Ontario Municipal Airport

Airport Layout Plan Narrative Report

Ontario, Oregon

Toothman-Orton
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December 2007

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AIRPORT LAYOUT PLAN NARRATIVE REPORT

ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON

December 2007

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Introduction

Plan Objective

The primary objective of an Airport Layout Plan (ALP) Update and associated narrative is to develop and maintain a long-term development program which will yield a safe, efficient, economical, and environmentally acceptable air transportation facility. The plan should meet the goals and needs of the City of Ontario, Malheur County, and the surrounding communities by addressing social issues that may influence airfield development. The plan must also satisfy federal and state guidelines for the development of Airport Layout Plans and facilities while incorporating characteristics unique to the community that the airport serves. Ultimately, the Master Plan Update will provide City officials with a comprehensive planning guide for the continued development of the aviation facility for the next 20 years.

It is important to point out that the ALP Update process is a "snap shot in time." In other words, this ALP Update is a 20 year plan being developed based on the variables and information available regarding the Ontario Municipal Airport today. The update process is one that the FAA recommends repeating every 5-10 years, or sooner as necessary. Should significant events take place at the Ontario Municipal Airport that drastically change the role of the airport which will be discussed in this report, a new planning study to address these changes can and should be initiated.

An Airport Layout Plan provides long-term guidance for airport development during a twenty-year planning period based on forecasts of future aviation activities. The resulting guidance includes a schedule of financial and construction priorities and identifies funding sources for use in paying for airport improvements for the twenty-year planning period. As such, it is both a physical and financial plan for use in guiding local decisions relating to airport facilities and their potential improvement.

The plan recommends improvements in accordance with specific FAA criteria taking into consideration changes that have occurred in the City of Ontario, Malheur County and at the airport over the past five to ten years since the completion of the previous Airport Master Plan. During this period, significant changes have been taking place within the aviation industry. These changes include a significant shift in general aviation activity, both in Oregon and at airports throughout the country. This shift has resulted in increased use of general aviation as a transportation tool for businesses. The Federal Aviation Administration (FAA) has also implemented significant changes to the Airport Design Advisory Circulars that affect the requirements of the Airport Master Plans, Airport Layout Plans and related planning documents.

The Airport Master Plan and Airport Layout Plan focus on basic aeronautical forecasts, need and justification for developments and provide a staged plan for implementing recommended development. The stated plan typically looks at 0-5 year, 6-10 year, and 11-20 year planning horizons. The first phase should focus on correcting any existing facility deficiencies or violations of standards that can and should be corrected quickly. Subsequent phases typically address features needed to accommodate predicted growth based on reasonable assumptions.

This ALP Update is being sponsored by the City of Ontario, who owns and operates the Ontario Municipal Airport. Primary Funding for this study is provided by a grant from the

Federal Aviation Administration (FAA), Airport Improvement Program representing 95 percent of the study cost. The remaining five percent is funded by a grant from the Oregon Department of Aviation and the City of Ontario. Preparation of this plan is being carried out with the assistance of the Airport Advisory Committee, airport users, and tenants, local officials, and the general public. This planning document is prepared in conformance with the requirements of FAA Advisory Circular (AC) 150/5300-13, "Airport Design" including Changes 1 through 11, and Advisory Circular 150/5070-6B, Airport Master Plans.

Plan Process

Development of an ALP Update proceeds through a series of specific steps. The planning process is briefly summarized as it relates to the Ontario Airport Layout Plan:

Inventory

The airport inventry is a collection of information about the existing airport facilities, including characteristics of the existing runway and taxiways, airport access, property holdings, airport users, airport services, hangars and aircraft parking aprons, population changes, land uses, development trends, changes in employment and income and future trends in the study area.

Aviation Activity Forecasts

A level of airport activity that can be anticipated at the airport is determined for set intervals in the future. Development of aviation activity forcast for the Ontario Municipal Airport provides an idea of future levels of aircraft opertions and the types of aircraft that will operate at the airport. Forecasts are developed using various mathematical, market share and trend related projection techniques to develop a realistic estimate of the future number of based aircraft, type of aircraft, and the total number of aircraft operations that should be planned for.

Facility Requirements Analysis

This section compares existing airport conditions against what is needed to meet current activity levels and the levels of activity forecast for the future. Using this comparison, it is possible to identify where there are deficiences or excess capacity in an airport facility. The output of this section is a "wish list" of facility improvements that the airport should attempt to provide.

Airport Alternatives Analysis

This portion of the ALP Update takes the applicable facility requirements and identifies a number of alternatives or options for meeting those needs at the airport. The options considered in the alternatives analysis can range from minor alterations to major reconfigurations in the airport property and its facilities. The various alternatives designated for this project will form the basis for future airport development at the Ontario Municipal Airport.

Airport Layout Plan Drawing Set

Tied to the development of the ALP Update for the Ontario Municipal Airport is the preparation of a series of drawings depicting the existing airport and the proposed changes to the airport over the next twenty years. This set of drawings is commonly referred to as the Airport Layout Plan (ALP). A description of each drawing included in the ALP drawing set for the Ontario Municipal Airport is included in Chapter Six along with a complete drawing set.

Development Plan

The development plan and the Airport Capital Improvement Program (ACIP) is a key plan for airport decision makers. It is a realistic listing of the required projects needed to satisfy the facilities requirements including the most viable manner of meeting these needs. The CIP includes a cost estimate based on current construction costs for each development. The CIP identifies sources of funding and the phasing of the required improvements. The CIP can be found in Chapter 5.

Chapter One – Facility Inventory

This chapter discusses the current classification and Airport Reference Code (ARC) of the Ontario Municipal Airport, introduces some of the terminology used in ALP Updates, presents a brief history of the airport, and summarizes existing facilities and their condition as of August 2006.

Geography

The Ontario Municipal Airport is located in the northeastern corner of Malheur County, Oregon near the Oregon/Idaho border. This area is situated on the Snake River near the main concentration of irrigated farmland in the county. Soils in the area are primarily river deposited silts and sands. The terrain is generally open with gently rolling terraces and upland areas. Elevations range from 2130' near the Snake River to 2185' at the airport. **Figure 1-1** shows the general location of Ontario.

FIGURE 1-1

The airport is located 3 miles west of downtown Ontario on approximately 480 acres. Access to the airport is from I-84 through the central business district and west on SW 4th Avenue to Oregon state highway OR 201. Exit 374 along I-84 also provides additional direct access via the Yturri Beltline. The terrain on the north end of the airport falls into a small valley and then rises to a range of hills. Topography is generally flat in all other directions around the airport. The coordinates of the Airport Reference Point are currently 44 degrees 1 minute 13 seconds north latitude and 117 degrees 0 minutes 45 seconds west longitude.

Climate

The climate of the Ontario area is generally characterized as a dry, temperate zone with cool wet winters and warm, dry summers. Significant temperature fluctuation is often experienced during the day. The mean annual temperature is approximately 51° F with a mean monthly temperature in January of 27° F and a mean monthly temperature in July of 76° F. The mean maximum temperature of the hottest month (July) is approximately 95° F. Precipitation averages 9.7 inches annually in the form of rain in the spring and summer and snow in the winter months. Snow is usually light and melts quickly. The area is also prone to temperature inversions during the winter months. The average growing season lasts approximately 144 days.

The Ontario Municipal Airport is closed for only a few days per year due to snow accumulation. The airport manager is responsible for snow removal using City equipment. The airport has high priority for snow removal to limit the time the airport is closed. Local weather reporting for aviation is available from the airport Automated Surface Observation System (ASOS) and through the Unicom at the Ontario Municipal Airport. There is no historical wind data for the Ontario vicinity. Prevailing winds in this region of the Snake River plain are reasonably consistent.

History

The Ontario Airport has existed at its present location since the 1930's **(Figure 1-2)**. Initially, the airfield was privately owned but was transferred to the American Legion and then to the City of Ontario in 1933. With City funding and help from the local pilot's association, land was cleared in the approximate vicinity of present day Runway 14-32. In the mid-1930's the City improved the runway and constructed a simple 10 foot by 10 foot office building that still stands today.

During the period from 1937 through 1938, Casey Jones started Ontario Flight Services as a full-time flight training school. From 1939 through 1940 the Civil Pilot Training Program provided flight training from the airfield.

