plans vary depending on location. Currently, each region within WSDOT has developed a VMP for their region. The plans formally establish the right tool(s), schedules, techniques that are appropriate for use at a range of transportation facilities. WSDOT Aviation is in the process of working with WSDOT Maintenance to add an airport addendum to each of the regions plans to address state-managed

airports. The approach would also include coordination with the applicable local, state or federal resource agencies, the land owner and other stakeholders to identify noxious weeds, vegetation management practices and other tools to establish formal VMP practices. Vegetation management tools can include the following:

- Mowing and trimming.
- Tree removal.
- Selectively using herbicides.
- Release of weed-eating insects.
- Improving soils.
- Planting native plants.

WSDOT Aviation intends to have formal airport VMPs established for state-managed airports for each region. The airport VMP will be established during development or update of an airport master plan and ALP or update of the regions VMP. This section generally defines what should be considered and included in the addendum for each region as they are developed. Once established, the *State-Managed Airport Handbook* will be amended accordingly.

Procedures for Developing Airport VMP

The purpose of a VMP is to define long-term, sustainable vegetative management and maintenance practices that would allow WSDOT Aviation to prevent future vegetative penetrations to safety-critical airport areas and airspace surfaces, while being protective of the environment. Ultimately, vegetation management plans for the state-managed airports will be utilized by the Airport Manager and maintenance crews to define the most appropriate tools, techniques and timing, for accomplishing prioritized airport maintenance activities. These plans, once developed, become the basis of an ongoing process of refinement and crew training, using annually documented experience of each airport's proven success and lessons learned. Ideally, the formal establishment and acceptance of a VMP will result in the relevant environmental agencies issuing an ongoing permit for vegetation maintenance operations as long as the VMP is followed

Currently, each WSDOT region has an adopted VMP. The VMP includes geographic inventories of routine maintenance activities, weed infestations, sensitive areas, and other relevant information. They also include a record-keeping system and database to document, evaluate and reference site-specific treatments, various situations and types of vegetation.

The following table generally describes the approach to be employed for establishing a VMP at a state-managed airport.

General Approach to Establish Airport VMP	
1	Identify the key stakeholders and interested regulatory agencies to participate in the VMP process. It should be noted that ultimately, a VMP is as much about the process of establishing it than about the document itself. The coordination, education, understanding and participation required for creating a VMP is a key element for ensuring its success.
2	Coordinate with the WSDOT Maintenance and applicable WSDOT region to assess vegetation management issues within the Region and assess probable vegetation and environmental characteristic, applicable resource agencies and other factors needed to develop successful solutions for addressing a VMP within the airport operating environment.
3	Identify those airport design safety and object free areas, as well as airspace surfaces that are most critical to ensuring the standard level of safety at each airport. These airspace surfaces could include any or all of the following: • FAR Part 77 Surfaces • FAA TERPS Surfaces, if applicable • FAA AC 150/5300-13, *Airport Design* areas • NAVAID clearance areas • Customized WSDOT safety/object free areas • Customized WSDOT airspace surfaces
4	Analyze the identifie surfaces with respect to the existing ground contours around each airport to identify height/clearance requirements at and around each airport.
5	Establish Vegetative Management Zones based on those clearance requirements. These zones would effectively merge those clearance requirements with generalized vegetation height classification to create a system whereby only certain types of vegetation having specifi maximum heights would be permitted in a particular zone.
6	Compare existing vegetation types with existing soils to estimate maximum expected vegetation (tree) heights. This information would be used to delineate which areas in a particular Vegetative Management Zone would likely require removal of vegetation to preclude existing or future penetrations into airspace surfaces. *Note:* The ultimate goal for these Vegetative Management Zones is for them to be in effect "self-regulating in that the vegetation that they contain could not grow to a height that would ultimately cause obstruction or penetration of airspace surfaces. *Note:* Existing or planned control measures should also be considered to help minimize the extent of these zones.
7	For those areas where existing vegetation and soil types indicated the potential for future or existing airspace conflicts identify best management practices based on the difference between the maximum expected vegetation height and the maximum allowable height of the respective Vegetative Management Zone. Areas should be identifie that would require complete vegetation removal (clear cut) based on potential penetrations into airspace surfaces. Maintenance and inspection practices and procedures for areas should be developed that do not necessitate complete vegetation removal to ensure the integrity of those airspace surfaces. Recommendations on annual updates should also be provided to document the vegetation management practices and establish a projected schedule of maintenance and inspections.
8	Coordinate with project stakeholder groups to ensure that completed VMP is integrated into WSDOT vegetation management program.

While there are no specific standard established for the contents of an airport VMP, the following table describes those elements that might reasonably be expected to be included in an appropriate VMP for the state-managed airports.

VMPs Elements	
Regulatory Objectives	• Part 77 Surfaces • TERPs Surfaces • NAVAID and other Customized Surfaces • Control Measures to Conform with Regulated Surfaces • Airport Assumptions • Environmental Regulations
Routine Maintenance Activities	• Route Mowing/Trimming (Guidelines/ Methods/ Locations) • Hazard Tree Removal (Guidelines/Methods/Locations)
Integrated Vegetation Management Activities	• Integrated Vegetation Management Planning and Tracking Database • Noxious Weed Control (Guidelines/Methods/Locations) • Nuisance Weed Control (Guidelines/Methods) • Tree and Brush Control (Guidelines/Methods)
Special/Sensitive Maintenance Areas	• Wetlands • Flood Zones • Archeological Sites • Rare and Endangered Species List • Recommended Procedures • Coordination with Regulatory Agencies
Appendices	• Integrated Vegetation Management Prescriptions • Herbicide Use Guidelines • Zone Map • Routine Mowing Map/Limited Access Mowing Map • Weed Identificatio Photos/Location Maps • Special Maintenance Areas • Forms and Records • Stakeholder List

Once the VMPs have been formally completed, WSDOT Aviation shall utilize and updated them as stipulated within the plans.

6.5 What is the Airport Land Use Compatibility Program

One of the main challenges facing aviation today is the encroachment of incompatible land use development adjacent to airports. To meet this challenge, the state of Washington has instituted legislation that requires local jurisdictions to discourage the encroachment of incompatible development adjacent to public use airports. Technical assistance is provided by the WSDOT Aviation through the Airport Land Use Compatibility Program.

The development of land uses that are not compatible with public use airports are a primary concern within the state of Washington, and nationwide. In addition to safety, airport operations and aircraft characteristics needs to be considered when addressing the overall issue of land use compatibility around airports. Although several federal programs include airspace standards and noise mitigation measures as part of their funding-eligibility and performance criteria, the primary responsibility for integrating airport considerations into the local land use planning process rests with airport sponsors and the local governments. The objectives of compatible land use planning are to encourage land uses that are generally considered to be compatible with airports. Generally uses that are compatible with commercial and industrial activity will also be compatible with airports. Uses that may be incompatible would include uses such as K-12 school, hospitals, convalescent homes, sporting complexes, and single family residential on lots less than 5 acres in size.

Through the development of its Airport Land Use Compatibility Program, WSDOT Aviation is at the forefront of assisting local jurisdictions, airports, and other interests to protect public use airports from incompatible development by providing technical assistance and resources to support local decision-making. This section provides guidelines for the application of this program with respect to the state-managed airports.

As sponsor of the Airport Land Use Compatibility Program, WSDOT Aviation shall utilize and implement (as required) the recommendations and tools included in that program for each of the state-managed airports. It is understood that WSDOT Aviation should work closely with the local land use jurisdiction to adopt comprehensive plan policies and development regulations to discourage incompatible development.

Program Objectives

In 1996, Washington State passed land use legislation (RCW 36.70A.510, RCW 36.70.547). Under this provision of the Growth Management Act (GMA), all towns, cities and counties are required to discourage the encroachment of incompatible development adjacent to public use airports through adoption of comprehensive plan policies and development regulations. GMA also identifies airports as essential public facilities. WSDOT Aviation provides a technical assistance program to help communities meet the requirements of the law.

Airport Land Use Compatibility Program Objectives	
1	Ensure the functions and values of airports are protected and enhanced statewide.
2	Assist towns, cities and counties in meeting update deadlines for comprehensive plans and development regulations.
3	Provide education, workshops and training on best practices to protect airports from adjacent incompatible development and enhance airport operations to meet transportation demand.
4	Showcase the good work of local governments in implementing GMA requirements.

Supporting Legislation

There are several primary sources of supporting legislation for the WSDOT Aviation Airport Land Use Compatibility Program. These are listing and described within the following table.

Supporting Legislation	
RCW 14.07 and 14.08 Municipal Airports Act	The act adopted in 1941 and 1945 provides for the acquisition and sponsorship of airports by Washington cities, towns, counties, port districts, and airport districts.
RCW 14.12 Airport Zoning	This section was adopted in 1945 and establishes definitions criteria, and allows local jurisdictions to adopt zoning controls to protect critical airspace from buildings, structures or other airspace obstructions. The law provides direction and guidance to cities and counties on airport hazards.
RCW 36.70.547, 36.70A.510, 35A.63.270, and 35.60.250 General Aviation Airports	These sections were adopted in 1996 and requires all cities and counties (also applies to city or counties not planning under GMA) to protect public use airports from the siting of incompatible development, whether publicly owned or privately owned public use airports through its comprehensive plan and development regulations. The plans may only be adopted following formal consultation with airport owners and manager, private airport operators, general aviation pilots, ports, and WSDOT Aviation. The law requires that comprehensive plans and regulations be file with WSDOT Aviation and that each jurisdiction may obtain technical assistance from the WSDOT to develop plans consistent with state law.

RCW 36.70A Growth Management Act	The Growth Management Act was originally adopted in 1990, and identifie requirements and processes under which counties and cities are required to act. Within the Act there are several important sections related to airports. • RCW 36.70A.070 outlines mandatory elements within a comprehensive plan, which includes maps, descriptive text covering objectives, principles, and standards, and that the comprehensive plan must also be internally consistent with all elements. This section also requires that an inventory of air, water and ground transportation facilities and services be included. As well, new or amended elements of the Act must be adopted concurrent with scheduled update provided in RCW 36.70A.130. • RCW 36.70A.130 requires that each comprehensive plan and development regulations shall be subject to continuing review and evaluation by the county or city that adopted them. A county or city shall take legislative action to review and, if needed, revise its comprehensive plan and regulations to comply with this section. Legislative action means the adoption of a resolution or ordinance following notice and a public hearing indicating at a minimum, a findin that a review and evaluation has occurred and identifying the revisions made, or that a revision was not needed and the reasons thereof. Additionally, any amendment of or revision to development regulations shall be consistent with the comprehensive plan. • Airports are also recognized under RCW 36.70A.200 by the state as essential public facilities (EPF). All counties and cities planning under GMA RCW 36.70A.040 are required to protect public use airports as essential public facilities. Jurisdictions are required to develop a siting process for locating EPF and should not prohibit the siting, expansion, or continuation of EPF within their comprehensive plan or development regulations. Nor can jurisdictions develop strategies or develop provisions within their comprehensive plan or development regulation that would render the siting of an EPF impossible, impractical, or incapable of being accomplished, however, it is not inappropriate for a jurisdiction to require applicable conditions or mitigation measures.

Airport Land Use Compatibility Program Resource Materials

The following table provides a listing of resource materials that are currently available for review and use.

Supporting Resource Materials	
Resource Documents and Other Sources	• The Growth Management Act 101 • WSDOT Aviation Airports and Compatible Use Guidelines • Land Use Compatibility and Airports, A Guide for Effective Land Use Planning, FAA Airports Division Southern Region • Height and airspace Hazards • Airport Stormwater Design Guidelines
Land Use Planning Tools	• Example Scope of Work • Example Comprehensive Plan Goals and Policies • Example Disclosure Notice • Frequently Asked Questions • Reference Materials from the FAA, Defense Department, other states, universities, etc. • Index of Airport Master Plans (City/County, Airport Name, Subject, Year) • List of Airports by County and MPO/RTPO Regions

6.6 How to Plan for Public Communications

A primary responsibility of an airport manager is the initiation and maintenance of a proactive and open public awareness, outreach and education program. Many times, airports only undertake public involvement efforts in order to secure a short-term goal, such as to win approval for major facility enhancements. However, a truly successful relationship between the airport and the community requires the ongoing attention of the airport to ensure that it is being a good neighbor.

The following section provides guidelines for public communications with respect to the state-managed airports. These guidelines incorporate both current WSDOT Communication practices , as well as several best management practices used within the airport industry.

Current WSDOT Communication Program

WSDOT currently has a communications program already formally established for use during specific planning efforts. While not specifically designed for airport activities and audiences, this program encompasses many of the elements discussed above.

Work Together to Reach Common Goals

Bring together all managers and employees who own the content, work with customers and maintain the site. Adopting an inclusive process at the outset helps ensure the final product meets the needs of everyone involved, especially customers. With many people planning a website you may find that each person could have different goals, expectations and direction for the site.

Using the WSDOT Creative Brief and Communication Planning directions below will help get everyone involved working toward the same goal. Use these tools to ensure your website is developed right the first time.

Communication Tools	
Creative Brief	Use the brief to get all the issues on the table, get everyone on the same page, defin your target audiences, develop your key messages, and develop a timeline.
Communication Planning	Use this format to develop a formal Communication Plan when you need to accomplish the above and in addition to creating a new website, you also need to reach customers in more ways than the Web such as via open houses, media, posters, brochures, email campaigns, list serves, and any other mediums. This ensures all communications support each other and enhances the effectiveness of the entire communication campaign.

Information on Creative Briefs

The process for developing a creative brief can be as simple as answering the following questions. As a group and write the answers on a flip chart so everyone can follow the process.

Key Creative Briefs Questions	
1	**What is the assignment?** • *Example:* Develop a website for x subject.
2	**What do you want this plan to accomplish?** • *Example:* Reach customers and let them know what services and tools are available to help them.
3	**Who is your target audience or stakeholders?** • *Example:* Describe them in as much detail as possible.
4	**What does your target audience think now?** • *Example:* This can be in the form of a quote, “I have no idea why WSDOT doesn’t solve the congestion problems. We obviously shouldn’t give them any more money until they fi what they have.”
5	**What do you want them to think?** • *Example:* What do you want to happen or have the target feel when your communication plan is done? You can use a quote for this answer as well. “WSDOT has proven they spend money wisely by providing detailed information showing projects are on time and on budget.”

6	**What are the main messages you plan to communicate?** • Select three or fewer key messages. They should be short and succinct.
7	**Why should the target audience believe this?** • *Example:* What type of supporting material do you have – incentives and/or cutting edge information.
8	**Is there anything else that is important?** • This is the bare your soul time. Identify the elephants lurking in the room.
9	**What is the decision/input timeline?**
10	**What is the due date?**

More Information on Communication Planning

Communication planning yields success. The Plan is what keeps you from trying to do everything and helps prioritize which elements will get you the most bang so you can minimize risk and maximize results. Great communication plans have established parts. You must define each of the following parts. (See also WSDOT Communication Plan Template at the end of this section.)

Key Communication Planning Components	
Goal	This is the thing you want to do. In business, a goal might be to sell more widgets. For the agency, your goal might be to increase awareness.
Objectives	There are broad ideas of how you will achieve your goal and how you will measure success - objectives need to be quantifiable These are written as sentences. Use beginning words like develop, position, build, determine, help, assist, etc.
Target Audiences	Be as descriptive as you can. You may need to break your audiences into primary and secondary audiences if you have several target audiences. For example, if elected official are a primary audience, the media may be a secondary audience. The public is not a target audience but define segments of the public can be.
Key Messages	Be concise. No more than three. Messages must be short, easily repeatable and readily understandable.
Strategies	Strategies are more specifi than objectives. Use words such as: utilize, produce and concentrate. “Utilize integrated communication to achieve goal (public relations, government/ community relations, program sponsorship, etc.) Strategies are how you achieve your objectives.
Tactics	Be very specific These are the actual actions that will be taken to achieve your goal. These are assignable tasks. They are deliverables.
Budget	Be realistic.
Timeline	Start at the end of your planning cycle and plan backward. Be realistic about how much time things take to accomplish – review and adjust as needed.