At the onset of World War II in 1941, Bessie Halliday leased Ontario Flight Service for a flight training school. Ms. Halliday relocated her flight school inland from the Portland area due to the war. The airport also served as a Navy flight school. The runways as they currently exist date from 1943 when they were constructed by the Works Progress Administration (WPA) as an emergency alternate airport for B-17 bombers.

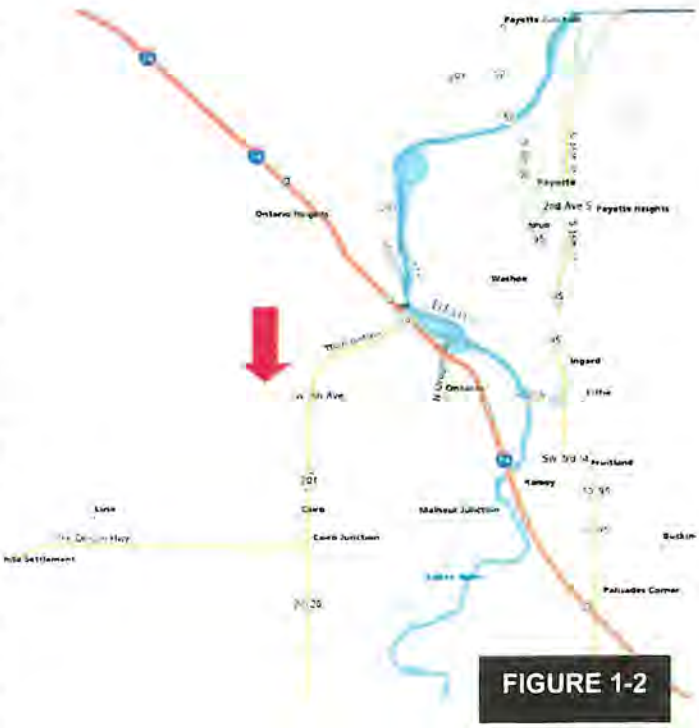

FIGURE 1-2

A runway lighting system was installed in 1950 and the FAA Weather Bureau and Flight Service Station (FSS) was relocated from the Weiser area.

Commercial service came to Ontario Municipal airport in the mid-1940's with the arrival of Empire Airlines. Through the years this company became West Coast Airlines and eventually Hughes Air West. Commercial service was discontinued to Ontario in the early 1970's. At that time, the FSS and FAA weather stations were closed.

Private pilot training peaked during the 1970's when the Fixed Base Operator (FBO) enrolled around 100 students. By the end of the 1970's and early 1980's interest in private flight training waned and enrollment dropped significantly.

Runway 6-24 was closed around 1979 in an attempt to reduce airfield maintenance costs. The FBO was relocated to its present location about this time. Runway 14-32 was reconstructed in the mid-1980's and the segmented circle and wind cone were relocated to their present location. Closure of Runway 6-24 allowed development of a 14-acre industrial park to the east.
Runway 14-32 was overlaid in 1989 and the existing MIRL system was updated. A portion of the municipal golf course was relocated to eliminate a displaced threshold of Runway 32. VASIs were relocated and REILs installed as part of this project.

In 1990-91 approximately 7.7 acres of the airport industrial park were sold to Ozawa Research for a pump manufacturing business. The business is currently operating at this site.

In 2003, Runway 14-32 and the parallel taxiway received a crack fill and seal coat, the bypass taxiway and several hangar taxilanes were reconstructed. In 2005, Taxiway A-1, the centerfield, a Runway 14 Holding Apron and Blast Pad were constructed. The "centerfield" at the Ontario Municipal Airport is an infield area between the north and south portions of the primary apron. This area has been reserved by airport management with the primary purpose of reducing the amount of dirt, dust and debris (F.O.D) that has a tendency to be blown around by prop and jet wash. This landscaped and well maintained area also brings and aesthetic appeal to the apron and airport. It was designed and built with a specific purpose and it is the desire of the airport to keep the area intact throughout the planning period.

Classification and Airport Reference Code – Ontario Municipal Airport

According to the National Plan of Integrated Airport Systems (NPIAS) and the Oregon Aviation Plan, the Ontario Municipal Airport is classified as a core, Category 3 Regional General Aviation airport. Based on the aircraft that currently use the airport the current Airport Reference Code (ARC) for Ontario Municipal Airport is **B-I**.

Table 1-1 lists examples of typical aircraft that generally can be accommodated at an airport classified as B-I. The ultimate classification and associated design standards for Ontario Municipal Airport will be determined based on forecasts that have been developed as part of this study.

TABLE 1-1
Typical Aircraft

AIRCRAFT	APPROACH SPEED	CATEGORY	WINGSPAN	DESIGN GROUP
Beech King Air B100	111 KTS	B	45.8'	I
Cessna 150	55 KTS	B	33.3'	I
Piper Cheyenne	110 KTS	B	47.7'	I

Fleet Mix

An understanding of the current and projected aeronautical activity at an airport is required in order to apply procedures for capacity and delay planning. This aeronautical activity is known as the fleet mix and is determined following FAA guidelines. Aircraft fleet mix is the relative

percentage of operations conducted by each of the four classes of aircraft A, B, C and D (**Table 1-2**).

TABLE 1-2
Aircraft Classifications

AIRCRAFT CLASSIFICATION	DESCRIPTION
Class A	Single-engine: 12,500 pounds or less maximum certified takeoff weight (MCTW)
Class B	Multi-engine: 12,500 pounds or less MCTW
Class C	Large multi-engine: 12,500 to 300,000 pounds MCTW; includes corporate jets
Class D	Heavy multi-engine: 300,000 pounds MCTW or more

Source: FAA AC 150/5060-5 Capacity Planning Manual

Airport Reference Code (ARC)

The ARC is a coding system developed by the FAA that is used to relate airport design criteria to the operational and physical characteristics of the aircraft expected to operate at an airport. The ARC has two components associated with the design or critical aircraft. The first component, depicted by a letter, represents the aircraft approach category and is related to aircraft approach speed. The second component, depicted by a Roman numeral, represents the aircraft design group and is directly related to aircraft wingspan. In general, aircraft approach speed influences runway design criteria and runway related facilities. Aircraft wingspan is associated with the dimensions required for taxiway and taxilane wingtip clearance. Descriptions of both aircraft approach categories and aircraft design groups are presented in **Table 1-3**.

TABLE 1-3
Aircraft Approach Categories* and Design Groups**

APPROACH CATEGORY	APPROACH SPEED	DESIGN GROUP	AIRCRAFT WINGSPAN
A	Less than 91 knots	I	Up to but not including 49 feet
B	91 knots or more but less than 121 knots	II	49 feet up to but not including 79 feet
C	121 knots or more but less than 141 knots	III	79 feet up to but not including 118 feet
D	141 knots or more but less than 166 knots	IV	118 feet up to but not including 171 feet
E	166 knots or more	V	171 feet up to but not including 214 feet
		VI	214 feet up to but not including 262 feet

* An aircraft approach category is a grouping of aircraft based on an approach speed of 1.3 times the stall speed of the aircraft at the maximum certified landing weight.

**Aircraft design groups are subdivided by the wingspan of the aircraft. The aircraft design group concept associates airport dimensional standards with aircraft approach categories, aircraft design groups or to runway instrumentation configurations.

Table 1-4 lists typical aircraft within the A-I and B-I or A-II and B-II ARC's. The certified maximum takeoff weight for each representative aircraft has also been included. The current (1992) Airport Master Plan indicated that the ARC for Runway 14-32 was B-I with aircraft weighing less than 12,500 pounds but predicted changing to B-II during the planning period as more demanding aircraft began to use the airport. For purposes of this study, aircraft in the B-II category will be assumed as the design aircraft, or critical aircraft, for Runway 14-32, specifically the Raytheon King Air 200. The standards listed above were used as a guide to evaluate the existing airfield facilities. Data collected as part of the inventory section will be used to aide in identification of the future critical aircraft and to develop the Airport Capital Improvement Program (ACIP).

TABLE 1-4
Typical Airport Reference Code Aircraft

A-I or B-I ARC Examples:			
Aircraft Manufacturer	**Approach Speed (knots)**	**Wingspan (feet)**	**Max Take-Off Weight (pounds)**
Beech Baron 58P	101	37.8	6,200
Beech Bonanza V35B	70	33.5	3,400
Beech King Air B100	111	45.9	11,799
Cessna 150	55	33.3	1,670
Cessna 177	64	35.5	2,500
Cessna 421	96	41.1	7,500
Cessna Citation 10	108	47.1	11,850
Gates Learjet 28/29	120	42.2	15,000
Mitsubishi MU-2	119	39.1	10,800
Mitsubishi MU-300	100	43.3	13,890
Piper Archer II	86	35.0	2,500
Piper Cheyenne	110	47.6	12,050
Piper Navajo	100	40.7	6,500
Rockwell Sabre 40	120	44.4	18,650
Swearingen Merlin	105	46.3	12,500
A-II or B-II ARC Examples:			
Beech E-18	87	49.2	8,750
Beech King C90-1	100	50.3	9,650
King Air 200	103	54.5	12,500
Beech 1900	120	54.5	15,245
Cessna 441	100	49.3	9,950
Cessna Citation II	108	51.6	13,300
Cessna Citation III	114	50.6	17,000
Embraer Brasilia	92	64.9	23,800
Gulfstream I	113	78.5	35,100

Administration

Ontario Municipal Airport is owned and operated by the City of Ontario, Oregon. The Airport Manager is selected by the City Manager and is a City employee with responsibility for operation and management of the airport. The Airport Manager receives direction from the City Manager. The seven member Airport Committee serves in an advisory capacity. The Mayor appoints committee members. The Airport Committee and the Airport Manager have formed an Airport Layout Plan Advisory Committee for purposes of review and oversight throughout this study.

Existing Airport Facilities Description

The following sections describe the existing facilities at Ontario Municipal Airport. These facilities are generally defined as "airside" or "landside". The runway system, associated parallel taxiway, aircraft apron and tie-down areas along with any visual or electronic approach navigational aids describe the airside facilities. All other facilities located on the airport including terminal area and building, aircraft hangars, automobile parking areas, airport support facilities and areas and access routes comprise the landside facilities. **Figure 1-3** depicts the existing airport facilities.

General

Land

The Ontario Municipal Airport currently has 326.93 acres under fee simple ownership based on information contained in Exhibit "A" Airport Property Map.

Airport Pavements

A Pavement Condition Index (PCI) was completed in 2006 for the Oregon Department of Aviation who administered the survey for the Ontario Municipal Airport. Pavement Consultants, Inc. performed the PCI field survey in October 2006.

The 2006 report indicated that PCI's at the airport ranged from a low rating of "failed " with PCI numbers ranging from 0 to 10 to a high of "good" with PCI numbers ranging from 55 to 70.

Runway 14-32 was reported to be "good" with a PCI between 55 to 70. The north half of the parallel taxiway had a "fair" rating and the south half rated as "good". Other pavements that were reconstructed in 2003 have "excellent" ratings because of the recent construction. These pavements include the bypass taxiway, TWBON-01, and six hangar taxilanes including TA1ON-02, TEBON-01, TA3ON-01, TA5ON-01, TA6ON-01 and TA7ON-01. Two other hangar taxiways on the airport have PCI's that were rated as "very poor" in 2006 with PCI values between 10 and 25. The two taxilanes contain large areas of alligator cracking indicating partial subgrade failure. These two taxilanes will require full depth reconstruction to repair.

PCI values for apron pavements ranged from ratings of "very poor" to "fair". The western portion of the old runway that currently serves as the apron (AO1ON-01 and TO3ON-01) rated "fair" in 2006. The old runway/current apron area east of the tiedown apron (AO1ON-05) is rated "very poor". The apron area indicated in the PCI drawings are not as large as the actual area which in reality extends farther to the east.

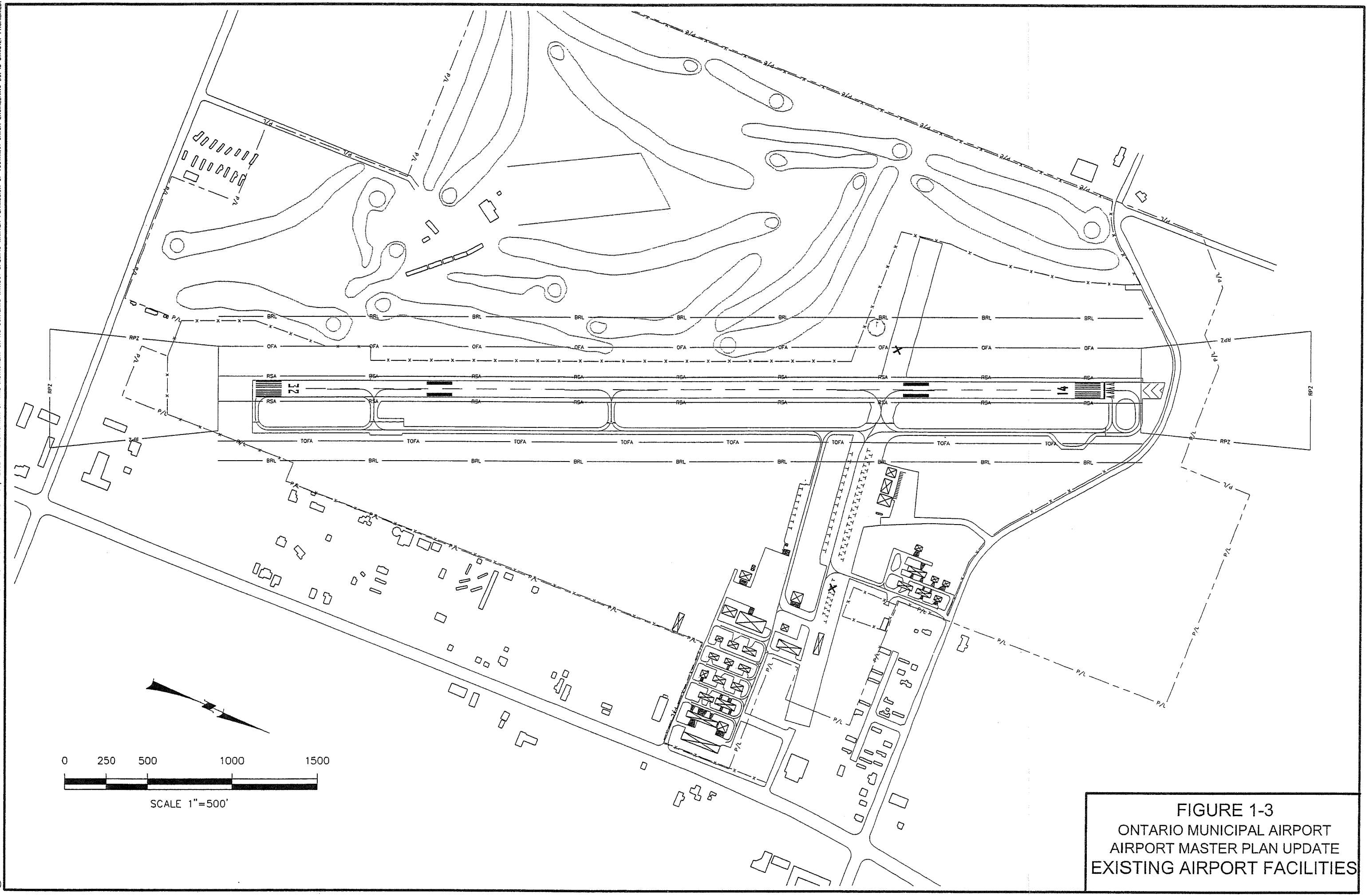

FIGURE 1-3
ONTARIO MUNICIPAL AIRPORT
AIRPORT MASTER PLAN UPDATE
EXISTING AIRPORT FACILITIES

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The apron area located south of the old runway/apron (AO3ON-01) was rated "very poor". This pavement is showing extensive amounts of alligatoring and subgrade failure and will need full reconstruction to repair.

Two other apron areas shown on the PCI include an area south of the bypass taxiway (AO2ON-01) and another south of the tiedown apron area (AO1ON-04). Both areas were rated in "fair" condition in 2006. Like the other apron areas, these areas have not received seal coating or crack filling in the past few years.