Public Communication and Relations for Airports – Best Practices

As defined, community or public relations is "a set of management, supervisory, and technical functions that foster an organization's ability to strategically listen to, appreciate, and respond to those persons whose mutually beneficial relationships with the organization are necessary if it is to achieve its missions and values."

At its core, effective airport-community relations depend on trust. It is difficult for community members to have trust in airports if they feel their concerns and ideas are consistently being discounted and/or rejected. If trust is to be built with regard to airport activities, it is fundamental that airport management be responsive to criticisms and make real efforts to see things from different perspectives. Similarly, it is critical that the community fully appreciate the requirements and constraints experienced by airports. As such, it is incumbent upon airport representatives to offer the community insight as to the practical realities of airport operational requirements.

The goal of airport community relations is the establishment and preservation of relationships and trust through effective communications.

Some Common Misconceptions

- **A Low Profile Will Avoid Difficulties** – There is no such thing as a "low profile" for an airport. The mere fact that the airport exists means people will have opinions about it.
- **Public Relations is Just About Publicity** – Public relations involves everything the airport is and does that addresses or affects the public interest. The best time to start a planned, positive public relations program is before you need it.
- **Everybody Knows How Important Airports Are** – Many airport-related problems arise from a lack of understanding by the community and its leaders of the airport's value. Most opponents believe an airport is just for hobbyists and therefore frivolous, expensive and expendable. It is up to the airport to promote the value of the airport to the local community.
- **We Only Need Public Relations for Specific Projects** – A public relations program should include community involvement, political action, and media relations. Ideally, it should be launched before any negative public opinion builds into action and continued even when no crisis threatens.

Developing an Airport Public Relations Plan

The ultimate purpose of public relations is to influence public opinion through persuasion. In essence, it is convincing people that a viewpoint offered serves their best interests, or that they should subordinate their personal self-interest in favor of a greater public interest. With respect to airports, persuasion will typically require an effective public relations effort comprised of steps in the following table.

Key Steps for Developing an Airport Public Relations Plan	
1	Defin and write down your objectives for your public relations plan. In order for your public or community relations plan to be successful, it is firs most important to determine and defin your objective.
2	Defin your goals in achieving this objective. It is important that your goals be specific measurable, results-oriented and time-bound. These goals must be in-line with your overall airport operations, development and business objectives.
3	Determine who comprises your target audience and what issues are important to them. Who is it that you want to reach with this campaign? What do you want your key message to be?
4	Develop a schedule for your public relation campaigns. Create synergy by coordinating your public relations plan with other promotional efforts.
5	Develop your plan of attack. Determine which media your audience uses and trusts the most, and identify those communication vehicles you will use to get your message to the public. Examples include the following: • Advisory committees, public hearing testimony. • Press releases, articles, letters to the editor, newsletters. • Press conferences, interviews, or media tours. • Radio, television, or press Interviews. • Seminars or speaking engagements. • Event sponsorships.
6	Establish measures to track the results of your public relations plan. At specifi times, review the plan and ask questions. For example, did you achieve the define objectives and goals of this campaign? Should you consider modifying your original plan?

Foundations for an Effective Airport Communications Plan

To establish an effective airport communication plan the airport manager must incorporate the interests of the local community with the goals of the airport … understand in detail how the goals of the airport compare with those of the surrounding community. It is essential that these goals align to the greatest degree possible with the community, particularly when they are complementary.

Examples:

- If the community wants growth, point out how an airport attracts business.
- If it wants safety, point to the role airports play in law enforcement or in movement of emergency supplies after a natural disaster such as a hurricane or earthquake.

In order to effectively establish the airport's position with respect to these goals, the airport manager should collect and track relevant airport operational data (both hard and anecdotal), such as the following:

- Details of the significant role the airport plays in the community (law enforcement, disaster relief, and handling dignitaries or business visitors).

- Aircraft traffic counts, both local and itinerant.
- Economic implications – document the number of businesses at the airport, their jobs and payroll; the businesses connected with or dependent on the airport and the jobs they provide; outside businesses that fly to your airport; tourism, etc.
- Social implications – document how the airport is currently used.
- Emergency services (medical, firefighting, access/evacuation, etc.).
- Emergency landing
- Education, vocational training, flight training.
- Law enforcement, military or National Guard.
- Air cargo (mail, overnight express parcel, high-priority freight handling for just-in-time manufacturing operations delivery, etc.).
- Pipe or power-line patrol.
- Agriculture.
- Personal air transportation (which results in gas sales, tiedown fees, and maintenance services).

In order to anticipate community reactions and to effectively respond to their concerns, it is important that the airport manager have a clear understanding of who comprises the community and what their attitudes toward the airport may be. For example, typical questions that oftentimes remain unanswered for an airport manager include: Is opposition to the airport common throughout the community, or just among a vocal few? Is there positive opinion out there that needs to be strengthened and made public? Is there negative opinion that can easily be erased with a few clarifying facts? While this type of attitude research is commonly done by advertising firms, it can be costly. However, an airport manager might interest an advertising class at a local school or university in examining attitudes about the airport at no cost. Local business leaders or civic organizations might also sponsor such research.

What is important for an airport manager to recognize is that it is best to collect as much information regarding the airport and the host community as possible, and that even a little data can help.

Airport Public Outreach Conduits Strategies

A progressive and enthusiastic public outreach program will endeavor to communicate the many ways that airports provide positive benefits to the communities in which they serve. It will also be the responsibility of the airport manager or administrator to be vigilant against forces that may act to discredit these positive impacts.

There are a wide variety of methods and means to communicate to the public with respect to the airport. ***Note:*** Use of multiple mediums for the dissemination of information is recommended to ensure that a diverse range of interests are communicated with, and the facts surrounding the project are distributed in a straightforward manner. The following reflect several examples.

- **Technical Advisory Committee (TAC)** – Ongoing public relations can be effectively facilitated by a special airport committee such as a TAC, which are typically formed to oversee the development of an airport master plan. Members of such committees typically hold some influence within the community and usually include local elected officials or their representatives, local and regional planners/engineers, stakeholder agencies, airport businesses/airlines, pilots, and neighborhood groups. A significant benefit to utilizing this group of individuals is that they likely have at least a basic working understanding of airport operational considerations, which can be leveraged to enhance communication with the general community.
- **Committee Outreach** – Effective community outreach begins with communicating and educating local civic organizations. This aspect is critical since people who care enough to hold and defend an opinion on community issues are almost always involved with a civic organization. Generate a listing of these organizations and establish a program of regular briefings/ educational efforts on behalf of the airport. Create a standardized audiovisual slideshow presentation for these briefings that educates the audience on the airport, and promotes its benefits to the community. ***Note:*** Schools can be a valuable resource in that there are numerous ways to nurture aviation interest among students, ranging from flights for interested teachers to simply collecting aviation magazines and donating them to school libraries. AOPA has information on a variety of promotional programs, including "Fly-A- Teacher," "Fly A Reporter," "Fly A Leader," and AOPA's "APPLE" (America's Pilots Participating in Local Education) program.
- **Special Events** – Airport-sponsored special events are among the best ways to promote aviation in the community. These events can include airport anniversary celebrations, military reserve days, air races, static displays, fly-in breakfasts, dedication of new buildings, youth group activities, career days, student art showings, antique shows, and warbird displays. Most of these events can be conducted with minimal expenditures of time and money through use of existing airport facilities and volunteers. However, it must be noted that many such events fail due to lack of proper planning. Basic requirements for a special event include a planning committee, a sponsor, and a small reserve of operating funds. It is generally sound practice to appoint one person to coordinate all planning and information. It is also good practice to leverage community involvement through participation of local parent-teacher associations, Civil Air Patrol, the Boy Scouts, etc.

- **Briefings**
- **Webpage**
- **Media Outreach** – Given the evolution and recent expansion of media outlets, it is critical that airport management develop a program to integrate appropriate media coordination into its overall communications efforts. It must be recognized that existing media resources are the best and most cost-effective means for the airport to reach the community. However, it must also be understood that utilizing this resource in an effective manner requires not only establishing relationships with media elements, but also maintaining those relationships over the long term. While there are significant benefits available to airport management when these relationships are managed appropriately, mismanagement or neglect of these relationships can result in negative impacts for the airport that are just as dramatic. Some of the methods that media outlets can be leveraged include the following table.

Media Outlet Methods	
Press Liaison	Become a news and contacts source for media outlets.
Press Releases	Issue timely announcements of newsworthy events, actions, or statements. News releases must be concise, to the point and, above all, contain genuine news. (Aviation list service)
News Events	Beyond a press release, directly providing media outlets with news is an excellent way to generate publicity. *Note:* Determining what is "news" is open for interpretation. For example, simply having an opinion doesn't constitute news unless a public statement contributes meaningfully to a current, high-profil public debate. While releasing an economic study of the airport can be news, sending a copy to a local officia is still bigger news, since the reporter could then work that officia into the story. Additionally, the reporter would likely call the officia for comment, effectively facilitating the process of public dialogue. In some cases, the public officia could perhaps provide the airport with support by publicly agreeing with the information that was developed.
Media Events	A media event is an occasion or happening that attracts coverage by mass media organizations. For example, an aviation day for the local news media, held at the airport, has proven to be an effective media relations opportunity. *Note:* These media events can coincide with the Special Events discussed above.
Letters to the Editor	A letter to the editor of the local newspaper, or a posting on its website, can often be an effective means of responding to a news story, particularly if it is believed that the reporter is not conveying the position of the airport appropriately.

Political Action	Political action and public relations tie closely together in any campaign to gain support for a local airport. While a successful public relations campaign focuses primarily on the objective of influencin "public opinion" concerning an airport, political action focuses on influencin those elected official who make decisions on important airport issues.
Personal Contact	Personal contact is probably the most effective means of communication. However, due to its inherent limitation with respect as to how many people can be directly contacted, its use should be employed judiciously.
Public Meetings	Effective public meetings are oftentimes the best means of creating synergy between the public outreach efforts described above. Through disseminating information about the airport, a public meeting can be a media/news event that oftentimes involves public official and typically results in facilitating personal contacts following the meeting.
Electronic Promotions	New electronic mediums continue to evolve that afford an airport manager additional avenues of communication. These can include website notifications email "blasts," and mass "texting" that reflec the migration of communications from mass to personal media.

6.7 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

6.1 What is the Importance of Airport Planning Studies
• FAA AC 150/5070-7, *The Airport System Planning Process*. FAA. 10 November 2004
• FAA AC 150/5300-13 CHG 14, *Airport Design*. FAA.1 November 2008
• FAA AC 150/5070-6B CHG 1, *Airport Master Plans*. FAA. 1 May 2007
• FAA Order 5100.38C. *Airport Improvement Program Handbook*. FAA. 28 June 2005

6.2 What Are the Airport Design Standards
• FAA AC 150/5300-13 CHG 14, *Airport Design*. FAA.1 November 2008
• FAA AC 150/5070-6B CHG 1, *Airport Master Plans*. FAA. 1 May 2007
• FAA Order 5100.38C, *Airport Improvement Program Handbook*. FAA. 28 June 2005
• FAR Part 77, *Objects Affecting Navigable Airspace*. FAA

- FAA Order 5050.4B, *Environmental Handbook*. FAA. 28 April 2006
- FAA Order 8260.3B, *United States Standard for Terminal Instrument Procedures*. FAA. 15 May 2005
- FAA AC 150/5390-2B, *Heliport Design*. FAA. 30 September 2004

6.3 What About Environmental Planning

- WSDOT *Environmental Procedures Manual* M 31-11
  www.wsdot.wa.gov/publications/manuals/m31-11.htm
- Washington State Department of Ecology. State Environmental Policy Act (SEPA) Handbook. October 2008
  www.ecy.wa.gov/programs/sea/sepa/handbk/hbtoc.html
- FAA Order 5050.4B, *Environmental Handbook*. FAA. 28 April 2006
- WSDOT. National Environmental Policy Act (NEPA)/State Environmental Policy Act (SEPA) Guidance
  www.wsdot.wa.gov/Environment/Compliance/NEPA_SEPA.htm
- WSDOT. Department of Transportation Act, Section 4(f) Guidance
  www.wsdot.wa.gov/environment/compliance/section4fguidance.htm
- WSDOT. Land and Water Conservation Fund Act, Section 6(f) Guidance
  www.wsdot.wa.gov/environment/compliance/section6fguidance.htm
- WSDOT. Environmental Justice Guidance
  www.wsdot.wa.gov/environment/ej/envirojustice.htm

6.4 What Are the Vegetation Management Procedures

- WSDOT Integrated Vegetation Management
  www.wsdot.wa.gov/maintenance/vegetation/default.htm

6.5 What is the Airport Land Use Compatibility Program

- WSDOT Aviation Airport Land Use Compatibility Program
  www.wsdot.wa.gov/aviation/landusecompatibilityoverview.htm
- RCW 14.07 and 14.08 Municipal Airports Act
  http://apps.leg.wa.gov/rcw/default.aspx
- RCW 14.12 Airport Zoning
  http://apps.leg.wa.gov/rcw/default.aspx
- RCW 36.70A Growth Management Act
  http://apps.leg.wa.gov/rcw/default.aspx
- RCW 36.70.547, 36.70A.510, 35A.63.270, and 35.60.250 General Aviation Airports
  http://apps.leg.wa.gov/rcw/default.aspx
- Airport Noise Compatibility Planning Toolkit. FAA. 12 December 2006
  www.faa.gov/about/office_org/headquarters_offices/aep/planning_tool t
- FAA AC 150/5020-1, *Noise Control and Compatibility Planning for Airports*. FAA. 5 August, 1983

6.6 How to Plan for Public Communications
• Aircraft Owners and Pilots Association (AOPA). Guide to Obtaining Community Support for Your Local Airport. AOPA. 15 April 2008 www.aopa.org/asn/airportpr/
• Lake, Laura. Six Steps to Developing Your Public Relations and Media Plan. About. 15 April 2008 http://marketing.about.com/cs/publicrelations/a/prplan6steps.htm
• National Air Transportation Association (NATA). Community Relations Toolkit. NATA

Supporting Documentation

The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

6.1 What is the Importance of Airport Planning Studies
• FAA Airport Layout Plan Drawing Set Checklist

6.3 What About Environmental Planning
• WSDOT Environmental Policy Statement, April 7, 2009
• WSDOT Project Definitio Form
• WSDOT Design Decisions Form
• WSDOT Environmental Review Summary Form
• FAA Categorical Exclusion Checklist
• Environmental Permits and Approvals, WSDOT *Environmental Procedures Manual*

6.6 How to Plan for Public Communications
• WSDOT Communications Plan Template

Chapter 7 Airport Management Guidelines

In This Chapter

- What are the airport manager's administrative responsibilities?
- What records must be maintained?
- How are complaints managed?
- What are airport minimum standards/airport rules and regulations?
- What are the current airport leasing procedures?
- What are the current purchasing and procurement procedures?

The Washington State Department of Transportation (WSDOT) Aviation Division's (WSDOT Aviation) primary responsibility with respect to the state-managed airport system is to maintain and operate the airports in a safe and serviceable condition for air travelers and operators. While other activities are permitted and occasionally solicited at the airports, they should not conflict with or hamper the ability of WSDOT Aviation to fulfill its primary function.

Managing the state-managed airports to assure their future is an important and complex responsibility. There is a wide spectrum of stakeholders to which the WSDOT Aviation Airport Manager is responsible, ranging from local pilots and neighbors to state and federal officials, each with their own interests and agendas. The critical challenge for the Airport Manager is to not only recognize and understand the extent of stakeholders and their positions with respect to the airport, but to also be able to effectively balance those interests for the long-term interest of the airport.

Administering the airport system efficiently and effectively is a challenging responsibility. Operating a successful airport closely resembles the job of managing a successful business. This challenge is summarized in the following sections, which describe the responsibility of the Airport Manager to the state of Washington, and to the airport community and its users. This chapter also addresses the airport management administrative elements required to effectively operate the state-managed airports.

It should also be noted that the WSDOT Aviation Airport Manager (referred to herein as the "Airport Manager") has the ultimate responsibility for ensuring that the sections within this chapter are utilized, maintained and updated.