Figure ON-3 depicts the Pavement Condition at Ontario Municipal Airport as of October, 2006.

Airside Characteristics

Runway Designations

Runway numerals are determined from the approach direction to the runway and should be equal to one-tenth the magnetic azimuth of the runway centerline, measured in a clockwise direction from magnetic north. Although the true bearing of a runway will not change over time, the magnetic bearing will change as the location of magnetic north shifts. The magnetic declination in the Ontario area is approximately 15 degrees 5 minutes east in 2007. Therefore the magnetic bearing for Runway 14-32, based on the magnetic declination for the Ontario area is 322° 49' 00". This indicates that the existing numerical runway designation is correct. **Table 1-5** provides a summary of the bearing information for the airport.

TABLE 1-5
Runway Bearings

Runway	14-32
True Bearing	337° 54' 00"
Magnetic Variation	15° 05" 00"
Magnetic Bearing	322° 49' 00"

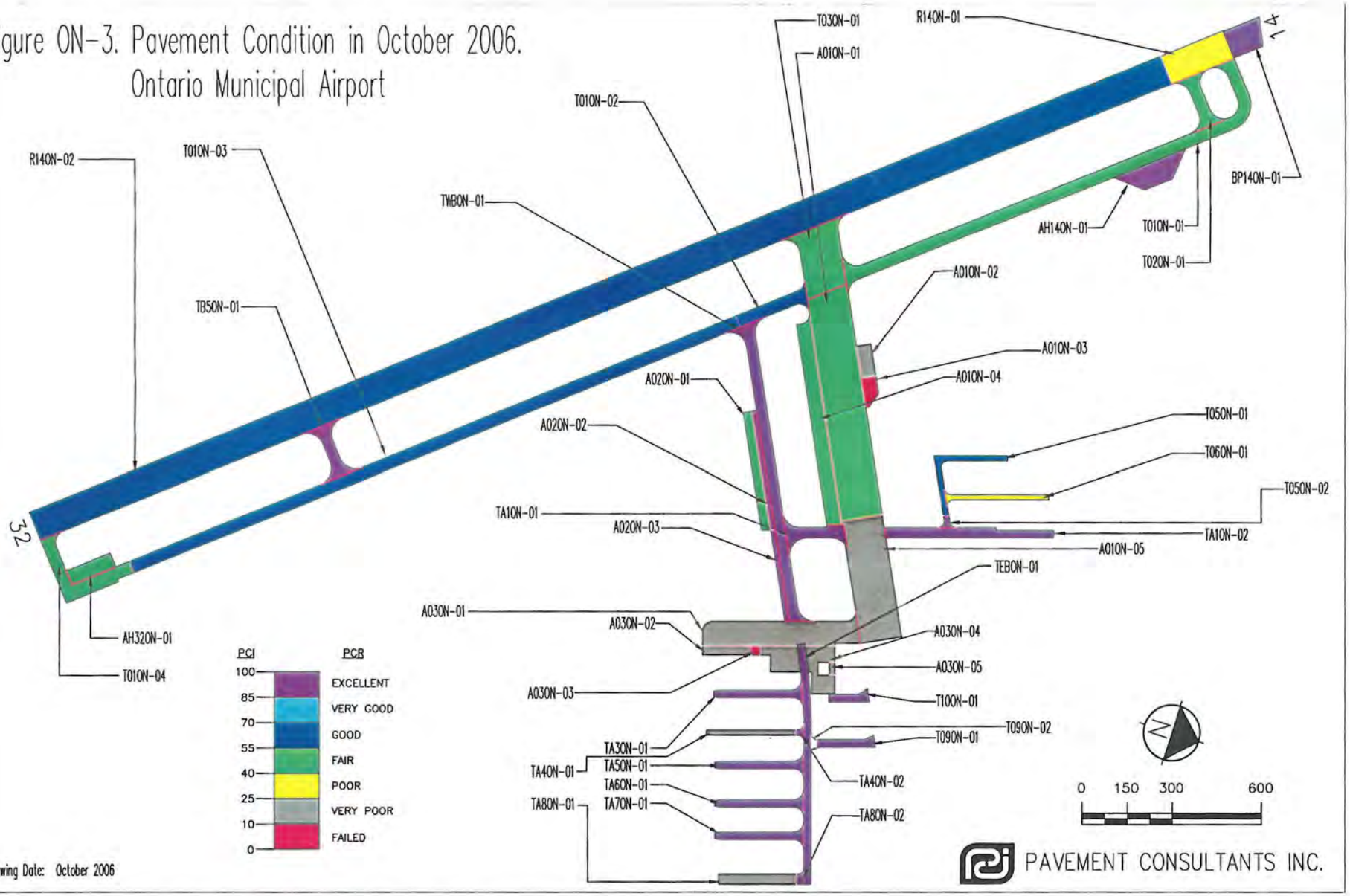
Runway 14-32

Runway 14-32 is 100 feet wide and 5,011 feet long. It has standard non-precision markings in good condition. The runway is lighted with Medium Intensity Runway Lighting (MIRL) with Runway End Indicator Lights (REIL) on the Runway 32 end. The Runway 14 end has a blast pad to reduce dust and debris from blowing onto S.W. 4th Avenue. The crosswind Runway 6-24 was marked as closed in 1979 and converted to aircraft tie-down space and taxiways.

Runway Safety Areas

The Runway Safety Area (RSA) for a B-I ARC is 120' wide and extends 240' beyond each runway end. The RSA for a B-II ARC is 150' wide and extends 300' beyond each runway end. Both Runway 14 and 32 currently meet ARC B-II criteria. Runway 14 has been relocated approximately 220' to provide for the required RSA.

Figure ON-3. Pavement Condition in October 2006.
Ontario Municipal Airport



Drawing Date: October 2006

Object Free Areas

The Runway Object Free Area (ROFA) dimensions at Ontario Municipal airport will accommodate a B-II Airport Reference Code. The dimensions for a B-II ROFA are 500' wide and extend 300' beyond each runway end. The existing runway object free area dimensions on both Runway 14 and 32 ends meet these criteria.

Taxiway

A full-length 40 foot width parallel taxiway serves the east side of Runway 14-32. The parallel taxiway is 240 to 245 feet off the runway centerline and has new retro-reflective markers. Four 35 foot wide connector taxiways and a 125 foot wide taxiway connects the runway to the apron and parallel taxiway. The existing connector taxiways are also provided with retro-reflective markers with lighted exit taxiway points at their intersection with the runway.

Aircraft Parking Apron

The vast majority of the airport aircraft parking is on the old Runway 6-24 which has been transformed into the primary apron area after its closure in 1979. The western portion of this pavement area has been more recently overlaid than the more degraded eastern portion and therefore functions as the current primary apron area. The primary apron is approximately 15,400 square yards in area with 31 (or 32) ties downs. There are additional tie down spaces in the eastern portion of the old runway/apron but due to insufficient separation for B-II aircraft, this area is not used. Aircraft parking is also available south of the Bypass Taxiway and the primary apron. There are approximately 8 (or 9) tie downs available in this area.

Airfield Lighting

Runway 14/32 has Medium Intensity Lighting (MIRL). Runway lights and Runway End Identifier Lights can be activated by radio by calling CTAF. The parallel taxiway currently does not have edge lights but is designated with reflectors.

NAVAIDS, Radio Communication, and RADAR Coverage

The Ontario Municipal airport is a non-towered facility. The only aviation communication facility associated with the airport is the Aeronautical Advisory Station (UNICOM) broadcast on frequency 122.8 MHz. The airport has a Non-Directional Beacon (NDB) located east of Runway 14-32. It is designated by the three-letter code ONO. Ontario also has GPS instrument approach capability.

The Airport is located within Class G airspace with a ceiling 700 feet above the surface. The Boise Air Terminal is located 42 nautical miles southeast of Ontario and is in Class C controlled airspace. **Figure 1-4** depicts the airspace surrounding Ontario Municipal Airport.

FIGURE 1-4

A navigational aid (i.e., NAVAID) is defined as a visual or electronic device on the surface or airborne that provides point-to-point guidance information on position data to aircraft in flight. A VORTAC (VHF Omni-directional Range/Tactical Air Navigation) provides VOR azimuth, TACAN Azimuth, and TACAN distance-measuring equipment (DME) at one site. A Non-Directional Beacon (NDB) is a low or medium frequency radio transmitter that broadcasts a non-directional signal (more specifically an NDB transmits its signal in a pattern that covers all 360 degrees of the compass). Pilots of an aircraft equipped with a receiver can establish bearings to "home-in" on the NDB. All radio beacons transmit continuous three-letter identification in codes except the compass locators and except during voice transmissions.

Within the relatively recent past, a new type of instrument approach capability has been developed - Global Positioning System or GPS. The United States military originally developed the Global Positioning System for their use. This system uses a series of satellites stationed in permanent orbit above the earth. Using mathematical triangulation, an individual with GPS equipment can establish their geographic location anywhere on earth. The Global Positioning System has entered the civilian realm, due to its relatively universal coverage, and the minimal investment in aircraft instrumentation needed to use GPS capabilities.

FAR Part 77 and Other FAA Regulations designate non-precision approaches as those using air navigation facilities providing only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved or planned. There are two types of non-precision instrument approaches:

(1) Circle-to-land instrument approach
(2) Straight-in non-precision instrument approach

The principal difference between these approaches is the circle-to-land approach provides an approach to the airport rather than an approach to a specific runway. A straight-in non-precision instrument approach provides an approach to a specific runway end. The FAA establishes approaches and the procedures that must be flown to use these approaches. The established approaches and procedures are published by the FAA in U.S. Terminal Procedures documents (a number of private companies also publish these approach procedures for use by pilots).

The Boise VORTAC is located approximately 40 nautical miles southeast of Ontario Municipal Airport. The Meridian NDB is located approximately 32 nautical miles north of the Airport and the Ontario NDB is located on the airport. Ontario Municipal Airport has a circling approach using the Ontario NDB and a straight-in non-precision GPS approach to Runway 32.

The types of approaches available at an airport are important in determining the standards used for delineating FAR Part 77 Surfaces and other runway geometry guidelines. The airspace around Ontario Municipal Airport is traversed by a network of low altitude "Victor" airways, which are also shown on the existing area airspace drawing, **Figure 1-4**.

Several visual approach aids are currently located on the Airport and available to pilots. These include:

- The rotating beacon located west of and near the midpoint of Runway 14-32
- A lighted wind cone located west of and near the midpoint of Runway 14-32
- Visual Approach Slope Indicator (VASI) near the Runway 32 threshold
- REILS for Runway 32

A VASI system is a Visual Glideslope Indicator (VGI) that provides visual descent guidance information during the approach to a runway. The VASI glideslope (3° standard) provides safe obstruction clearance within a specified trapezoidal area along the extended runway centerline from a point 300 feet in front of the touchdown point out to four nautical miles from the runway threshold. The system has an effective visual range of three to five miles during the day and up to 20 miles or more at night. The standard two-bar VASI on Runway 32 consists of near and far light bars that provide one visual glide path as follows:

- Above glide path – all lights appear white.
- Proper glide path – near bars appear white; farther bars appear red.
- Below glide path – all light bars appear red.

Wind Indicator

A mentioned previously, there is one lighted wind indicator located on the airport. This indicator is located on the west side of Runway 14-32 near the midpoint. This windsock is situated well away from any surrounding buildings and generally provides accurate wind information. The windsock and associated segmented circle are in good condition.

Meteorological Conditions

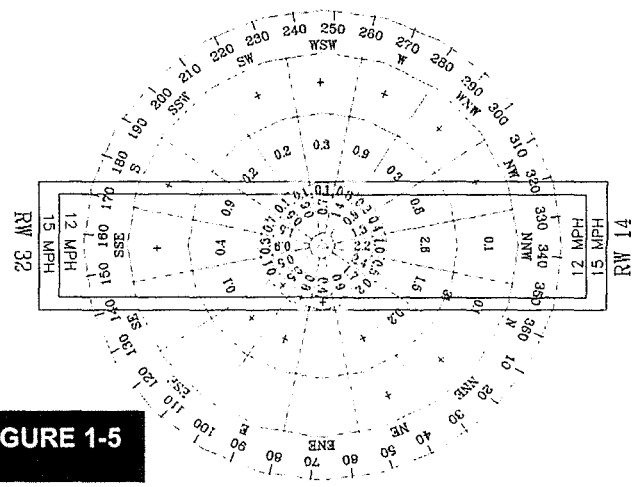
Meteorological conditions have a direct impact on the operational characteristics of an airport. These conditions determine the direction in which aircraft operations may be conducted, the frequency of use for each operational configuration and the instrumentation required to assist aircraft in landing and departing.

Local Climate Data

As previously stated, Ontario has an average annual precipitation of 9.7 inches. The mean maximum temperature for the hottest month (July) is approximately 95° F.

Runway Wind Data

Wind direction and speed determine the desired runway alignment and configuration of the runway system. Aircraft land and take off into the wind and can tolerate only limited crosswind components (the percentage of wind perpendicular to the runway centerline). The ability to land and take off in crosswind conditions varies according to pilot proficiency and aircraft type. The FAA recommends that airports have runways adequate to provide 95 percent coverage for all wind directions and velocities (dependent on the ARC for the critical aircraft). **Figure 1-5** depicts the wind rose for the Airport.



WIND DATA
12 MPH = 97.2%
15 MPH = 98.2%
+ Indicates an occurrence, but less than 0.1%
Δ Calm (0-4 MPH) = 70.4%
Period: 1965-1969
Source: NOAA-EDS, Ashville, N.C.

FIGURE 1-5

Landside Characteristics

Airport Buildings

The airport currently has approximately 23 nested T-Hangar or single aircraft hangars. There are five multi-aircraft hangars on the airport and four of those are leased by the current FBO. The multi-aircraft hangars are of varying sizes. A significant portion of the T-Hangar development is nested versions to conserve space. The airport manager's office and the fixed based operator office is located in the same building located immediately west of the south end of SW 33rd Street. Other aviation related services which operate out of airport buildings include two agricultural operations and a city maintenance shop. One agricultural operation is located near the airport beacon and the electrical vault building located south of the Bypass taxiway and the apron. The other is located north of the apron and east of the FBO Terminal.

Fuel Facilities

There is one existing fuel facility located at the Ontario Airport, which is currently owned and operated by the FBO. The facility is comprised of one 12,000 gallon above ground tank for Jet A and one 6,000 gallon above ground tank for 100 LL aviation gasoline. All of the existing fuel facilities are EPA compliant.

Airport Access

Primary public access to the airport and directly to the FBO/Terminal building is SW 33rd Street which intersects SW 4th Avenue west of OR 201. There are two additional access points on the northeast section of the airport. One is immediately east of 33rd Street which intersects SW 4th onto the end of the taxilane that accesses both the airport and the airport maintenance shop. The other is Airport Way which is located off OR 201 just south of the current Southeast Hangar area. This road provides access to the hangar area and the golf course cart maintenance shop.

Chapter Two – Activity Forecasts

Airport Activity Statistics

Airport activity statistics include the tracking of based aircraft and aircraft operations. Based aircraft are those aircraft which are stored, and which initiate and terminate their travel activity, at a particular airport. An aircraft operation is the activity of an aircraft at a particular airport. A take-off, landing, touch-and-go, low pass, simulated approach, and missed approach each count as one aircraft operation. As there is no on-field air traffic control tower to provide data, airport records and FAA data were used. Data represents years 1995 through 2005, as most 2006 data was not yet available at time of analysis. However, based aircraft data for 2006 was available from airport management, and is included.