Section Contents

Make Sure

- Check that the sections are current!
- Do they need to be updated?

Key Section Dates

Information is only as good as its current relevance. Therefore, it is important that the information contained within this chapter be updated on a regular basis to ensure that it remains appropriate to current conditions. The following table presents the dates that each section was formally adopted by WSDOT Aviation, as well as the scheduled date for the next internal review of each section to ensure its currency.

Section	Current Date	Scheduled Review Date
7.1 What is Included in Airport Administration	7/1/10	6/1/11
7.2 An Overview of Airport Standard Procedures	7/1/10	6/1/11
7.3 What Are the Airport Property Management and Leasing Standards	7/1/10	6/1/11
7.4 Airport Purchasing and Project Procurement	7/1/10	6/1/11
7.5 Chapter References and Supporting Documentation	NA	

7.1 What is Included in Airport Administration

The term “airport administration” can encompass an extensive range of organizational design factors, performance measures and operational requirements that are common with any type of organization. But what is most important to recognize for the management and administration of an airport, including that of the state-managed airport system, is that airports should be operated similar to that of a business organization.

One of the hallmarks of the aviation industry is that of competition. In terms of both commercial aviation and general aviation, competition with respect to efficiency and profitability drives all aspects of the aviation industry, including airports. Subject to any number of local, state, regional, national, and international market considerations, airports of all sizes must be able to respond to market conditions and demands in a decisive and immediate manner; an inappropriate delay in response to evolving conditions could result in inefficiencies, degraded

market share, and a degraded level of service. As such, an airport must be managed and operated as a business more so than any other group or department within a typical city or state government. Therefore, it is critical that airport management be designed and positioned in such a fashion as to ensure their flexibility in responding to market demands.

While it is understood that the state-managed airports are small, low activity, and remote in nature, they are still required to be operated and administered as an efficient and effective business unit. This section of the chapter introduces several key indicators of an effective organization, as well as supporting information related to best management practices for these indicators.

Airport Administrative Structure

WSDOT Aviation is charged with the responsibility of managing, operating and administrating the state-managed airport system for the benefit of the state of Washington. Within WSDOT Aviation, the Airport Manager has the day-to-day responsibility of operating and managing the system. That person reports directly to the WSDOT Aviation Director and is supported by various other members of WSDOT Aviation on an as needed basis. (Additional information regarding WSDOT Aviation and airport administrative structures is provided in a supplement following this section.)

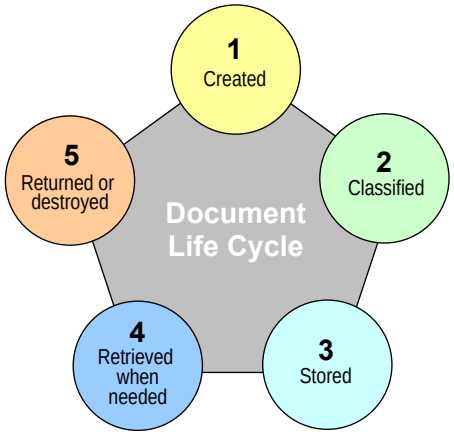
Good record keeping is essential to achieving better control over operating results. Internally, a good record system makes possible the detection of employee frauds, material waste, errors, spoilage, and other losses requiring prompt correction. It may also pinpoint employee skill deficiencies as well as internal organization problems. (see RCW 40.14.010 *Records Legal Definition* and RCW 40.14.060 *Destruction, disposition of official public records or office files and memoranda – Record retention schedules*.

Enforcement Compliance

The Airport Manager has the responsibility to ensure that the requirements and policies of this guidebook are maintained, updated and enforced.

General Records Management

Records have been described as the working tools of management, the memory of the organization, and the source of many kinds of valuable information that is needed in the process of making business decisions. The challenge to management is to bring the tidal wave of records under control and to create a system that serves the needs of the company as efficiently and economically as possible.



All records follow a similar path or cycle in their existence. Each of these steps must be understood and controlled as part of an active records management program. They are (1) created, (2) classified, (3) stored, (4) retrieved when needed, and (5) returned to storage or destroyed.

WSDOT Aviation has a written program specifically designed to provide direction in regard to records management titled *Aviation File Room Data Base Manual*. The WSDOT Aviation file room/library houses historical information on aviation and provides resources to be used in future decision making. The Airport Manager should maintain and archive as needed all pertinent records related to the items listed in the following table (see RCW 40.14.010, *Records Legal Definition*).

Partial Listing of Records to be Maintained	
A	Land acquisition records should be kept permanently as should relevant legal documents.
B	Legal documents, including leases, agreements, etc. (6 years).
C	Maintenance documentation, including contracts, logs, purchase orders, volunteer documentation, etc. (6 years).
D	Construction documentation, including contracts, specifications as-built drawings, etc. (6 years).
E	Planning documentation, including studies should be kept permanently as should relevant environmental data/permitting, etc. (? years).
F	Purchase orders, agreements, payments, etc. (6 years).
G	Communication documents (1 to 6 years depending upon content).
H	Any other documentation deemed relevant by the Airport Manager.

Complaints Management

Negative correspondence or complaints are occasionally received by WSDOT Aviation regarding the state-managed airport system. During such occurrences, the following actions shall be taken.

Complaint Management Process	
1	All complaints shall be forwarded to the Airport Manager.
2	The Airport Manager shall record/document the complaint in paper and/or electronic formats. (*Note:* Phone call complaints shall be documented by recording the day, time, name of complaint, nature of complaint and WSDOT Aviation response.)
3	WSDOT Aviation Director shall be informed of the complaint.
4	The Airport Manager shall formulate an appropriate response to the complaint, including through coordination with WSDOT Aviation personnel.

5	Airport Manager shall provide a written response to the complaint. If providing a written response is not possible (i.e., telephone response required), the Airport Manager shall respond and document the conversation. The WSDOT Aviation Director shall be copied on this response.
6	The Airport Manager shall attach the WSDOT complaint response to the original compliant and maintain them as records until such time as they can be disposed, as define by the records management plan.

7.2 An Overview of Airport Standard Procedures

The Airport Manager shall apply, utilize and enforce all policies defined for the state-managed airport system. Additionally, the Airport Manager should employ appropriate airport management tools to help ensure that the airports are operated and maintained to a level that is consistent with the state-managed airport policies addressed in Chapter 1. This section provides information and guidelines regarding the following elements:

- Airport Rules and Regulations
- Airport Minimum Standards
- Adopt-an-Airport Program

Airport Rules and Regulations

An airport rules and regulations document is generally established to facilitate the safe, orderly, and efficient use of the airport for the benefit of its users. Its primary purpose is to ensure that airport tenants and customers operate in a safe and orderly fashion, as well as to restrict any activity that would interfere with the safe and orderly use of the airport.

The airport rules and regulations document should include the necessary administrative, operational and safety rules and regulations for the management of the state-managed airports. The document itself should be geared to the everyday airport user, such as an aircraft owner or airport maintenance worker, and should be easy to read and reference. Rules and regulations tailored to the each individual airport will be developed in conjunction with the development of the airport master plan and ALP pursuant to Section 6.1. Additionally, since this document should be readily available, many airports have provided links to their documents on their website and/or have printed this particular document in a booklet form with a hard cover for easy storage in a pilot's flight bag.

While a rules and regulations document should be developed to meet the unique circumstances of an individual airport, there are several areas of focus that generally should be included in the document. These areas of focus include, but are not limited to, those listed in the following table.

Partial Listing of Focus Points for Airport Rules and Regulations	
A	Airport management and associated roles (including authority, responsibilities and accountability).
B	Description of standard airport operations (including primary contact information and periods of operation; standards of tenant and operator behavior; insurance and liability requirements and wavers; and security and access standards and responsibilities). Also refer to Chapter 3, Airport Emergency Operations.
C	Description of aircraft operational areas and standard procedures (including traffi patterns, details of the surrounding terrain, weight limitations, noise abatement, etc.).
D	Description of ground vehicular operational areas and standard procedures (including vehicular requirements).
E	Description of other specifi standard airport operations (including fueling, forest firefighti operations, emergency medical operations, vertical operations, through-the-fence operations, and recreational use).
F	Airport Security Plan, based on WSDOT template.
G	Description of airport maintenance programs (including mowing, snow removal, pavement maintenance, etc.).

At a minimum, the rules and regulations document should give a clear description of airport areas where the general public is not allowed free access because of safety and interference with airport operations. It should also distinguish areas where the public has unrestricted rights and access (i.e., airport roads, public-parking areas, public terminals).

Airport Minimum Standards

WSDOT Aviation does not currently have any minimum standards established for any of the state-managed airports. Basic information related to minimum standards is provided herein to assist in developing, amending and updating adopted minimums.

By definition, minimum standards are the "qualifications that may be established by an airport owner/operator as the minimum requirements to be met as a condition for the right to conduct an aeronautical activity on the airport." The purpose of minimum standards is "to provide a fair and reasonable opportunity, without unlawful discrimination, to all applicants to qualify, or otherwise compete, to occupy available airport land and/or improvements and engage in authorized aeronautical activities at an airport." In essence, by establishing minimum entry-level requirements (or thresholds), minimum standards level the playing field. If consistently applied and enforced, this permits the airport sponsor to maintain a high level of service to the public while also offering consistent, predictable decision-making criteria to potential tenants.

Minimum standards establish a set of threshold requirements for activities, tenants, or providers who want to operate on a state-managed airport. Ideally, they should consider the individual circumstances of an airport, including its existing and future development, as well as its current and future roles in the aviation system. Once established, minimum standards require that users seeking to operate on the airport to agree to minimum standards of conduct.

Where consistently applied, airport minimum standards will help the airport sponsor evaluate users' interests to locate on the airport and provide a mechanism to achieve the following:

- Ensure safe, efficient, and quality service at the airport.
- Establish a template for safe airport operations.
- Minimize exposure to claims of discrimination or unfair treatment by providers of aeronautical services and their users.
- Address environmental liability.
- Assure that prospective tenants are treated equally and without unjust discrimination.

A minimum standards document will also include a formal application process as a way to negotiate with an interested party and be included with any airport property management agreements set forth in Section 7.3. Additionally, the minimum standards document is an appropriate place to include requirements for those items listed in the following table.

Partial Listing of Typical Minimum Standards Inclusions	
A	Application Process
B	General Contractual Provisions and Permits
C	Insurance
D	General Operational Requirements
E	General Airport Business Activities
F	Aviation Specialty Services
G	Tenant Options

These items will provide minimum standards for airport activities and can serve as a deterrent to illegal business and help the airport to keep track of individual providers. Some airports also charge a minimal annual fee to help update the airport's provider information annually. Once completed, the WSDOT Aviation airport minimum standards document will include application forms developed specifically for aeronautical use together with the approved WSDOT Real Estate forms. The appropriate minimum standards and application forms will be included and attached as part of the *State-Managed Airport Handbook* and referenced on the website.

Maintenance

An airport's Minimum Standards document should be reviewed regularly and, if necessary, revised in order maintain standards that are meaningful and apply to current airport operational circumstances. Any changes to these documents should be conducted with full participation of the airport's tenants and users. Revisions should also include opportunities for public comment, a thorough review process, and a review by legal council.

A general Minimum Standards document will be created for use for all 17 state-managed airports and as individual airport master plans are completed at each of its state-managed airports will be updated based on the stratification and activity level assigned to the facility. Airports operated by WSDOT under agreement with another agency should remain subject to all provisions of lease/permit agreements; those agreements may preclude WSDOT from allowing commercial operators on the airport(s).

Airport Application Process

(To be developed.)

Airport Application Appeal Process

(To be developed.)

Adopt-an-Airport Program

Important!

- Volunteer groups are critical resources for maintaining the state-managed airport system.

WSDOT Aviation's Adopt-an-Airport Program is designed to recruit, organize and coordinate volunteer groups to help maintain its state-owned airports in Washington. One of only four such programs in the country (including Texas, Minnesota, and Pennsylvania), this WSDOT program not only provides a vehicle by which host communities and local organizations can contribute to their local airport, but by helping out they can learn what is involved in the operation of an airport and the importance of its economic value to the local community. Specifically, the program offers civic clubs and other volunteer groups an opportunity to volunteer their time to contribute to their community and state. Participation and activities vary and depend upon the age, skills, abilities, and expertise of the adopting group or individual. Activities may include maintenance operations, picking up debris along access roads and fences, mowing and trimming natural areas, and painting and maintaining airport buildings. These projects will generate publicity for the group as well as a sense of pride and accomplishment for their efforts.

Note: It is encouraged that more than one group adopt the same airport. Volunteer groups must complete an application document (included in the Templates and Example Documents section of this chapter) and will be required to work on their adopted airports a minimum of four times a year for a two-year period. In recognition of their community service at the airport, WSDOT will erect a permanent sign at the airport entrance identifying each volunteer group.

In Washington, the Adopt-an-Airport program's current (2008) status is reflected in the following table.

Current Adopt-an-Airport Progarms for the State-Managed Airports (2008)	
Avey	(none – open)
Bandera	Washington Pilots Association, Seattle Chapter
Copalis	(none – open)
Easton	WPA Harvey Field Chapter
Lake Wenatchee	WPA Wenatchee Chapter and the Lake Wenatchee Recreational Club
Lester	N/A
Little Goose	Starbucks Flight Club
Lower Granite	(none – open)
Lower Monumental	(none – open)
Methow	(none – open)
Ranger Creek	WPA Green River Chapter
Rogersburg	Washington and Idaho Back Country Pilots
Skykomish	WPA Paine Field Chapter
Stehekin	Cessna 180/185 Owners Club
Sullivan Lake	WPA Deer Park Chapter
Tieton	WPA Yakima Chapter
Woodland	Woodland Tenants

7.3 What Are the Airport Property Management and Leasing Standards

For airport operators, one of the most important and challenging jobs can be the management of leases and leased property. This activity is critical in that typically over 75 percent of an airport's income is ordinarily generated from leases. As such, it is important to have leases or rental agreements that will help maintain existing revenue streams, and provide opportunities for expanding those streams, while insulating the airport from exposure to liability.

This section provides information regarding WSDOT Aviation's current practices and standards for leases on the state-managed airports. Section 7.4 also provides general information on airport industry best management practices in regards to leasing agreements.

Current WSDOT Aviation Airport Leases

Currently, the state-managed airport system has very few leasing agreements established, and those contracts that do exist tend to be inconsistent. In order to manage the airports efficiently, WSDOT Aviation must anticipate the possibility

of future leasing requirements that may necessitate several lease versions or templates that would have to be more specific than a standard land lease. Those agreements that have been established and are considered to be the current standard for WSDOT Aviation include those listed in the following table (examples of these leases have been provided following this section).

Current WSDOT Aviation Leases	
A	Aircraft tiedown lease
B	Aircraft hangar lease
C	Right of entry agreement
D	Utility placement
E	Business services or activities
F	General Aviation Specialty Services

Note: It is important that for any future agreements established, WSDOT Aviation incorporate those elements that are considered the current level of best management practices with regard to leasing on airports. A listing of considerations based on common practices and lease documents typical of other general aviation airports has been provided in the section supplement. These are by no means all-inclusive, but should assist WSDOT Aviation in developing a lease template and general format to be utilized in all of the state-managed airport system's lease agreements. As stated previously, the finalization of any leasing agreements must be coordinated with the sponsor's attorney or an attorney who specializes in the area of landlord-tenant law.

Current Airport Leasing Procedure

The formal process for establishing leasing agreements at the state-managed airports is as follows:

Current Airport Leasing Procedure	
1	The Airport Manager shall review the leasing proposal in terms of its consistency with airport planning documentation (including master plan, airport layout plan, airport rules and regulations and minimum standards, as available) and WSDOT Aviation policy with respect to the state-managed airport system. The manager shall also coordinate with relevant WSDOT personnel, including the Director of
2	The Airport Manager shall produce a draft leasing agreement based on the current established leasing template for the proposed application. If no such template is available, the Airport Manager has the option to either utilize other industry standard templates (see below), or coordinate directly with WSDOT Real Estate Services on establishing a new template. New or amended templates shall be consistent with the aviation best management principles and leasing best management practices in Section 7.4.
3	The Airport Manager shall forward the draft leasing documentation to the WSDOT Real Estate Services for review and preliminary approval.