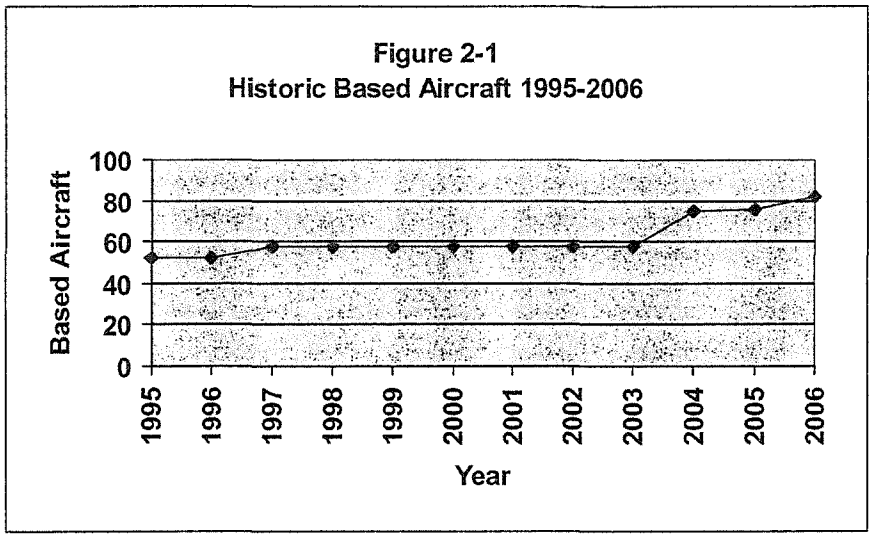
Based Aircraft

Based aircraft at ONO between 1995 and 2006 are presented in **Table 2-1. Figure 2-1** illustrates the based aircraft trend during this period. According to the FAA Terminal Area Forecasts (FAA TAF 2005) and the airport, the based aircraft increased from 52 in 1995 to 82 in 2006, with no decrease.

Table 2-1
Historic Based Aircraft 1995-2006

Year	Total
1995	52
1996	52
1997	58
1998	58
1999	58
2000	58
2001	58
2002	58
2003	58
2004	75
2005	76
2006	82

Source: FAA TAF 2005, Airport Management



Source: FAA TAF 2005, Airport Management

Aircraft Operations

Aircraft operations at ONO between 1995 and 2005, as reported in the FAA TAF 2005, are presented in **Table 2-2. Figure 2-2** illustrates the aircraft operations trend during this period. After a decrease in 1996, operations increased until 2000, decreased in 2001 as a result of national trends from the events of September 11, 2001, and have increased since. Operations over this period range from approximately 15,000 and 16,000. The total operations consist only of general aviation operations, as no air carrier/commuter, cargo, or military operations have been recorded.

Itinerant and Local Operations

General aviation operations are characterized as either local or itinerant.

Local operations as defined by the FAA are:

- Operations performed in the local traffic pattern or within sight of an airport
- Performed by aircraft departing for, or arriving from, flight in local practice areas located within a 20-mile radius of an airport
- Performed by aircraft executing simulated or actual instrument or visual approaches or low passes at an airport (touch-and-go operations)

Itinerant operations are all other operations. The airport's current FAA 5010 Master Record indicates that approximately 46 percent of Ontario's annual operations are local traffic with 54 percent itinerant. Discussions with the airport manager indicate that this split does not seem accurate. Per the airport manager, the more realistic split is consistent with accepted uncontrolled small general aviation airport activity of 60% local and 40% itinerant. Where applicable, this 60%/40% split was utilized throughout the planning period.

It is important to note the difficulty of tracking aircraft operations and uncontrolled airports such as Ontario Municipal. While the State of Oregon Department of Aviation does track airport

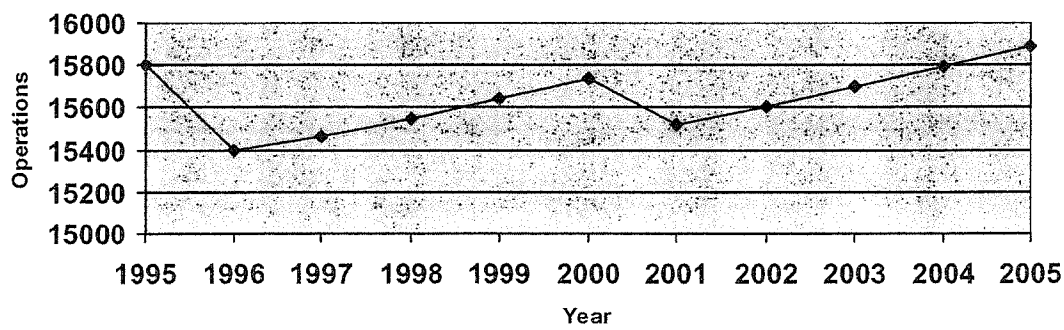
operations at uncontrolled airports, including Ontario, the counts are not exact. Accepted methods in obtaining current operations counts and forecasting future activity have been followed throughout this study. In spite of these challenges, both estimated current and forecast operations counts do not result in any significant demand based requirements.

Table 2-2
Historic Aircraft Operations 1995-2005

Year	Total
1995	15,800
1996	15,400
1997	15,460
1998	15,551
1999	15,644
2000	15,737
2001	15,515
2002	15,608
2003	15,702
2004	15,795
2005	15,889

Source: FAA TAF 2005

Figure 2-2
Historic Aircraft Operations 1995-2005



Source: FAA TAF 2005

Aircraft Fleet Mix

The airport's aircraft fleet consists of the types of aircraft using ONO, which is a blend of single, multi- and jet engine aircraft. As previously mentioned, since ONO is not a towered airport, the definition of specific operations become a challenge, which is best achieved by using both industry information, as well as a based aircraft mix as a representation of the overall fleet mix. For example, the existing based aircraft are predominately single engine aircraft. However, the itinerant users have a higher probability of being larger multi-engine and jet engine aircraft. Consequently, an estimate of the fleet mix is established using available information.

Data provided by the airport manager indicates approximately 95 – 125 annual operations by itinerant jet aircraft. Additionally, the manager reports between 70 and 80 annual operations by a based jet aircraft. This accounts for approximately 165 to 205 jet operations annually. The airport has also realized in an increase in helicopter operations in the recent past. Helicopter training operations originating from the Caldwell Industrial Airport east of Boise have contributed to an increase in transient aircraft operations and, therefore, the airport's fleet mix. Of the total number of operations noted by the FAA TAF in 2005, the jet operations would account for 1.2% and the remaining operations would be split between the single engine, multi-engine aircraft and helicopters.

The split can be established by looking at the based aircraft fleet mix, or by using ratios from other sources, such as the FAA data for registered aircraft in Malheur County, Oregon. The FAA provides aircraft registration by State/County on its internet website, where Malheur County, Oregon is shown with 166 registered aircraft, broken into: 159 fixed wing single reciprocating engine; 1 fixed wing multi reciprocating engine; 2 fixed wing multi turbo jet engine; and 4 rotorcraft. Airport manager data also indicates that 14 fixed wing multi turbo jet engine aircraft use ONO. There may be other fleet mix variations, as ONO does serve aircraft not registered in Malheur County, and not all aircraft registered in Malheur County use ONO.

The ratios generated by this information reflect a mix of 96% single engine aircraft, 1% multi-engine, 1% percent jet aircraft (which is similar to the previously developed fleet mix assumption), and 2% helicopter. Specific make up of these classifications into detailed aircraft reference codes is difficult, given the available data. The absence of a tower at ONO makes quantifying of fleet mix as difficult as quantifying operations.

Socioeconomic Data

Socioeconomic data provides an observation of trends for the community surrounding an airport. Population and income per capita add to the understanding of a community. Population typically generally correlates with employment, which generally correlates with demand for aviation services. Population can also drive economic development, which generally drives airport growth. Malheur County's population and per capita income data has been obtained from Woods and Poole Economics, Inc. (W&P), and is provided for reference.

Population

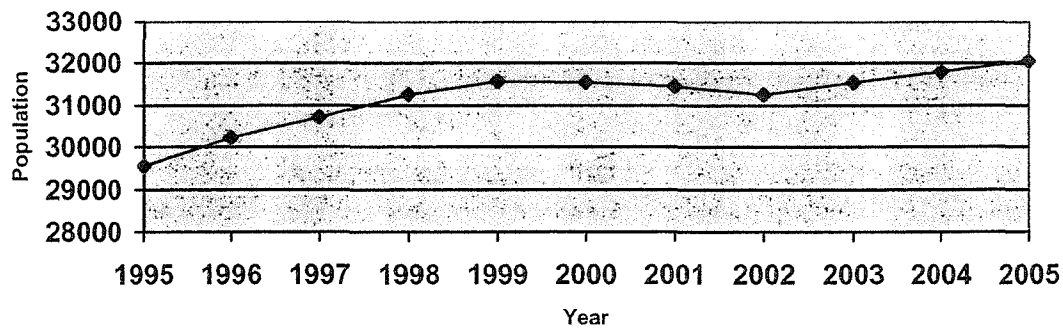
The population of Malheur County between 1995 and 2005 is presented in **Table 2-3. Figure 2-3** illustrates the population trend during this period. Population increased from 1995 to 1999, decreased to 2002, and then increased again in 2005. Population over this period range from approximately 29,000 and 32,000 persons.