4	The Airport Manager/ Section Manager of WSDOT Real Estate Services shall forward the draft lease to the state of Washington Attorney General's offic for review, update and approval.
5	The WSDOT Aviation Director shall finaliz and sign the fina lease.

7.4 Airport Purchasing and Project Procurement

Maintaining and developing the state-managed airport system is a critical role for the WSDOT Aviation Airport Manager to ensure that the system remains vibrant and relevant in the long term. Activities required of the Airport Manager in order to achieve those goals include direct purchasing of supplies and materials, conducting maintenance activities, and/or establishing construction projects. These activities are generally discussed in the following sections.

Purchasing Procedures

Purchasing procedures by WSDOT Aviation for the state-managed airports must abide by the requirements of WSDOT *Purchasing Manual* M 72-80. The *Purchasing Manual* provides policies and procedures that regulate the purchase of materials, supplies, services, and equipment for all organizations within the department of transportation, including WSDOT Aviation. These policies and procedures reflect legal requirements found in state and federal laws.

WSDOT Aviation Purchasing Procedures	
1	The Airport Manager is responsible for the purchasing processes as related to the state-managed airports.
2	Given a purchasing requirement, the Airport Manager shall generate/procure an estimated cost (through vendors, suppliers, etc.) and coordinate with the WSDOT Aviation Fiscal Analyst.
3	Per the WSDOT *Purchasing Manual*, if the estimate is $3,300 or below (excluding sales tax and freight), WSDOT Aviation may direct buy via a purchase order.
4	Per the WSDOT *Purchasing Manual*, purchases between $3,300 and $46,200 must have quotations. It is recommended that at least three written quotations be used whenever possible. (*Note:* Per the *Purchasing Manual*, there is a materials and services limit of $10,000. This will require the authorization of the WSDOT Aviation Director and should also be referred to HQ purchasing to ensure compliance with state and WSDOT regulations.)
5	For those purchases of $3,300 and above, the Airport Manager shall also coordinate with the WSDOT Purchasing Department headquarters. The purpose of this is to either (1) obtain authorization for the purchase request based on conformance to WSDOT *Purchasing Manual*, or (2) utilize the WSDOT Purchasing Department itself as the purchaser of the requested materials. (*Note:* Depending on the nature of the purchase, the department's larger purchasing authority could help expedite the process and/or result in lower costs.)

6	Purchases of $46,200 and above must use formal sealed bid procedures as described in Appendix 7 of WSDOT *Purchasing Manual* and the *Washington State Procurement Manual* or (2) utilize WSDOT Purchasing Department itself as the purchaser of the requested materials. (*Note:* Depending on the nature of the purchase, the department's larger purchasing authority could help expedite the process and/or result in lower costs.)

Project/Activity Procurement

Conducting maintenance activities and the establishment of construction and/or planning projects for the state-managed airports are two of the must most important and challenging tasks for the WSDOT Aviation Airport Manager. These can all be very complicated endeavors in that each activity and/or project tends to have its own unique circumstances and considerations. The following narrative provides a general summary of the actions typically required of the Airport Manager when initiating these activities and projects. (Also note that additional construction project guidance has been provided following this section.)

WSDOT Aviation Project Procurement Procedures	
1	The Airport Manager is responsible for construction projects and maintenance activities as related to the state-managed airports. Typically, requirements for construction projects and/or maintenance activities for the state-managed airports are originated by the Airport Manager. These may occur through airport inspections, safety requirements, initiatives identifie within the system plan, etc.
2	The Airport Manager shall determine whether the proposed action is define as either a construction projects or a maintenance activity, since there are implications for both actions.
3	The Airport Manager shall follow the requirements of the WSDOT *Purchasing Manual* M 72-80 as briefl described. ***Note:*** Per the *Purchasing Manual*, there is a materials and services limit of $10,000, the exceedance of which will require the authorization of the WSDOT Aviation Director. Additionally, where required, the Airport Manager shall abide by the requirements of the WSDOT *Advertisement and Award Manual* M 27-02.
4	If the proposed action is a maintenance activity, the Airport Manager has three options for fulfillin that requirement.
	a. **WSDOT Regional Support** – For activities that require competitive bids, it is a WSDOT Aviation policy to utilize the WSDOT regional maintenance resources to the maximum extent practicable. Use of WSDOT for maintenance activities should be reviewed on a case-by-case basis to ensure that WSDOT region is capable of responding to the request in a timely and appropriate manner. b. **Sub-contractors** – For those activities that are deemed to be not appropriate for the WSDOT regional maintenance forces or airport volunteer groups (see below), WSDOT Aviation will employ local subcontractors on a case-by-case basis.

	c. **Volunteer Groups** – As part of the WSDOT Aviation Adopt-an-Airport program, the Airport Manager can utilize volunteers to assist in some limited airport maintenance activities, including the following typical examples (*Note:* There is only a minor use of tools required for these activities): • General airport cleanup. • Minor landscaping, minor weeding, minor brush clearing. • Minor FOD control, trash pick-up. • Seasonal placement of runway markers. • Filling of animal holes. • Minor raking. • Clean up of recreational facilities.
5	If the proposed action is a construction or planning project, the Airport Manager shall perform the following actions: a. The Airport Manager, in consultation with relevant WSDOT Aviation personnel, shall establish a preliminary project scope. As required, the Airport Manager shall utilize the WSDOT *Consultant Services Procedures Manual* M 27-50. (This manual provides guidance concerning the authorization, selection, and use of consultants for Personal Service and Architect and Engineering (A&E) agreements and/or supplements.) Also note that for projects located at state-managed airports included in the NPIAS, the Airport Manager, in coordination with the local FAA ADO, shall abide by the requirements of FAA Order 5100.38C, *Airport Improvement Program Handbook*. b. The Airport Manager, in consultation with relevant WSDOT Aviation and WSDOT personnel, shall establish an estimated project value. As required, the Airport Manager shall utilize the *Cost Estimating Manual for WSDOT Projects* M 3034. (The Cost Estimating Guidance for WSDOT Projects provides a consistent approach to cost estimating, estimate reviews, estimate documentation, and management of estimate data. It provides guidance on how to treat common and recurring challenges encountered in the cost estimating process. This guidance should be used as a tool in the project delivery process.) Also noted above, for projects located at state-managed airports included in the NPIAS, the Airport Manager, in coordination with the local FAA ADO, shall abide by the requirements of FAA Order 5100.38C, *Airport Improvement Program Handbook*. c. For projects at state-managed airports included in the NPIAS, WSDOT Aviation shall abide by all FAA requirements. d. For all other projects at non-NPIAS state-managed airports, WSDOT Aviation shall abide by all state requirements, including selection of outside consultants through existing on-call contracts or general advertisements.

7.5 Chapter References and Supporting Documentation

Chapter References

The following tables include references for additional and/or supporting information with respect to the various sections of this chapter. This has been provided with the intent of providing the reader with a current listing of appropriate sources for additional information and research.

7.1 What is Included in Airport Administration
• State of Washington. Revised Code of Washington (RCW). WSDOT. 14 May 2008 www.wsdot.wa.gov/aviation/aviationrcws.htm
• State of Washington. Washington Administrative Code (WAC). WSDOT. 14 May 2008 http://apps.leg.wa.gov/wac/default.aspx?cite=468-12&full=true
• J.F. Rodwell. Essentials of Aviation Management. Dubuque, Iowa: Kendall/Hunt Publishing Company. 2003
• WSDOT *Aviation File Room Data Base Manual*
• RCW 40.14.010 *Records Legal Definition*
• RCW 40.14.060 *Destruction, disposition of official public records or office files and memoranda – Record retention schedules*

7.2 An Overview of Airport Standard Procedures
• Aircraft Owners and Pilots Association (AOPA). Minimum Standards for Commercial Aeronautical Activities. AOPA. 1998 www.aopa.org/whatsnew/region/standards.html
• FAA AC 150/5190-7, *Exclusive Rights and Minimum Standards for Commercial Aeronautical Activities*. FAA. 28 August, 2006
• FAA Order 5190.6A, *Airport Compliance Requirements*. FAA. 2 October 1989
• Texas Department of Transportation (TXDOT). Adopt-An-Airport. TXDOT. 15 April 2008 www.dot.state.tx.us/services/aviation/adopt_airport.htm

7.3 What Are the Airport Property Management and Leasing Standards
• J.F. Rodwell. Essentials of Aviation Management. Dubuque, Iowa: Kendall/Hunt Publishing Company. 2003
• Aircraft Owners and Pilots Association (AOPA). Through-the-Fence Operations. AOPA. 15 April 2008 www.aopa.org/whatsnew/region/operations.html
• Wisconsin Department of Transportation (WDOT). Airport Leases. WDOT. 15 April 2008 www.dot.wisconsin.gov/travel/air/docs/leases-ref.pdf

7.4 Airport Purchasing and Project Procurement
• WSDOT *Purchasing Manual* M 72-80, WSDOT. January 2009 www.wsdot.wa.gov/publications/manuals/m72-80.htm
• WSDOT *Advertisement and Award Manual* M 27-02, WSDOT. September 2004 www.wsdot.wa.gov/publications/manuals/m27-02.htm
• WSDOT *Consultant Services Procedures Manual* M 27-50, WSDOT. January 2002 www.wsdot.wa.gov/publications/manuals/m27-50.htm
• WSDOT *Cost Estimating Manual for WSDOT Projects* M 3034, WSDOT. November 2008 www.wsdot.wa.gov/publications/manuals/m3034.htm
• FAA Order 5100.38C, Airport Improvement Program Handbook. FAA. 28 June 2005

Supporting Documentation

The following tables include supporting WSDOT Aviation-specific documents and resources to support the implementation of the various sections of this chapter. The following table provides a listing of these documents and resources.

7.2 An Overview of Airport Standard Procedures
• WSDOT Adopt-an-Airport Volunteer Registration Form. Appendix 7-1
• WSDOT Adopt-an-Airport Agreement for Volunteers. Appendix 7-1

7.3 What Are the Airport Property Management and Leasing Standards
• Current BMPs for Airport Leases. Appendix 7-1
• WSDOT Aviation Tiedown Lease. Appendix 7-1
• WSDOT Aviation Hangar Lease. Appendix 7-1
• WSDOT Aviation Right-of-Entry Agreement. Appendix 7-1

Appendix 7-1 Best Management Practices for Airport Leases

This section provides a description of many of the best management practices utilized within the aviation industry in relation to the structuring and development of leasing arrangements at airports. ***Note:*** The information detailed below includes only some of the areas that should be covered in the development of lease agreements. However, since the particular requirements of states, local governments and airport sponsors can vary dramatically, the finalization of any leasing agreements must be coordinated with the sponsor's attorney or an attorney who specializes in the area of landlord-tenant law.

It is also important to acknowledge that many of the leasing practices detailed below are largely based on FAA standards and requirements related to grant assurances for the securing of Airport Improvement Program (AIP) funding. Most WSDOT-managed airports currently are not within the NPIAS. In fact, only one of the state-managed airports is currently included in the NPIAS and therefore eligible for AIP funding. However, it is the general practice of WSDOT Aviation to manage airports using standard industry practices as appropriate to meet minimum provisions within state law through the establishment of fair and reasonable practices in order to safeguard the public's interest and interest of aviation users. The information included in this section reflects this.

Generally, the FAA requires that airports establish fair and reasonable fees without unjustly discriminating against a specific aeronautical user. This same policy states that airports should maintain a fee and rental structure that makes the airport as financially self-sustaining as possible. Airports are expected to establish rents and airport user fees that generate enough revenue to meet airport funding requirements without discriminating against airport users, subsidizing tenants or diverting revenue off-airport.

This supplement provides additional background and best management practices regarding the following:

- Airport Land Leases
- Airport Facility Leases
- Airport Tiedown Parking Leases
- Airport FBO/SASO Leases
- Airport Through-the-Fence (TTF) Leases
- Airport Lease Agreement Considerations

Airport Land Leases

The most common lease at smaller airports is that of the land or ground lease. For this lease, the airport sponsor makes undeveloped sites available for the development of aviation businesses and private hangars on airport property. As such, this lease is often utilized by an airport sponsor as a means to generate development of facilities on the airport that the sponsor may not otherwise have the ability to fund or complete.

Typically, airport sponsors faces many competing demands on their funding and bonding capabilities, and in some states, including Washington, there is a constitutional or other prohibition against using the credit of the public sector to aid the private sector. Without leveraging public/private partnerships, most airports would be comprised of just the basic airfield infrastructure. ***Note:*** Development on any airport properties (such as facilities and infrastructure) through a ground lease are typically subject to reversion to the airport after a specific period (often 25 to 50 years).

As is the current practice, land leases need to be negotiated individually; however, they still should follow the basic format of the facility lease (described below) and include all of the same references to the Airport Minimum Standards and Airport Rules and Regulations documents. The land lease price per square foot should vary by location and possibly by the length of the term. The land lease may also be tied to a business permit or a Fixed Base Operator (FBO) lease.

Some conditions that are typical of land leases include the following:

- Requires significant tenant capital investment – tenant must develop a proposed improvement on site within specified timeframe.
- Lease specifies type of improvement (i.e., T-hangars or hangar for aeronautical services).
- Generally is a long-term lease (25 years to allow tenants to amortize their investments and make a reasonable profit).
- Often includes provisions for lease extension options up to a specified number of years.
- Often includes provision for improvement to revert to the airport at the end of the lease plus all extensions.
- Generally requires tenant to maintain safe building, minimum level of aesthetics and cleanliness.
- Subleasing allowed only under certain, limited conditions.

Airport Facility Leases

A facility lease is required for any facility or structure being leased on the airport, such as private hangars, T-hangars, and other structures. Facility leases should include all of the same references to the Airport Minimum Standards and Airport Rules and Regulations documents. Factors that affect facility lease rates include amenities, location, condition, type of use, and length of lease.

This type of lease should also be flexible enough to accommodate both aviation and non-aviation operations. For example, a standard hangar facility lease agreement should be able to accommodate a full range of hangars (i.e., small to large T-hangars and conventional hangars). The only part of that lease that should normally vary between each type of hangar would be the rental price, which itself can fluctuate based on size, amenities, location, access, condition or type of door operating mechanism for each type of hangar. It is important to note that it is not uncommon for an airport to have different leasing rates for similar sized hangars due to amenities, terms of lease, etc.

Additionally, this type of lease needs to specify that hangars are for aircraft storage purposes only and should prevent a tenant from using the property for conducting a non-aviation related business or storing other non-aviation related items. Hangars that are leased for any type of business purposes should be covered under an FBO or SASO lease, described below.

Some conditions that are typical of private facility leases include the following:

- Requires no or minimal capital investment.
- Year-to-year lease (or shorter timeframe) with automatic renewal unless notice is given.
- Subleasing prohibited.
- Generally requires tenant to carry out basic maintenance and up-keep.

It is often possible to combine both hangar and tiedown agreements into one agreement, simplifying the leasing process. While there may be some areas of the lease that will not apply to a tiedown tenant that does apply to a hangar tenant, the lessor could strike through these areas or clauses or simply write over them "Not Applicable to this Agreement."

Airport Tiedown Parking Leases

A tiedown parking lease is a form of facility lease and is required for any aircraft parking position being leased on the airport. A tiedown lease at an airport should be able to accommodate parking for both small and large aircraft. The only part of this lease that will fluctuate is the rental price of the tiedown space, and that price may vary based on location or proximity to other services on the airport. This type of lease needs to be for the sole purpose of aircraft storage and should be designed to prevent a tenant from using a tiedown for an unauthorized business. It should

also require compliance with the aforementioned Airport Minimum Standards and Airport Rules and Regulations documents. The state-managed airport system currently has tiedown leases only at Methow State and Woodland State. In order to protect WSDOT Aviation, it is important that any tenant who leases space should be obligated under a formal lease.

Some conditions that are typical of private tie-down leases include the following:

- Requires little or no capital investment.
- Month-to-month lease with automatic renewal unless notice is given.
- Subleasing prohibited.
- Generally requires tenant to carry out basic maintenance and up-keep.

Airport FBO/SASO Leases

Fixed Base Operator (FBO) and Specialized Aeronautical Service Operator (SASO) leases encompass commercial aeronautical applications and businesses located at an airport. FBO leases are typically unique to the local conditions and therefore must be negotiated individually.

These lease types should still follow the basic format of the facility lease and include all of the same references to the Airport Minimum Standards and Airport Rules and Regulations documents. From a practical standpoint, the term "FBO" is defined within the context of the market place, but generally, it is defined as an airport-based service provider that operates under a lease, use, or operating agreement with the airport with the specific purpose of providing aircraft fueling services and engages in one or more aviation-related service areas. Some examples of service areas might include but are not limited to aircraft storage, ground handling, maintenance and repair, flight instruction, aircraft rental, and aircraft sales.

While an FBO normally provides fueling services and engages in one or more aviation-related services, a SASO provides specialized products and services in only one of the aviation-related service areas such as flight training or maintenance, exclusive of selling fuel. SASOs may operate under a lease of their own or as sub-tenants of an FBO.

The majority of general aviation airports require an FBO to provide a variety of services that are typically identified in advance by the airport. In return for providing this full package of services, the FBO receives the ability to sell fuel, which is often an FBO's primary source of income. As stated above, SASOs are generally not permitted to sell only fuel.

Some conditions that are typical of commercial FBO/SASO leases include the following:

- May require minimal-to-moderate capital investment.
- Generally lease period three to five years, with options for renewal.

- Renewal options may be limited.
- Generally requires tenant to maintain safe building (minimum level of aesthetics and cleanliness).
- Subleasing allowed under certain conditions.

Airport Through-the-Fence (TTF) Leases

Airport owners and operators, including WSDOT Aviation, are often presented with requests by operators independent of the airport to issue permits and/or leases granting access to the airport from abutting sites. This type of arrangement is commonly known as a "through-the-fence" (TTF) operation, and typically includes businesses or individuals that require access to the airport infrastructure from outside airport property, or which utilize airport property to conduct a business but do not rent business space at the airport. Common types of through-the-fence agreements include aircraft hangars, aircraft maintenance, general aviation fixed base operator services (FBO), miscellaneous flight services (i.e., charter, rental, skydiving). Airpark residential hangar development will not be allowed to access state-managed airports. Other through the fence operations will be determined on a case by case basis subject to the state-managed airport management principles and contribution to the operation, maintenance and improvement of the airport at a competitive rate with on airport activities.

Concerns About TTF Leases

There are several concerns for an airport owner or operator related to the establishment of through-the-fence operations at an airport. First, the lease of airport property is one of only a few revenue streams that are typically available to an airport for the operation, maintenance and improvement that airport. Individuals and businesses that are granted access to the airport from off-airport property do not typically contribute to the airport fund at a level commensurate to on-airport operators. This could be damaging to the airport not only through the loss of that operational revenue, but also through the potential granting of an unfair competitive advantage to the off-airport operator. Specifically, a TTF operator may not have to bear as high a leasing cost as that of an on-airport operator, effectively reducing the through-the-fence operator's overhead costs. Such a competitive advantage may reduce the ability of on-airport operators to compete for services, thereby hampering their financial viability, and diminishing the economic vitality of the airport.

The second principal concern related to TTF operations is that of access and security. Such operations invariable lead to a greater risk of runway incursions and uncontrolled vehicle access, as well as a general reduction in airport security by introducing additional points of airfield entry.

It is also critical to note that through-the-fence operations have been proved to be significantly difficult to manage for airports across the country. While each potential TTF operation should be weighed on its own merits, the airport must not overlook the potential problems with such an arrangement.

It must be noted that the FAA is not "against" a TTF operation, although they do strongly discourage it. It must also be understood that an airport has no obligation to provide such access; rather the issue is dependent in negotiating an agreement, which will benefit the airport. With respect to Washington, it is WSDOT Aviation's policy to discourage any TTF operation at any of the state-managed airports.

TTF Lease Considerations

If such an operation were to be introduced at the state-managed airports, the following points should be considered:

- The development of a TTF operation will require that WSDOT Aviation contend with the legal, insurance, safety, and management implications of such access. Additionally, allowing access to one TTF operator may invite future or previously denied operators the opportunity for the same privilege.
- Services provided by the TTF operator should include some type of compensation, similar to those paid by other business tenants at the airport. Frequently, a yearly fee, percentage of the gross profits or an access fee may be satisfactory ways of allowing this type of operation. It is important that the airport operator ensure that a through-the-fence operator be subjected to conditions similar to those applicable to the businesses at the airport in order to avoid complications and possible violations of the grant assurances.
- Access leasing arrangements should grant WSDOT Aviation control over the types of development and operations conducted by the TTF operator, including meeting the same minimum standards required of on-airport operators. These conditions may be in the form of a formal "Through-the-Fence Operations" operating plan that should be established and accepted by WSDOT Aviation.
- All development must be compatible with the airport environment and the current Airport Layout Plan (ALP).

Finally, for the reasons stated above, a formal TTF leasing agreement must be established with any potential tenant. As such, the following are offered as leasing agreement considerations with respect to through-the-fence operations:

- **Term** – The term for all TTF agreements should be no greater than one year. Extensions can be granted on a year by year basis only.
- **Termination** – All TTF agreements should have a termination clause that will allow the airport owner to terminate the agreement. This is particularly important when considering the increased security emphasis placed on all facets of aviation.
- **Lease Transfer** – All TTF agreement should exist only for the benefit of the lessee and no transfer should be allowed. Further, the privilege of accessing the airport via such an agreement may not be extended to others other than at the discretion of the airport owner.

- **Rate** – The airport should establish the rate for access to the airport at least equal to the current land rental rate for airport property. The TTF proponent should be required to finance any necessary improvements and maintenance of the facilities and infrastructure connecting the adjacent land to the airport's landing area. ***Note:*** Any use of airport or sponsor funds associated with a TTF access would be considered to be revenue diversion by the FAA.
- **Reversion** – The TTF agreement should include the requirement that all costs associated with a termination of the TTF agreement will be born by the lessee.

Airport Lease Agreement Considerations

Given the importance of leasing agreements to the revenue production component of every airport, appropriate leasing agreements must be established by the airport manager that are fair and reasonable to all parties over the long term. (The following narrative utilizes elements taken from "Essentials of Aviation Management," J.F. Rodwell, Kendell/Hunt Publishing Company, 2003.)

As the instrument that provides the basic parameters of aviation business (establishing a framework for success or failure) and/or airport facilities (hangars, tiedowns, etc.), it is absolutely necessary that the airport manager fully understand the leasing process and is able to obtain as favorable an arrangement as possible. Of course, from the onset the airport manager should recognize that it is necessary to obtain the services of legal counsel to assist in molding the contractual arrangement, and it is also best to find one familiar with the aviation business or be prepared to spend time acquainting him or her with the technical implications and operational difficulties of the problems involved.

Initial Considerations

Prior to dealing with the contents of a lease and the typical framework of the contract, the airport manager should clearly identify the following considerations:

1. The aviation lease is a composite agreement, a combination of a real estate lease as it is normally understood by lawyers and nonprofessionals, and an operating agreement that sets forth the obligations, duties, and restrictions that apply to the manner in which the aviation business shall be conducted on the leased premises. Some specialists recommend, and many public agencies require making the operating agreement a separate document, incorporated into the lease by reference.

2. The pre-lease situation is normally one in which the lessor and lessee (land owner and airport manager) are in a bargaining situation. It is not a precast, fixed situation. Guidelines are available, but each lease is different, representing the local situation and various local and state laws.

3. The contractual relationship between the base operator and the airport owner/operator has an enormous impact upon both parties and more importantly, upon the community they both serve. Because of the economic impact upon

the community, an FBO lease should attract competent aviation organizations and provide the opportunity for an adequate margin of profit on the required investment of time, money, and experience. It should cover a long enough period of time to sustain the financing required to establish and operate the business.

4. Developing a lease is not a one-time or periodic activity. A lease is a living instrument that controls a constantly changing relationship and as such should be under constant review. This is reflected in the comment "start working on your second lease the day after signing your first one."

5. Developing a lease is in reality developing a plan. As such, the plan should include those elements that will ensure success for both parties. A basic concern in creating the plan is the need to set the terms and length of the lease with full consideration of the requirements of the potential lenders, who will supply the large financing required of the proposed investment. In the eyes of the lender, the amount loaned will be limited to an amount that can be adequately amortized from the funds expected to be generated by the business during the term of the lease. Therefore, a 25-year or longer lease will be needed for many financing purposes.

6. To meet the requirements of business flexibility (in the case of an aviation business) and frequently the leading institution's needs, there is a basic interest in the assign-ability provisions of the lease. Normally the lessee should be empowered to assign or sell the lease for financing purposes upon written notice to the lessor, with approval thereof not unreasonably withheld. The lessee should typically have the right to sublease part of the space covered by the lease, provided the sub-lessee is subject to the same conditions and obligations as those in the basic lease. Furthermore, it is desirable that the lease state the lessee has the right to sell without restriction to any corporation formed by it, consolidated, or merged with it, provided, however, that the purpose of the surviving organization is to perform under the lease.

7. An understanding of local and national economic aviation trends is important in projecting revenue and expenditures over the life of the lease as well as anticipating increases in lease payments.

Preliminary Planning

Prior to any actual negotiations over the terms of the lease, considerable planning needs to be accomplished. Achieving a successful lease and ultimately a profitable business will depend to a major degree on the thoroughness of the planning efforts. In this plan the airport manager should employ the following actions:

1. Review the master plan for the airport and determine whether the proposed leasing agreement is in harmony with the long-term development plan for the airport.

2. Review and study previous agreements or other example agreements with parties regarding similar leasing agreements.

3. If the proposed lease is for a business, review the prospectus for the business and its financial projections for the future. The airport, in acting on the bid for a lease, has the right to probe into many personal and business financial issues to satisfy itself of the business's ability to perform.

4. Establish what lease terms will be acceptable to the specific lending institutions expected to provide financing.

5. Review such issues as special requirements of the lessee, such as underground storage tanks on the leased property.

Procedural Steps

For situations where leases are to be bid upon and awarded by the airport sponsor, the norma1 procedural steps in negotiating and awarding those leases are as follows:

1. The development and release of an invitation to bid by the lessor. The invitation is aimed at soliciting responses from all interested and qualified parties and contains the basic information necessary to identify the property, the desired services, and the basic leasing arrangement. In order to ensure coverage of desired items and an element of standardization among prospective lessees, a sample lease bid is usually included in the bid announcement, along with any applicable airport minimum standards that serve to screen out unqualified bidders. Bonding capability is a likely requirement.

2. The interested lessees then prepare and submit lease bids to the lessor. These are usually closed bids with simultaneous bid openings for all respondents.

3. All proposals received by the owners are evaluated fully through a detailed analysis of the major elements in each proposal. An airport board may establish a lease committee for this purpose.

4. Negotiations are conducted with the bid respondents submitting the most acceptable proposals in order to assess complete understanding of the proposals submitted and to reach any modifications deemed necessary.

5. The bidder offering the most acceptable final proposal is identified.

6. The detailed lease and operating agreement will be completed and agreed upon.

7. The final lease proposal is agreed upon and the unsuccessful bidders advised and released from their offers.

Major lease Components

Most aviation leases follow similar formats since there are certain basic concerns, covering common elements. The major components in a lease typically include the following:

- Lease Terms
- Lease Rate
- Identification of Rental Premises
- Use of Premises
- Construction, Maintenance, Repairs, Utilities
- Rights, Reservations, and Obligations of Lessor
- Obligations of Lessee
- Insurance

Generally, in negotiating the lease terms, careful consideration should be given to the useful life of the improvements and size of the tenant's investment, since the lease term will directly affect how long an amortization period the tenant would receive in terms of his financing. While there are no hard and fast rules, it is possible that an overly long lease term may prevent land from being developed to its highest-and-best use, while an overly short term will make the prospective tenants investment not cost effective, unprofitable and therefore, undesirable.

Lease Terms

The term of the lease is the specific length of time that the lease will be in place, and may be for a fixed, conditional, periodic or of indefinite duration. If the term of a lease is for a specified period of time, the term ends automatically when the period expires, and no notice needs to be given, in the absence of legal requirements. If the term's duration is conditional, it last can until some specified event occurs, such as the death of a specified individual. At an airport, this term is frequently used for facility or hangar leases where the tenant must commit funds for the construction of a facility.

A periodic tenancy is one which is renewed automatically, usually on a monthly or weekly basis. A tenancy at will last only as long as the parties wish it to, and be terminated without penalty by either party. It is common for a lease to be extended on a "holding over" basis, which normally converts the tenancy to a periodic tenancy on a month by month basis. At an airport, this term is utilized most often for aircraft tiedown leases

Critical to airport lease agreements is the inclusion of a reversion clause, which generally means that at the termination of a lease, or potentially at a specified point during the term of a lease agreement, that the ownership of any improvements (i.e., facilities) reverts to the airport. The presence of a reversionary clause is standard within the aviation industry for a number of reasons, including the provision for future revenue streams, maintaining a certain level of control over the development and maintenance of facilities on the airport, and the ultimate

control/management over airport development as it may affect future airport expansion. However, it should be noted that there are numerous other examples of leases at airports throughout the United States that include provisions for the airport to purchase the improvements at lease termination. Seldom is there a provision for automatic or perpetual renewals of the lease at the prevailing ground rent only.

An additional consideration with respect to reversion includes the lessee's right of first refusal, which should be clearly defined in the agreement to be that of fair market value within a specific set time before the expiration of the existing lease. Additionally, if possible, it is desirable to avoid lease options and stick with a fixed year length on time since options are more difficult to manage than a specific termination date.

- **WSDOT Considerations** – Specific to the state-managed airports, WSDOT Aviation should consider month-to-month agreements that automatically renew each month (or other agreed-upon period) unless WSDOT or the tenant gives the other the proper amount of written notice (typically 30 to 45 days). This is standard industry practice and supported by the Aircraft Owners and Pilots Association (AOPA). ***Note:*** A month-to-month rental agreement would provide the State with more flexibility than a one-year lease, including the ability to increase rents or change other terms with relatively short notice. With proper notice, the sponsor could also end the rental agreement at any time. On the other hand, if WSDOT Aviation were to determine that it is difficult to fill any vacant hangar space or, as a means of attracting development, it may be preferable to have tenants to commit to a longer period of time, such as six months or a year.
- **Termination Considerations** – Occasionally a tenant will not give adequate notice of intent to move as outlined in the lease or agreement, and while it is also not uncommon for a tenant to leave with no notice at all, it is important that tenants be required to pay rent through the notice period. Considerations to offset this potential include the requirement of a deposit (normally equal to one month's rent) or a performance bond/letter of credit (more suitable to business operations). If a deposit were to be required, the airport may want to develop a tenant checklist, which would have to be completed prior to a new tenant taking occupancy. This would require a mutual inspection of the rental unit and identify any problems that existed at the time of the lease execution. This could help avoid any disputes when the tenant vacates the unit.

Lease Rate

The rate of the lease is simply the agreed upon fee (or rent) which will be presented to the lessor on a regular basis (i.e., weekly, monthly, or annually) over the course of the lease term. The rental amount for the state-managed airports may be determined by conducting a brief survey of similar GA airports in the area. An amount per square foot should be equal to the average amount paid for like-property at similar size airports in the state. ***Note:*** This amount is only representative of the value of the land at a specific date and time. In a competitive

environment, the forces of supply and demand should yield a determination of what is known as market value. While a comparison of similar facilities is an acceptable method of determining market value, other market factors affecting the value of the land can be quite different.

Leases usually require rent to be payable on or before the first day of each month without invoicing. They should also specify what forms of payment (i.e., personal check, cashier's check, credit card, or money order) are acceptable. It is also reasonable to consider a discount for tenants who make rent payments in advance.