Table 2-3
Historic Population 1995-2005

Year	Population
1995	29,550
1996	30,211
1997	30,708
1998	31,248
1999	31,558
2000	31,540
2001	31,450
2002	31,248
2003	31,536
2004	31,792
2005	32,046

Source: W&P

Figure 2-3
Historic Population 1995-2005



Source: W&P

Income

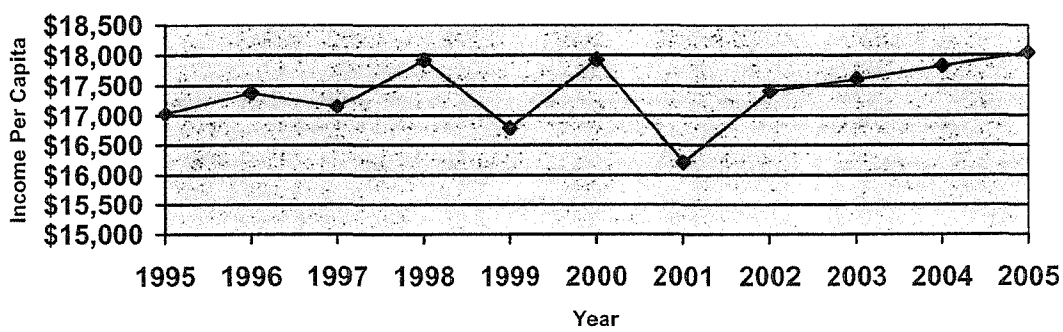
Income per capita for Malheur County between 1995 and 2005 is presented in **Table 2-4. Figure 2-4** illustrates the income per capita trend during this period. Income per capita has fluctuated since 1995, but has increased since 2001. Income per capita over this period ranges from approximately $16,000 and $18,000.

Table 2-4
Historic Income Per Capita 1995-2005

Year	Income Per Capita
1995	$17,022
1996	$17,353
1997	$17,140
1998	$17,915
1999	$16,777
2000	$17,925
2001	$16,207
2002	$17,403
2003	$17,602
2004	$17,818
2005	$18,035

Source: W&P

Figure 2-4
Historic Income Per Capita 1995-2005



Source: W&P

Summary

These factors of based aircraft, aircraft operations, population, and income are each considered in various methods to produce results which are compared to each other and to FAA data, to indicate which methods best represent the expected change at ONO.

Role of the Airport

The role of the airport gives direction to the projection of aviation demand. ONO provides opportunity for general aviation (GA) activity to the Eastern Central Oregon region, and to the Boise, Idaho metropolitan area. GA activity is generally defined as that portion of civil aviation outside of commercial service and military operations. ONO's service and use area is defined by geography, access, and proximity of alternative aviation facilities.

Being the largest public use airport in Malheur County, Oregon, ONO serves business, recreational, and transient aircraft users for the county. Being 50 miles from the Boise Air Terminal Airport (BOI), ONO provides GA users a facility which is away from the traffic of a commercial service airport. ONO provides relief to BOI activity, and provides GA aircraft access to the Boise metropolitan area without having to compete with passenger, cargo, and military aircraft using BOI.

The Airport Reference Code (ARC) for an airport provides information about features of aircraft intended to use an airport. This code is based upon the wingspan and approach speed of the various aircraft which utilize the airport. The current ARC for ONO is B-I, a category including many smaller single-engine aircraft. The planned improvements for ONO will provide a future ARC of B-II, a category including many twin engine and smaller jet aircraft.

Projections of Aviation Demand

The projection of aviation demand provides information on an airport's expected activity, so the appropriate action can be planned and implemented to accommodate that activity. Projections of aviation demand provide the basis for:

- Determining the role of the airport, with respect to the type of aircraft to be accommodated in the future
- Evaluating the capacity of existing airport facilities and their ability to accommodate projected aviation demand
- Estimating the extent of airside and landside improvements required in future years to accommodate projected demand

Aviation forecasting depends on the availability and validity of historical information, particularly data on local aviation and socioeconomic trends. FAA's national projections of aviation activity are also considered for comparison.

The 2005 data serves as the base year of analysis for airport operations, being the most recent year for which a full year of data is available. However for based aircraft projections, the Airport has provided current (2006) which is used as the base year of analysis. Projections of short-, intermediate-, and long-term activity are based on 5-, 10-, and 20-year milestones, for years 2010, 2015, and 2025, respectively. Discussion of the methodologies and findings used to project based aircraft, aircraft fleet mix, and aircraft operations, follows.

Forecasting Approaches

Forecasting methods for the projection of aviation activity range from subjective judgment to sophisticated mathematical modeling. Each contributing variable is to be appropriately considered in the context of its use. For variables which significantly affect the nature and extent of facilities, redundancy has been achieved through the utilization of several forecasting techniques, to minimize the uncertainty associated with the range of the forecast variable. The following methodologies were used.

Trend Line Analysis

An historical trend line, or linear extrapolation, is one of the most widely used methods of forecasting. This technique utilizes time-series type of data, and is most useful for a pattern of demand that demonstrates an historical linear relationship with time. In utilizing this technique, an assumption is made that the same factors which have influenced demand will continue to affect future demand, and also continue to grow linear with time. While this is a rather broad assumption, linear extrapolation often provides a reliable benchmark for comparing the results of other analyses.

Growth Rate Analysis

The growth rate methodology, or exponential extrapolation, is generally used for projections of activity which have shown long-term trends to increase or decrease by an average annual percentage. This technique assumes that the historical annual growth rate will continue through the future. Population statistics have been shown to demonstrate such a variation, particularly for large sample sizes. Projections utilizing this technique tend to be most accurate for large data sets, as within large data sets there is generally less variation from year to year in the percentage of growth.

Market Share Methodology

Market share, ratio, or top-down models are utilized to bring large-scale aviation activity down to a local level. Inherent to the use of such a method is the demonstration that the proportion of the large-scale activity which can be assigned to the local level is a regular and predictable quantity. This method has been used extensively in the aviation industry for aviation demand forecasting at the local level, and its most common use is in the determination of the share of total national traffic activity that will be captured by a particular region or airport. Historical data is examined to determine the ratio of local airport traffic to total national traffic. From outside data sources, in this case the FAA, projected levels of national activity are determined and then proportioned to an airport based upon the observed and projected trends.

Socioeconomic Methodology

Socioeconomic, or correlation analysis, examines the direct relationship between sets of historical data. Two socioeconomic analyses have been performed, one relating historical aviation activity to population, and one relating historical aviation activity to income per capita. Based upon the observed and projected correlation between historical aviation activity and the socioeconomic data sets, future aviation activity projections are developed based upon the projected socioeconomic data sets.

Airport Activity Projections

To determine the types and sizes of facilities that should be planned to accommodate aviation activity, elements contributing to the activity are forecasted. The number of based aircraft is projected, and those projections are used to forecast aviation operations.

Based Aircraft Projections

Historical and projected based aircraft with the trend line and growth rate methodologies are shown in **Table 2-5**. For the trend line methodology a linear trend line using the least squares methodology has been fit the historical data from 1995-2006. This method results in a 2025 projection of based aircraft of 119. The growth rate methodology determines the compound annual growth rate (CAGR) from 1995 through 2006 (4.23%) and assumes that this growth rate will continue through the planning period. The growth rate methodology results in a based aircraft projection of 180 aircraft.

Table 2-5
Based Aircraft Projections
Trend Line & Growth Rate Methodologies

	Trend Line		Growth Rate	
Year	**Based Aircraft**		**Based Aircraft**	**Growth Rate**
1995	52		52	
1996	52		52	0.00%
1997	58		58	11.54%
1998	58		58	0.00%
1999	58		58	0.00%
2000	58		58	0.00%
2001	58		58	0.00%
2002	58		58	0.00%
2003	58		58	0.00%
2004	75		75	29.31%
2005	76		76	1.33%
2006	82		82	7.89%
CAGR (1996-2006)	*4.23%*		*4.23%*	
Projected:				
2010	84		97	*4.93%*
2015	96		119	*4.93%*
2025	119		180	*4.93%*
CAGR (2006-2025)	*1.97%*		*4.23%*	

Sources: FAA TAF, Airport Management, Mead & Hunt, Inc.