Late fees associated with lease payments should be a fixed dollar amount. However, the problem with late fees is they are only effective when they are enforced and collected, and a significant amount of time and effort can go into collecting what could amount to little income. Depended on the overall number and frequency of delinquent accounts, it may be prudent to eliminate all late fees and just raise the rental rates to compensate.

- **WSDOT Considerations** – WSDOT Aviation may want to consider language to cover annual or semi-annual rent increases that coincide with the first of the year or the first date of the fiscal year. If formalized increases are to be considered, the frequency of the increases will need to be determined, as well as the basis for the increase. Options for the latter include using the Consumer Price Index (CPI), a flat dollar amount, or a straight percentage to determine the rent increase. This will help keep the rentals comparable to other facilities and account for the cost of inflation. In the case of a percentage-based or CPI-based increase, it is advisable to specify a "not to exceed" amount, so the increase does not end up too excessive.

  The mistake most airports have made with rent increases is that they wait until other airports are charging higher rent before they raise their rent. This type of rent increase is often not well received by the tenants. To avoid hasty rental increases for the tenants, a small annual or biannual increase is recommended to help offset the increases in the cost of doing business.

- **Termination Considerations** – It is also important to recognize that any violation of the agreement by the tenant should be grounds for terminating the tenancy. As such, the lease could identify some specific reasons for lease termination, such as requiring that the stored aircraft be owned by the tenant and the aircraft is airworthy or requiring a tenant to provide a current airworthiness certificate and registration. This will also help to minimize the number of derelict aircraft at the facility.

  Additionally, the lease could contain wording that in the event that the lessee fails to remove property prior to the expiration of lease terms, the lessor should retain the right to store, utilize, sell, or otherwise dispose of any of lessee's personal property remaining on the premises after the termination of the agreement. In this situation, the lessee needs to know that any such property would be considered the property of the lessor and title would vest with them.

Identification of Rental Premises

The identification of rental premise on a lease represents the specific detailing of how a lease and the associated property extents can be utilized by the tenant. Based on industry practice, conventional hangars and T-hangars should have a fixed monthly rate not normally referenced as a square foot amount. These fixed rates may vary based on the conditions described previously. The words "for aircraft storage purpose only" should be used in the lease to prevent a tenant from using the property for operating a business or storing other items. The lease should also state that the tenant is not permitted let anyone else permanently utilize the hangar or tie-down space without the airport sponsor's written consent. Some additions to this may include a requirement that the aircraft is FAA-registered and that tenants provide a copy of the aircraft registration as proof. As another consideration, some airports also require the aircraft to be airworthy.

Many airports choose to let their tenants operate businesses from their hangars. As such, the facility lease can be written to allow, with approval, tenants to sublease or operate a business concession on the airport. If WSDOT Aviation chooses to allow this type of activity, it should be addressed in a lease that is different from the standard hangar lease or in a separate business license or use permit.

Additionally, all business must comply with existing Airport Rules, Regulations, and Minimum Standards. WSDOT Aviation would also need to consider the amount of vehicular traffic that the business would generate, as well as the number of outside signs, and the number of employees. (***Note:*** Most hangars do not have water, sewage, or phone service, which would make operating a business out of them difficult.) The sponsor would also want to determine and require an appropriate level of insurance for a hangar-based business to protect the potential liability of employees or guests. A tenant may be required to maintain a certain type of liability insurance, depending on the type of business. In order to run a business out of the hangar, it may also be necessary to meet the accessibility requirements of the federal Americans with Disabilities Act.

One other circumstance to consider is if a tenant wants to allow another aircraft, other than the one to which the hangar is assigned, to utilize the hangar or tie-down space for a short period of time. If WSDOT Aviation wishes to allow this practice, they would need to include some language in the lease to limit guest stays. While some airports do not strictly enforce restrictions on guests, it should be recognized that the practice of accommodating "guests" could occasionally be used by a tenant to disguise a sublease arrangement. This is a common problem at airports with long waiting lists. Appropriate leasing language would provide the lessor with the standing needed to ask the guests to leave or, if necessary, to evict a tenant for violating this lease provision.

Use of Premises

The use of premises on a lease is related to the previous section and specifically details how the lease property can by used by the tenant. Facility leases should include a provision to prevent the lessee from storing non-aviation related items

in the facility. This provision can be used to prevent subletting and the use of the hangar to store other items such as boats and cars. Some airports do permit such items as desks, couches, and storage cabinets, while others limit the hangar to the aircraft and aircraft support items only. In this manner, if the tenant wishes to have a workbench or cabinet to use in conjunction with the operation of the aircraft, it is permissible. However, it is important to prevent hangars from becoming auxiliary storage units to the tenant's home.

There are several other issues that the lease could address, including the potentially sensitive topics for airport tenants of aircraft maintenance and the storage of flammable or hazardous material. Aircraft owner self-maintenance can be addressed in several ways depending on local building and fire codes, and on the privileges WSDOT Aviation may wish to extend to its tenants. The main issue associated with maintenance in a hangar is the need to avoid undue exposure to liability. Because of the importance of this issue, some airports provide a designated outside area to conduct maintenance, while others provide a specific hangar or inside space that is available for conducting self-maintenance activities.

Another potential aircraft maintenance issue originates in FAA airport grant assurance #22 (f) which states that tenants should be able to use their own employees or agents. In terms of aircraft maintenance, the definition of "employee" depends on the lease arrangement, insurance, and what the lessor defines to be an "employee." An employee should be a person who is on the payroll of the aircraft owner, with the owner complying with all applicable labor laws, including Worker's Compensation, Social Security, etc. He should not be a mechanic that operates out of the back of a van. ***Note:*** If the lessor owns the hangar and pays for its insurance, it has the right to regulate the activity that takes place inside it. The best alternative is to provide a designated space to conduct maintenance activities.

Over-spray from aircraft painting and fabric doping operations and the use of a compressor for this type of activity can be potentially very damaging to surrounding facilities and aircraft. Hangars are not airtight and over-spray can damage aircraft windows and paint. The cost in damage from these activities justifies their prevention. Additionally, some lessees bring their projects from home and work on them at the airport in their hangar; this is as much a liability issue as it is a non-compatible use issue.

Another major concern is the storage of flammables. Using the National Fire Prevention Association (NFPA) code gives the airport some support for enforcement. Most airports do not permit the storage of flammables, and of those that do, the majority have strict requirements, such as no more than 2 gallons or tenants are required to have an NFPA-approved cabinet for the storage of flammable materials.

Within hangars, auxiliary heaters are commonplace, although they can be extremely hazardous. A lessor that permits this type of equipment will not only increase the chance of a fire, but it may also void its insurance policy. The airport

should check with the local fire marshal regarding specific state laws, and with local authorities for a list of approved heaters that meet local building and fire codes and are permissible. Any permanently installed heaters must be approved by the airport and local building officials.

When the tenant's lease terminates, it is important that the tenant leave the hangar or tie-down space the same way he or she found it. It can be costly to have to make repairs or correct unwanted electrical modifications that might not meet code or been completed with out permits.

Note: Many of these issues are commonly addressed in the Airport Minimum Standards and Airport Rules and Regulations documents, which should be attached as an exhibit to the lease.

Construction, Maintenance, Repairs, Utilities

Leases should guarantee that leased properties are used for the defined purpose of the lease, and that development and maintenance of that property should be conducted in accordance with a specific site plan. The lessee should be required to complete the construction of any new facilities within a specific allotment of time or the lease should revert to the airport. This practice eliminates the potential for future land banking and future lease assignments to another party. The lessee should also be required to maintain and repair the facilities and surrounding grounds. These items are good examples of requirements that could be referenced in the Airport Minimum Standards and Airport Rules and Regulations documents in that they typically can be changed more easily than the individual land leases.

Most important for this section is that the lessee be prohibited from making any changes, modifications, or improvements to the property and/or facility. The only reasonable exception to this prohibition would be if the lease specifically provides a means for the lessee to acquire written approval from the lessor prior to any repairs, renovations, improvements and alterations or maintenance being performed.

In terms of maintenance, the lease should state that the airport sponsor has no obligation whatsoever with respect to maintenance, replacement or repair of the leased premises and that the tenant is responsible for keeping the rental premises in a neat and orderly condition, including arranging for the disposal of refuse. Additional provisions could include requiring tiedown lessees to be responsible for providing and maintaining their own chocks and ropes to secure their aircraft. Leases could include requirements for each tenant to provide an approved dry chemical fire extinguisher suitable for use on type A, B, and C fires that would coincide with the minimum size extinguisher recommendations of the local fire department. Lessees should also assume sole and exclusive responsibility for prompt and efficient removal of snow, ice, and debris from leased premises, and should coordinate a snow removal plan and method of removal with the airport. It must also be made clear that the tenant shall not make any alterations during maintenance without the airport's consent.

To protect its investments, WSDOT Aviation should schedule an annual safety and maintenance inspection. This annual inspection would be a good opportunity to inspect the overall integrity of the airport facilities, including hangars and mechanical door operations, and would permit the observation of other conditions, such as the storage of illegal items flammable liquids or possible subletting. WSDOT Aviation could also choose to have another official, such as the local fire marshal, accompany the inspector during the inspection to be sure local fire codes and regulations are enforced.

In terms of providing utility services to lessees, most airports do not include a clause for hangar rentals unless the hangars are individually metered, or are used for conducting business, since most airports include the cost of limited electrical use in the rent. When building new hangars, WSDOT Aviation should consider requiring a separate service for each individual hangar unit so each tenant would then be responsible for specific utility charges. This also will depend on the type of activities the airport will allow to be conducted in the hangars.

Rights, Reservations, and Obligations of Lessor

The lease agreement must specifically list the rights, reservation and obligations of the lessor. Leases should provide the lessor with the ability to enter, ingress and egress leased premises. Leases should also reference the lessor's rights for the purpose of enforcing or ensuring compliance with the Airport Minimum Standards and Airport Rules and Regulations documents. Since the lessor oftentimes does not own the facility, the lease should specify a reasonable notification period and outline a formal process such as in writing or by phone for a notice of inspection.

WSDOT Aviation may want to consider requiring a key from each tenant. Although this is a sensitive issue for some renters, the majority of states recognize the lessor's legal right for access. One way to avoid this would be to provide locks to the tenants and require that they only use airport-supplied locks. This will reduce the amount of passkeys needed to access the property. The return on the investment and the extra measure of safety strongly outweigh the small cost in purchasing and supplying the locks. If employed, language should be added to the lease to specify that upon termination of the lease, all locks will be removed by the lessor.

Another item to consider would be the right of WSDOT Aviation to temporarily close the airport facility, including, but not limited to, the runway, taxiway, apron, terminal building, and automobile parking area, when reasonably necessary for purpose of maintenance, repair, further development or construction, or for the safety of the general public. This will help alleviate the need for prorating a tenant's rent in the event of having to close the airport for a significant amount of time for construction or due to inclement weather such as snow removal operations. Some tenants may seek restitution for airport closure and their inability to use the airport or access their aircraft.

Obligations of Lessee

The lease agreement must specifically list the obligations of the lessee. Given the current environmental regulatory requirements, it is important that the lessee's obligations with respect to the disposal of trash, oils, fluids or any hazardous waste be specifically detailed. Current federal and some local regulations dictate the amount of hazardous materials that are permitted to be stored at any one time, which is the case with aircraft refinishing facilities and the storage of certain waste oils and fluids.

WSDOT Aviation should also prevent tenants from subleasing or renting out additional space to another aircraft. Rules established to prevent subletting are also designed to prevent assignments or the transfers of the tenancy to someone else. A common problem at airports with waiting lists for hangar space is that tenants may leave in the middle of a month or lease term. By not allowing subletting to occur, this problem can be avoided. Additionally, it would protect the airport from any allegations of favoritism, since those on the waiting list for a hangar will have sequential rights for hangars when they become available.

Insurance

Lease requirements in terms of insurance can vary dramatically by use and by airport. Oftentimes, insurance requirements (such as Comprehensive, Automobile, and Aircraft Liability insurance, or Workman's Compensation Insurance on any structure and hangar) might not be appropriate for hangar rentals, but are appropriate for land leases. WSDOT Aviation should revisit the insurance requirements for each type of lease to insure that the combined single limit amount is reasonable, obtainable, and in line with the current tie-down permit requirements.

On some occasions, an airport might require that a tenant carry liability insurance on the hangar or tiedown. This is usually not a problem since the tenant's aircraft insurance provider should be able to extend the aircraft insurance policy's liability coverage at little or no cost to the tenant. The lessor could also require that their name be added as an additional insured party with respect to the tenant's insurance policy. Adding the lessor as an additional insured potentially reduces property owner liability for claims against both the property owner and the tenant.

Additionally, insurance companies will typically provide only 10-days notice of cancellation for nonpayment of premium, and therefore, it may be best for the lessor to specify only a 10-day notice on the certificate of insurance. A lessor may also want to specify a particular dollar amount of minimum insurance or valid liability and property damage insurance. Some airports ask for a copy of the insurance certificate or require the tenants to provide the name of the company that underwrites their insurance policy, as well as to require that the company be licensed to do business in the state.

Abbreviations

AAAE	American Association of Airport Executives
AASHTO	American Association of State Highway and Transportation Officials
AC	Advisory Circular
ACI	Airports Council International
ADF	Automatic Direction Finder
ADG	Airplane Design Group
ADO	Airport District Office
AEP	Airport Emergency Plan
AFD	Airport Facilities Directory
AGL	Above Ground Level
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ALS	Approach Lighting System
ALSF-1	Approach Light System with Sequence Flasher Lights
AMSL	Above mean sea level
AOPA	Aircraft Owners and Pilots Association
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Firefighting Facility
ARP	Airport Reference Point
ARTCC	Air Route Traffic Control Center
ASDA	Accelerate-Stop Distance Available
ASOS	Automated Surface Observation System
ASR	Airport Surveillance Radar
ASV	Annual Service Volume
ATC	Air Traffic Control
ATCT	Air Traffic Control Tower
ATIS	Automated Terminal Information System
AVGAS	Aviation Gasoline
AWOS	Automatic Weather Observation System

BLM	Bureau of Land Management
BRL	Building Restriction Line
CE	Categorical Exclusion
CIP	Capital Improvement Program
CL	Centerline
CTAF	Common Traffic Advisory Frequency
dBA	A-weighted Decibels
DCE	Documented Categorical Exclusion
DH	Decision Height
DME	Distance Measuring Equipment
DNL	Day-Night Sound Levels
DOT	Department of Transportation
DWL	Dual Wheel Loading
EA	Environmental Assessment
ECAP	Environmental Compliance Assurance Procedure
ECS	Environmental Classification Summary
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
EPA	The United States Environmental Protection Agency
EPM	Environmental Procedures Manual
ERS	Environmental Review Summary
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FATO	Final Approach and Takeoff area
FBO	Fixed Base Operator
FDC	Flight Data Center
FIS	Federal Inspection Service
FMS	Flight Management System
FOD	Foreign Object Debris
FONSI	Finding Of No Significant Impact
FSS	Flight Service Station

GA	General Aviation
GAMA	General Aviation Manufacturers Association
GIS	Geographic Information Systems
GPS	Global Positioning System
GS	Glide Slope
GSE	Ground Support Equipment
HAT	Height Above Threshold
HIRL	High Intensity Runway Lights
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
INM	Integrated Noise Model
LAAS	Local Area Augmentation System
LATS	Washington State Long-Term Air Transportation Study
LCC	Low-Cost Carrier
LDA	Landing Distance Available
LDN	Day-Night Sound Levels (see DNL)
LIRL	Low Intensity Runway Lights
LOA	Letter of Agreement
LOC	Localizer Beam
LNAV	Lateral Navigation
LPV	Localizer Performance with Vertical guidance
MALS	Medium Intensity Approach Light System
MALSF	Medium Intensity Approach Light System with sequence flashing Lights
MALSR	Medium Intensity Approach Light System with Runway alignment indicators
MDA	Minimum Descent Altitude
MGW	Maximum Gross Weight
MIRL	Medium Intensity Runway Lights
MITL	Medium Intensity Taxiway Lights
MOA	Military Operations Area
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

MPO	Metropolitan Planning Organization
MSL	Mean Sea Level
MTOW	Maximum Takeoff Weight
NAS	National Airspace System
NASAO	National Association of State Aviation Officials
NAVAID	Air Navigation Facility/Aid
NBAA	National Business Aircraft Association
NCP	Noise Compatibility Program
NDB	Non-Directional Beacon
NEM	Noise Exposure Map
NM	Nautical Mile
NOTAM	Notices to Airmen
NPA	Non-Precision Approach
NPIAS	National Plan of Integrated Airport Systems
NTSB	National Transportation Safety Board
O&D	Origination/Destination
OFA	Object Free Area
OFZ	Obstacle Free Zone
PAPI	Precision Approach Path Indicator
PASP	Pre-Activity Safety Plan
PCI	Pavement Condition Index
PIR	Precision Instrument Runway
RAIL	Runway Alignment Indicator Lights
RCW	Revised Code of Washington
REIL	Runway End Identifier Lights
RNAV	Area Navigation
RNP	Required Navigation Performance
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVZ	Runway Visibility Zone
RVR	Runway Visual Range
RW	Runway

SASO	Specialized Aeronautical Service Operator
SIR	Safety Improvement Report
SWL	Single Wheel Loading
SEPA	Washington State Environmental Policy Act
TAF	Terminal Area Forecasts
TERPS	United States Standards for Instrument Procedures
TLOF	Touchdown and Lift-off area
TODA	Take-Off Distance Available
TOFA	Taxiway Object Free Area
TORA	Take-Off Run Available
TRACON	Terminal Radar Approach Control
TSA	Transportation Security Administration
TTF	Through The Fence
TW	Taxiway
TWSA	Taxiway Safety Area
TWOFA	Taxiway Object Free Area
UAV	Unmanned Aerial Vehicle
UHF	Ultra High Frequency
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VHF	Very High Frequency
VLJ	Very Light Jet
VMP	Vegetation Management Plan
VOR	VHF Omni-Directional Range Navigation System
VORTAC	VHF Omni-Directional Range/Tactical Air Navigation
WAAS	Wide Area Augmentation System
WAC	Washington Administrative Code
WASP	Washington Aviation System Plan
WSDOT	Washington State Department of Transportation
WTP	Washington Transportation Plan

Definition

Advisory Circular (AC) – A series of FAA publications providing guidance and standards for the design, operation, and performance of aircraft and airport facilities.

Air Cargo – Commercial freight (including packages and mail) transported by passenger and all-cargo airliners.

Air Carrier – A commercial airline with published schedules operating at least five round trips per week.

Air Freight – Items principally transported by all-freight carriers and as belly freight on scheduled passenger services, including heavy-weight items as well as routine palletized shipments.

Air Mail – Items carried as belly freight on some commercial carriers and carried as freight by freight forwards (i.e., FedEx) under contract with the U.S. Postal Service (USPS).

Air Taxi – An aircraft operator who conducts operations for hire or compensation in accordance with FAR Part 135 in an aircraft with 30 or fewer passenger seats and a payload capacity of 7,500 pounds or less. An air taxi operates on an on-demand basis and does not meet the "scheduled-flight" qualifications of a commuter.

Aircraft Approach Category – An element of the ARC. A grouping of airplanes based on wingspan, per the following:

- ***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

Aircraft Mix – The classification of aircraft into groups which are similar in size and operational characteristics

Aircraft Operations – Airborne movements of aircraft at an airport including aircraft landings (arrivals) at and takeoffs (departures). These operations can be further defined by the following:

- ***Local Operations*** include those performed by aircraft that operate in the local traffic pattern or within sight of the airport; and/or are known to be departing for or arriving from a local practice area.
- ***Itinerant Operations*** are all others.

Airplane Design Group (ADG) – An element of the ARC. A grouping of airplanes based on wingspan, per the following:

- ***Group I*** – Up to, but not including 49 feet
- ***Group II*** – 49 feet up to, but not including, 79 feet
- ***Group III*** – 79 feet up to, but not including, 118 feet
- ***Group IV*** – 118 feet up to, but not including, 171 feet
- ***Group V*** – 171 feet up to, but not including, 214 feet
- ***Group IV*** – 214 feet up to, but not including, 262 feet

Airport Elevation – The highest point on an airport's usable runways, expressed in feet above mean sea level (MSL).

Airport Improvement Program (AIP) – A congressionally mandated program through which FAA provides funding assistance for the development and enhancement of airport facilities. AIP is periodically reauthorized by Congress through appropriations from the Aviation Trust Fund, which is funded through excise taxes on airline tickets, aviation fuel, etc.

Airport Layout Plan (ALP) – A scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows boundaries and proposed additions to all areas owned or controlled by the airport operator for airport purposes, the location and nature of existing and proposed airport facilities and structures, as well as the location of existing and proposed non-aviation areas and improvements on the airport.

Airport Master Plan – A standard planning document that presents a concept of the ultimate development of an airport, including the research and logic from which the plan was evolved, as well as the plan in graphic and written formats. An airport master plan is normally presented to the State or FAA for approval and would typically also be approved and adopted by the airport sponsor.

Airport Reference Code (ARC) – An FAA design criteria based upon the approach speed (aircraft approach category) and wing span (airplane design group) of an aircraft which produces a minimum annual 500 operations per year at an airport

Airport Reference Point (ARP) – The latitude and longitude of the approximate center of the airport.

Airport Sponsor – A private or public agency that is authorized to own and operate an airport, to obtain property interests, to obtain funds, and to be legally, financially, and otherwise able to meet all applicable requirements of current laws and regulations.

Airside – The portion of the airport meant for taxiing, takeoff, landing, parking, loading and unloading, or any other aircraft operation, including the aircraft parking aprons, taxiways, runways, and safety areas.

Airspace – The area above the ground in which aircraft travel. It is divided into corridors, routes and restricted zones for the control and safety of aircraft operations.

All-Cargo Carrier – An air carrier certificated in accordance with FAR Part 121 to provide scheduled air freight, express, and mail transportation over specific routes, as well as the conduct of nonscheduled operations that may include passengers.

Approach Lighting System (ALS) – A series of lights that assists the pilot when aligning aircraft with the extended runway centerline on final approach.

Air Route Traffic Control Center (ARTCC) – An FAA facility established to provide air traffic control service to aircraft operating on Instrument Flight Rules (IFR) flight plans within controlled airspace during the en route portion of flight.

Air Traffic Control (ATC) – A service operated by the appropriate authority to promote the safe, orderly, and expeditious flow of air traffic. The ATC system includes ARTCCs, Towers, airport ground radar and other elements such as navigational aids to pilots.

Air Traffic Control Tower (ATCT) – The airport traffic control facility located on an airport that is responsible for traffic separation within the immediate vicinity of the airport and on the surface of the airport.

Annual Service Volume (ASV) – An FAA planning tool that reflects the ability of airfield facilities (i.e., runways, taxiways, and approach aids) to accommodate aviation demand that includes commercial, general aviation, and military operations. It accounts for differences in runway use, aircraft mix, weather conditions, etc. that would encountered over a year's time.

Approach End of Runway – The near end of the runway as viewed from the cockpit of a landing aircraft.

Approach Surface – An FAR Part 77 imaginary surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

Assurance – An assurance (or grant assurance) is a provision contained in a Federal grant agreement to which the recipient of AIP funding has voluntarily agreed to comply with in consideration of the funding provided.

Automated Surface Observation System (ASOS) – The primary surface weather observing system in the U.S. that supports aviation operations and weather forecasting. An ASOS has automated sensors that record wind direction and speed, visibility, cloud ceiling, precipitation, etc and sends that data automatically to the National Weather Service. At many locations, a computer-generated voice broadcasts the minute-by-minute weather reports to pilots on a discrete radio frequency.

Automated Weather Observing System (AWOS) – An automated weather reporting system that provides airport weather observations to pilots on a discrete radio frequency via a computer-generated voice. Less sophisticated than ASOS, it is oftentimes installed using state or local funding.

Avigation Easement – A form of limited property right purchase that establishes legal land-use control prohibiting incompatible development of areas required for airports and aviation-related purposes.

Based Aircraft – Aircraft stationed at an airport on an annual basis.

Building Restriction Line (BRL) – A line which identifies suitable building area locations on airports. The BRL is drawn to exclude the runway protection zones, the runway visibility zones required for clear line of sight from the airport traffic control tower, and all airport areas with a clearance of less than 35 feet beneath the FAR Part 77 surfaces.

Capacity – A measure of the maximum number of aircraft operations that can be accommodated by an airport's airfield over a designated time period (i.e., hour or year).

Capital Improvement Program (CIP) – A schedule of planned projects and costs for an airport typically prepared and adopted by the airport sponsor and other public agencies.

Ceiling – The height above the ground of the base of the lowest layer of clouds or obscuring phenomena aloft that is reported as broken or overcast and not classified as scattered, thin, or partial. Ceiling figures in aviation weather reports may be determined as measured, estimated, or indefinite.

Charter – A nonscheduled flight offered by either a supplemental or certificated air carrier.

Circling Approach – An instrument approach procedure in which an aircraft executes the published instrument approach to one runway, then maneuvers visually to land on a different runway. Circling approaches are also used at airports that have published instrument approaches with a final approach course that is not aligned within 30 degrees of any runway.

Commuter Air Carrier – An air carrier certified in accordance with FAR Part 135 that operates aircraft seating with a maximum of 60 passengers and provides at lease five scheduled round trips per week between two or more points, or carries mail.

Commercial Air Carrier – An air carrier certified in accordance with FAR Parts 121 or 127 to conduct scheduled services on specified routes. These air carriers may also provide nonscheduled or charter services as a secondary operation.

Commercial Service Airports – Publicly owned airports that enplane 2,500 or more passengers annually and receive scheduled passenger aircraft service. It is a NPIAS classification. Commercial service airports are either one of the following:

- ***Primary*** – Airport that enplanes more than 10,000 passengers annually.
- ***Nonprimary*** – Airport that enplanes between 2,500 and 10,000 passengers annually.

Controlled Airspace – Airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification. Controlled airspace is designated as Class A, Class B, Class C, Class D, or Class E. Aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements as specified in FAR Part 91, depending upon the class of airspace in which they are operating:

- ***Class A*** – Airspace between 18,000 and 60,000 feet MSL over the conterminous United States. IFR clearances are required for all aircraft operating in Class A airspace.
- ***Class B*** – Airspace area around the busiest U.S. hub airports, typically to a radius of 20 nautical miles and up to 10,000 feet above ground level. Operations within Class B airspace require an ATC clearance and at least a Private pilot certificate (local waivers available), radio communication, and an altitude-reporting (Mode C) transponder.
- ***Class C*** – Airspace area around busy U.S. airports (other than Class B). Radio contact with approach control is mandatory for all traffic. Typically includes an area from the surface to 1,200 feet AGL out to 5 miles and from 1,200 to 4,000 feet AGL to 10 miles from the airport.
- ***Class D*** – Airspace around an airport with an operating control tower; typically to a radius of 5 miles from the surface to 2,500 feet AGL. Radio contact with the control tower required prior to entry.
- ***Class E*** – General controlled airspace comprising control areas, transition areas, Victor airways, the Continental Control Area, etc.
- ***Class F*** – International airspace designation not used in the U.S.
- ***Class G*** – Uncontrolled airspace, generally the airspace from the surface up to 700 or 1,200 feet AGL in most of the U.S., but up to as high as 14,500 feet in some remote Western and sparsely populated areas.

Day-Night Average Sound Level (DNL) – A noisemeasure used to describe the average sound level over a 24-hour period, typically an average day over the course of a year. DNL may be determined for individual locations or expressed in noise contours.

Decibel (dB) – Sound is measured by its pressure or energy in terms of decibels. The decibel scale is logarithmic. A ten-decibel increase in sound is equal to a tenfold increase in sound energy.

Declared Distances – The distances the airport owner declares available for the airplane's takeoff run, takeoff distance, accelerate-stop distance, and landing distance requirements. The distances are:

- ***Takeoff Run Available (TORA)*** – The runway length declared available and suitable for the ground run of an airplane taking off.
- ***Takeoff Distance Available (TODA)*** – The TORA plus the length of any remaining runway or clearway beyond the far end of the TORA.
- ***Accelerate-Stop Distance Available (ASDA)*** – The runway plus stopway (SWY) length declared available and suitable for the acceleration and deceleration of an airplane aborting a takeoff.
- ***Landing Distance Available (LDA)*** – The runway length declared available and suitable for a landing airplane.

Decision Height (DH) – During a precision approach, the height (or altitude) at which a decision must be made to either continue the approach or execute a missed approach.

Demand – Level of activity that needs to be accommodated.

Demand Management – The art or science of controlling demand as a strategy to avoid congestion.

Design Aircraft – An aircraft whose dimensions and/or other operational requirements make it the most demanding aircraft currently using an airport's facilities (i.e., runways and taxiways). (***Note:*** If the airport's facilities are designed to accommodate the Design Aircraft, they can accommodate less demanding aircraft as well.) The design aircraft must be an aircraft that has or is expected to conduct 500 or more annual operations (250 landings) at a given airport, and is used as the basis for airport planning and design at that airport.

Displaced Threshold – A threshold that is located at a point on the runway other than the designated beginning of the runway, often for the purpose of avoiding obstructions on approach. The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

Distance Measuring Equipment (DME) – A flight instrument that measures the line-of-sight distance of an aircraft from a navigational radio station in nautical miles.

Enplanements – The number of revenue passengers boarding an aircraft at an airport. Does not include arriving or through passengers.

Enroute System – That part of the National Airspace System where aircraft are operating between origin and destination airports.

Environmental Assessment (EA) – A concise document that assesses the environmental impacts of a proposed Federal Action. It discusses the purpose and need for the proposed action and alternatives, as well as their environmental impacts. An environmental assessment should provide sufficient evidence and analysis for a Federal determination whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). Public participation and consultation with other Federal, state, and local agencies is a cornerstone of the EA process.

Environmental Impact Statement (EIS) – An EIS is a document that provides a discussion of the significant environmental impacts which would occur as a result of a proposed project, and informs decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts. Public participation and consultation with other federal, state, and local agencies is a cornerstone of the EIS process.

Entitlement Funds – Federal aid funds (see AIP) apportioned to each airport for authorized and approved projects, based on a statutory formula that takes into account the airport's passenger enplanements and cargo.

Federal Aviation Administration (FAA) – A branch of the U.S. Department of Transportation responsible insuring the safe and efficient use of the nation's airspace, for fostering civil aeronautics and air commerce, and for supporting the requirements of national defense. In addition to regulating airports, aircraft manufacturing and parts certification, aircraft operation and pilot certification, the FAA operates Air Traffic Control, purchases and maintains navigation equipment, certifies airports and aids airport development, among other activities. The FAA also administers the AIP that provides grants from the Airport and Airway Trust Fund for airport development.

Federal Aviation Regulations (FARs) – The body of Federal regulations relating to aviation, published as Title 14 of the Code of Federal Regulations.

Final Approach – The flight path of an aircraft which is inbound to the airport on an approved final instrument approach course, beginning at the point of interception of that course and extending to the airport or the point where circling for landing or missed approach is executed.

Fixed Base Operator (FBO) – Any aviation business duly licensed and authorized by written agreement with the airport owner to provide aeronautical activities at the airport under strict compliance with such agreement and pursuant to these regulations and standards. Typically provide services such as hangar space, fuel, flight training, repair, and maintenance to general aviation airport users.

Fixed Wing – Any aircraft not considered to be a rotorcraft.

Flight Service Station (FSS) – Air traffic facility operated by the FAA to provide flight service assistance such as pilot briefings, en route communications, search and rescue assistance and weather information.

General Aviation (GA) – All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remunerations or hire. Often misunderstood to be only small, propeller-driven aircraft; even a large jet or cargo plane operated under FAR Part 91 can be a general aviation aircraft.

Glideslope (GS) – Provides vertical guidance for aircraft during approach and landing. Generally a 3-degree angle of approach to a runway established by means of airborne instruments during instrument approaches, or visual ground aids for the visual portion of an instrument approach and landing.

Geographic Information Systems (GIS) – An information system that is designed for storing, integrating, manipulating, analyzing, and displaying data referenced by spatial or geographic coordinates.

Global Positioning System (GPS) – Satellite-based navigation system operated by Department of Defense, providing extremely accurate position, time, and speed information to civilian and military users. Based on a "constellation" of 24 satellites, GPS will replace ground-based navigation systems (VOR, ILS) as the primary worldwide air navigation system in the 21st Century.

Hazard to Air Navigation – An object which, as a result of an aeronautical study, the FAA determines will have a substantial adverse effect upon the safe and efficient use of navigable airspace by aircraft, operation of air navigation facilities, or existing or potential airport capacity.

Instrument Approach − A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

Instrument Flight Rules (IFR) − Rules from Federal Aviation Regulations (14 CFR 91) that govern the procedures for conducting instrument flight. Pilots are required to follow these rules when operating in controlled airspace during Instrument Meteorological Conditions (i.e., visibility of less than three miles and/or ceiling lower than 1,000 ft). These procedures may also be used under visual conditions and provide for positive control by ATC.

Instrument Landing System (ILS) – ILS is designed to provide an exact approach path for alignment and descent of aircraft. Generally consist of a localizer, glide slope, outer marker, middle marker, and approach lights. There are three types of ILS:

- ***Cat I*** – Category I ILS which provides for approach to a height above touchdown of not less than 200 feet and with visibility of not less than ½ mile or a Runway Visual Range of not less than 2400 (RVR 1800 with operative touchdown zone and runway centerline lights).
- ***Cat II*** – Category II ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with a Runway Visual Range of not less than 1200.
- ***Cat III*** – Category III ILS approach procedure which provides for approaches to minima less than CAT II.

Instrument Runway – A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minimums has been approved.

Itinerant Operation – All aircraft operations at an airport other than local.

Joint Use Airport – Airport with existing formal written joint use agreement between the military and the local civilian sponsor.

Local Aircraft Operations – Includes aircraft operating in the local air traffic pattern or within sight of the air traffic control tower; aircraft that are known to be departing for, or arriving from local practice areas located within a 25-mile radius of the ATCT; or aircraft making simulated instrument approaches or low passes at the airport.

Local Area Augmentation System (LAAS) – An enhancement of the Global Positioning System (GPS) providing greater navigation accuracy and system integrity for civilian operations.

Land Use Compatibility – The ability of land uses surrounding the airport to coexist with airport-related activities with minimum conflict.

Landside – The general public common use areas of the airport such as terminals, public roadways, parking lots and buildings which are not contained in the airside area.

Local Operation – Operations performed by an aircraft that:

- Operates within the local traffic pattern or within sight of the airport.
- Are known to be departing for or arriving from an Airport within a 20-mile radius of the airport in question.r

- Execute practice maneuvers such as touch and goes or simulated instrument approaches at the airport.

The majority of local operations are conducted by based aircraft.

Localizer – A navigational aid and component of an ILS which provides lateral course guidance to the runway.

Mean Sea Level (MSL) – The average height of the surface of the sea for all stages of the tide over a 19-year period; used as a reference for elevations.

Middle Marker – A beacon that defines a point along the glide slope of an ILS, normally located at or near the point of decision height.

Minimum Standards – The qualifications or criteria established by an airport sponsor as the minimum requirements to be met by businesses engaged in on-airport aeronautical uses as a condition for the right to conduct those activities.

Missed Approach Procedure – An instrument procedure used to redirect a landing aircraft back around to attempt another landing. This may be due to visual contact not established at authorized minimums or instructions from air traffic control, or for other reasons.

Military Operations Area (MOA) – Depicted on navigational charts, MOAs are airspace in which military flight operations (training and practice combat) are conducted. They may be transited by VFR civilian traffic, but special vigilance is recommended.

National Airspace System (NAS) – The common network of U.S. airspace, includes air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, manpower and material.

National Plan of Integrated Airport Systems (NPIAS) – FAA planning document that identifies more than 3,300 airports that are significant to national air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP). It also includes estimates of the amount of AIP money needed to fund infrastructure development projects that will bring these airports up to current design standards and add capacity to congested airports. FAA is required to provide Congress with a 5-year estimate of AIP eligible development every 2 years. The NPIAS comprises all commercial service airports, all reliever airports, and selected general aviation airports.

National Transportation Safety Board (NTSB) – The independent federal agency charged with investigating and finding "probable cause" of transportation accidents.

Navigational Aids (NAVAIDs) – Any facility used by an aircraft for navigation.

Noise Abatement – A measure or action that minimizes the amount of impact of noise on the environs of an airport. Noise abatement measures include aircraft operating procedures and use or disuse of certain runways or flight tracks.

Noise Contour Map – A map representing average annual noise levels summarized by lines connecting points of equal noise exposure.

Non-Directional Beacon (NDB) – A radio beacon transmitting nondirectional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to and from the station. When the radio beacon is installed in conjunction with the ILS marker, it is normally called a compass locator.

Non-Precision Approach Procedure – A standard instrument approach procedure with only horizontal guidance or area-type navigational guidance for straight-in approaches, and no electronic vertical guidance (i.e., glideslope) is provided.

Non-Towered Airport – An airport without a control tower, which encompasses the majority of America's 13,000 airports (only approximately 680 airports have control towers). ***Note:*** Non-Towered airports are far from being "uncontrolled" in that pilots follow traffic pattern procedures and self-announce positions and intentions using the CTAF, usually called the UNICOM frequency.

Notices to Airmen (NOTAM) – A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations. NOTAMs are distributed via two methods: telecommunications (Class I) and/or postal services (Class 11).

Object Free Area (OFA) – An area on the ground centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes.

Obstacle Free Zone (OFZ) – The OFZ is the airspace below 150 feet above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway, and for missed approaches. The OFZ is sub-divided as follows:

- ***Runway OFZ*** – The airspace above a surface centered on the runway centerline.
- ***Inner-Approach OFZ*** – The airspace above a surface centered on the extended runway centerline. It applies to runways with an approach lighting system.

- ***Inner-Transitional OFZ*** – The airspace above the surfaces located on the outer edges of the runway OFZ and the inner-approach OFZ. It applies to runways with approach visibility minimums lower than ¾ statute mile.

Obstruction to Air Navigation – An object of greater height than any of the heights or surfaces presented in Subpart C of Code of Federal Regulation (14 CFR), Part 77. (Obstructions to air navigation are presumed to be hazards to air navigation until an FAA study has determined otherwise.)

Operation – A take-off, departure or overflight of an aircraft. Every aircraft flight requires at least two operations, a take-off and landing.

Outer Marker – An ILS navigation facility in the terminal area navigation system located four to seven miles from the runways edge on the extended centerline indicating the beginning of final approach.

Overflight – Aircraft whose flights originate or terminate outside the metropolitan area that transit the airspace without landing.

Part 77 – The part of Federal Aviation Regulations (FARs) covering objects affecting navigable airspace. It provides for the establishment of "imaginary surfaces" on and around an airport to identify potential aeronautical hazards in order to prevent or minimize the adverse impacts to the safe and efficient use of navigable airspace. Imaginary surfaces include the primary surface, approach surfaces, transitional surfaces, the horizontal surface, and the conical surface.

Part 91, 121, 125, 135 – The parts of Federal Aviation Regulations (FARs) covering non-commercial operations (Part 91), major scheduled air carriers (Part 121), commuters (Part 125), non-scheduled carriers and air taxis (Part 135).

Part 61, 141, 142 – The parts of FARs covering pilot certification and flight school operations: the pilot certification and standard flight school (Part 61), the integrated curriculum type school (Part 141) requiring slightly fewer flying hours, and Part 142 program allowing replacement of more flight time with advanced flight simulators.

Pavement Condition Index (PCI) – Numerical index between 0 and 100 used to indicate the condition of a selected portion of pavement with 100 representing excellent pavement.

Precision Approach Path Indicator (PAPI) – Provides visual approach slope guidance to aircraft during an approach. It is similar to a VASI but provides a sharper transition between the colored indicator lights.

Precision Approach Procedure – A standard instrument approach procedure in which an electronic glide slope is provided, such as an ILS. GPS precision approaches may be operational in the future.

Prohibited Area – An airspace area where flight is prohibited except by prior arrangement with the controlling agency. An example is the P-56 area over downtown Washington, D.C., prohibiting flight over the White House.

Public Use Airport – An airport open to public use without prior permission, and without restrictions within the physical capabilities of the facility. It may or may not be publicly owned.

Reliever Airport – A public use airport that relieves airport congestion at a commercial service airport and provides general aviation access to the overall community. It is a NPIAS classification.

Restricted Area – Airspace which (when "Active" or "Hot") usually excludes civilian aircraft, oftentimes for military training/operations (i.e., rocket flights, practice air-to-air combat or ground-based artillery practice). Temporary restricted areas are established for events such as forest fires, natural disasters or major news stories. Flight through a restricted area may be authorized by the "controlling agency" or by FAA.

Rotocraft – A heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors. Includes helicopters and gyroplanes.

Rules and Regulations – Directions approved and enforced by an airport sponsor to protect public health, safety, interest, and welfare on the airport, as well as to augment any ordinances and resolutions pertaining to the airport.

Runway (RW) – A defined rectangular surface on an airport prepared or suitable for the landing or takeoff of airplanes.

Runway End Identifier Lights (REIL) – Two synchronized flashing lights (one on each side of the runway threshold) that identify the approach end of the runway.

Runway Incursion – Any occurrence at an airport involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in loss of separation with an aircraft taking off, intending to take off, landing or intending to land.

Runway Protection Zone (RPZ) – An area off the runway end to enhance the protection of people and property on the ground.

Runway Safety Area (RSA) – A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.

Runway Threshold – The beginning of the portion of the runway usable for landing.

Segmented Circle – A system of visual indicators designed to provide traffic pattern information at airports without operating control towers.

Special Use Airspace – All airspace in which restrictions or prohibitions to flight are imposed for military or government needs (see MOA, Restricted Area, Prohibited Area).

SuperAWOS – Automated AWOS and Unicom system that is FAA certified for altimeter settings among other weather data, which is required for GPS approach implementation.

T-Hangar – An aircraft hangar in which aircraft are parked alternatively tail to tail, each in the T-shaped space left by the other row of aircraft or aircraft compartments.

Taxilane (TL) – The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

Taxiway (TW) – A defined path established for the taxiing of aircraft from one part of an airport to another.

Taxiway Safety Area (TSA) – A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway.

Terminal Area Capacity – The ability of an airport terminal area to accommodate aircraft, passengers, and cargo. Individual elements within terminal areas that comprise the overall terminal capacity typically include airline gate positions, airline apron areas, cargo apron areas, general aviation apron areas, airline passenger terminals, general aviation terminals, cargo buildings, automobile parking and aircraft maintenance facilities, among others.

Terminal Area Forecast (TAF) – The official forecast of aviation activity at FAA facilities, which are prepared to meet the budget and planning needs of FAA and provide information for use by state and local authorities, the aviation industry, and the public. The TAF includes forecasts for the following:

- FAA towered airports.
- Federally contracted towered airports.
- Nonfederal towered airports.
- Non-towered airports.

Terminal Radar Approach Control (TRACON) – An FAA Air Traffic Control Facility which uses radar and two-way communication to provide separation of air traffic within a specified geographic area in the vicinity of one or more airports. TRACONs control IFR and participating VFR flights.

Threshold Siting Surface – Defined in FAA AC 150/5300-13, *Airport Design*, this imaginary surface is utilized to locate a runway threshold in order to meet approach obstacle clearance requirements. The dimensions of TSS vary with the type of aircraft operations, the approach visibility minimums, and the types of navigational instrumentation.

Through-the-Fence Operation – A commercial or non-commercial activity that is directly related to the use of the airport but is developed or located off airport property beyond the sponsor's control. This term is also sometimes loosely used to refer to services performed on the airport by individuals or companies which may or may not have a lease or permit from the sponsor to perform such services.

Tiedown – An apparatus used to secure an aircraft while parked on the apron.

Touch-and-Go Operation – A flight training operation in which a landing approach is made, the aircraft touches-down on the runway, but does not fully reduce speed to turn off the runway. Instead, after the landing, full engine power is applied while still rolling and a takeoff is made, thereby practicing both maneuvers as part of one motion. It counts as two separate aircraft operations.

Traffic Pattern – The traffic flow for aircraft landing and departure at an airport. Typical components of the traffic pattern include: upwind leg, crosswind leg, downwind leg, base leg, and final approach.

Transportation Security Administration (TSA) – U.S. government agency is a component of the Department of Homeland Security and is responsible for security of the nation's transportation systems.

Turbojet Aircraft – An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

Turboprop Aircraft – An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

Ultralight – An aircraft operated for sport or recreational purposes that does not require FAA registration, an airworthiness certificate, or pilot certification. They are primarily single-occupant vehicles, although some two-place vehicles are authorized for training purposes. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.

UNICOM – A common, nongovernmental communication facility used at most nontowered airports as the CTAF to provide airport advisory information. Aeronautical charts and publications show the locations and frequencies of UNICOMs.

Unmanned Aerial Vehicle (UAV) – An unpiloted aircraft that can be controlled remotely using GPS or other satellite guidance, or flown autonomously based on pre-programmed flight plans or more complex dynamic automation systems. UAVs are currently primarily used in a number of military roles, but are also used

in a small but growing number of civil applications such as firefighting (when a human observer would be at risk), police observation of civil disturbances and crime scenes, and reconnaissance support in natural disasters.

Utility Airport – An airport designed, constructed and maintained to serve smaller (single and twin-engine) airplanes in aircraft approach categories A and B.

Very High Frequency Omni-Directional Range (VOR) – A ground-based electronic navigation aid transmitting very high frequency navigation signals, 360 degrees in azimuth, oriented from magnetic north. Used as the basis for navigation in the National Airspace System. The VOR periodically identifies itself by Morse Code and may have an additional voice identification feature. Voice features may be used by ATC or FSS for transmitting instructions to pilots.

Very High Frequency Omni-Directional Range Station With Tactical Air Navigation (VORTAC) – A navigational aid providing VOR azimuth and TACAN distance measuring equipment (DME) at one site.

Very Light Jet (VLJ) – A small jet aircraft approved for single-pilot operation, seating 4-8 people, with a maximum take-off weight of under 10,000 pounds. They are lighter than what is commonly termed business jets.

Visual Approach – An approach conducted on an IFR flight plan, operating in VFR conditions under the control of an air traffic facility and having an air traffic control authorization, may proceed to destination airport under VFR.

Visual Approach Slope Indicator (VASI) – A visual aid for the final approach to the runway threshold consisting of two wing bars of lights located in tandem on either side of the runway. Each bar produces a split beam of light—the upper segment is white, the lower is red.

Visual Flight Rules (VFR) – Rules and procedures specified in 14 CFR 91 for aircraft operations under visual meteorological conditions, or weather conditions with a ceiling of 1,000 feet above ground level and visibility of three miles or greater. Under VFR, it is the pilot's responsibility to maintain visual separation and not that of the air traffic controller.

Visual Runway – A runway without an existing or planned straight-in instrument approach procedure.

Wide Area Augmentation System (WAAS) – An enhancement to the GPS system providing greater navigation accuracy and system integrity and permitting GPS to be used for precision instrument approaches to most airports.

Wind Coverage – Percent of time for which aeronautical operations are considered safe due to acceptable crosswind components.

Wind Rose – A scaled graphical presentation of wind information.

Process Improvement

If you have any process improvement suggestions to the requirements in this manual, please submit your suggestions to:

WSDOT Aviation Division
State Airport Manager
18204 59th Drive NE, Suite B
Arlington, WA 98223-8701
aviation@wsdot.wa.gov

Please include the following information with your suggestion:

1. Your name, organization, work address, and telephone number.
2. Your suggestion for improvement.
3. The reason for the suggestion.

We may contact you to be sure we understand clearly what your suggestion is. You may be asked to participate in the validation process.

We will use quality improvement tools to identify, test, and validate your proposed process change. We will keep you informed on the progress and the final outcome.

Thank you for taking the time to share opportunities to improve how we work.