Table 2-6 presents the historical and projected based aircraft utilizing the market share and socioeconomic methodologies. The market share methodology examines the share of active US aircraft (as listed in the FAA's Aerospace Forecasts (FY 2007-2020)) that ONO has based at the Airport. In 2006 the airport had 82 based aircraft out the US total of 226,422, for a market share of 0.036%. Assuming that the Airport's market share remains constant through the planning period it is projected that ONO will have 108 of the 298,680 active aircraft in 2025. This represents a compound annual growth rate of 1.47%.

The socioeconomic methodology examines the relationship between the Malheur County's per capita income and based aircraft at the Airport. Assuming that the number of based aircraft per $1 in per capita income remains constant, projections in per capita income from Woods & Poole Economics, Inc. indicate that ONO will have 107 based aircraft for a compounded annual growth rate 1.41%, matching the projected growth rate in per capita income.

Table 2-6
Based Aircraft Projections
Market Share and Socioeconomic Methodologies

	Market Share			Socioeconomic		
Year	Based Aircraft	Total US Active Aircraft	Market Share	Based Aircraft	Malheur County Per Capita Income	Based Aircraft Per $1 Income
1995	52	188,089	0.028%	52	$17,022	0.00305
1996	52	191,129	0.027%	52	$17,353	0.00300
1997	58	192,414	0.030%	58	$17,140	0.00338
1998	58	204,710	0.028%	58	$17,915	0.00324
1999	58	219,464	0.026%	58	$16,777	0.00346
2000	58	217,533	0.027%	58	$17,925	0.00324
2001	58	211,535	0.027%	58	$16,207	0.00358
2002	58	211,345	0.027%	58	$17,403	0.00333
2003	58	209,788	0.028%	58	$17,602	0.00330
2004	75	219,426	0.034%	75	$17,818	0.00421
2005	76	224,352	0.034%	76	$18,035	0.00421
2006	82	226,422	0.036%	82	$18,256	0.00449
CAGR (1996-2006)	*4.23%*	*1.70%*		*4.23%*	*0.64%*	
Projected:						
2010	88	242,766	0.036%	86	$19,197	0.00449
2015	95	261,404	0.036%	92	$20,538	0.00449
2025	108	298,680	0.036%	107	$23,832	0.00449
CAGR (2006-2025)	*1.47%*	*1.47%*		*1.41%*	*1.41%*	

Sources: FAA TAF, Airport Management, FAA Aerospace Forecasts 2007-2020, Woods & Pool, Mead & Hunt, Inc.

Table 2-7 contains a summary of the based aircraft projections and a comparison to the FAA TAF. The FAA TAF 2005 shows a forecasted increase to 78 based aircraft in 2010, 81 in 2015, and 88 in 2025. These numbers are below the existing based aircraft of 82. **Figure 2-5** illustrates the based aircraft trend, with the 2006 data.

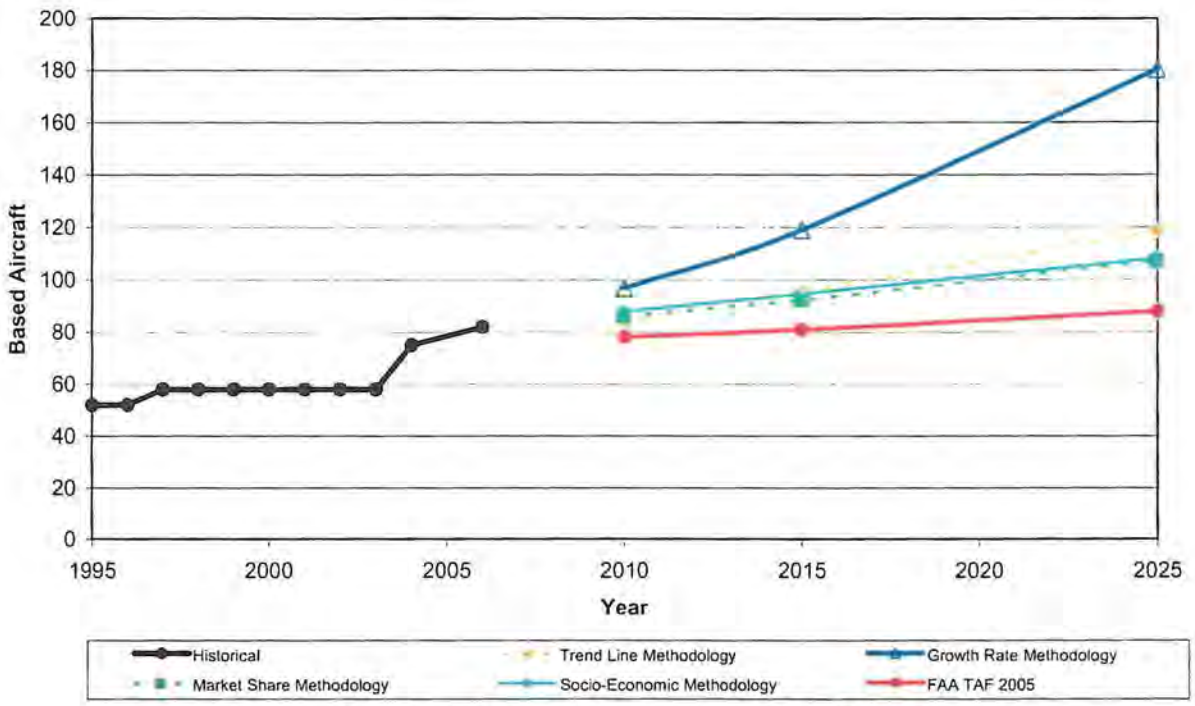
Table 2-7
Based Aircraft Projections
Summary

Method/Year	Historical	Trend Line	Growth Rate	Market Share	Socio-Economic	TAF
Historical:						
1995	52					
1996	52					
1997	58					
1998	58					
1999	58					
2000	58					
2001	58					
2002	58					
2003	58					
2004	75					
2005	76					
2006	82					
Projected:						
2010		84	97	88	86	78
2015		96	119	95	92	81
2025		119	180	108	107	88
CAGR (2006-2025)		*1.97%*	*4.23%*	*1.47%*	*1.41%*	*0.37%*

Source: FAA, Mead & Hunt, Inc.

Figure 2-5 illustrates the based aircraft trend, with the 2006 data.

Figure 2-5
Historical & Projected Based Aircraft



Source: FAA TAF 2005, Airport Management, Mead & Hunt, Inc.

As a general average of the various methods, the market share is recommended to provide a moderate forecast of based aircraft. This method provides a level of growth that is neither overly aggressive nor conservative. As the current percentage of the market share of national based aircraft held by ONO is maintained, the projected local based aircraft increases to numbers greater than those shown by the FAA TAF 2005. As additional aircraft storage hangars and tie-down/parking areas become available, the number of based aircraft is expected to follow the projected increases of the market share methodology. If the existing growth rate is maintained, the based aircraft may increase significantly. The various forecasting methods are illustrated to exhibit the variances that could be expected over the planning period.

Aircraft Operations Projections

Historical and projected aircraft operations are shown in **Table 2-6**. Methodologies utilized include the following:

- The **trend line methodology** utilizes a linear trend line using the least squares methodology to fit the historical data from 1995-2005.
- The **growth rate methodology** determines the compound annual growth rate (CAGR) from 1995 through 2005 (0.06%) and assumes that this growth rate will continue through the planning period.

- The **operations per based aircraft methodology** examines the number of operations per based aircraft (209 in 2005), and utilized this number in conjunction with the projected number of based aircraft to project the number of operations.
- The **market share methodology** examines the share of total U.S. General Aviation Operations (as listed in the FAA's Aerospace Forecasts (FY 2007-2020)) to ONO's (0.0040% in 2005).
- The **FAA TAF** summarizes the FAA TAF projections.

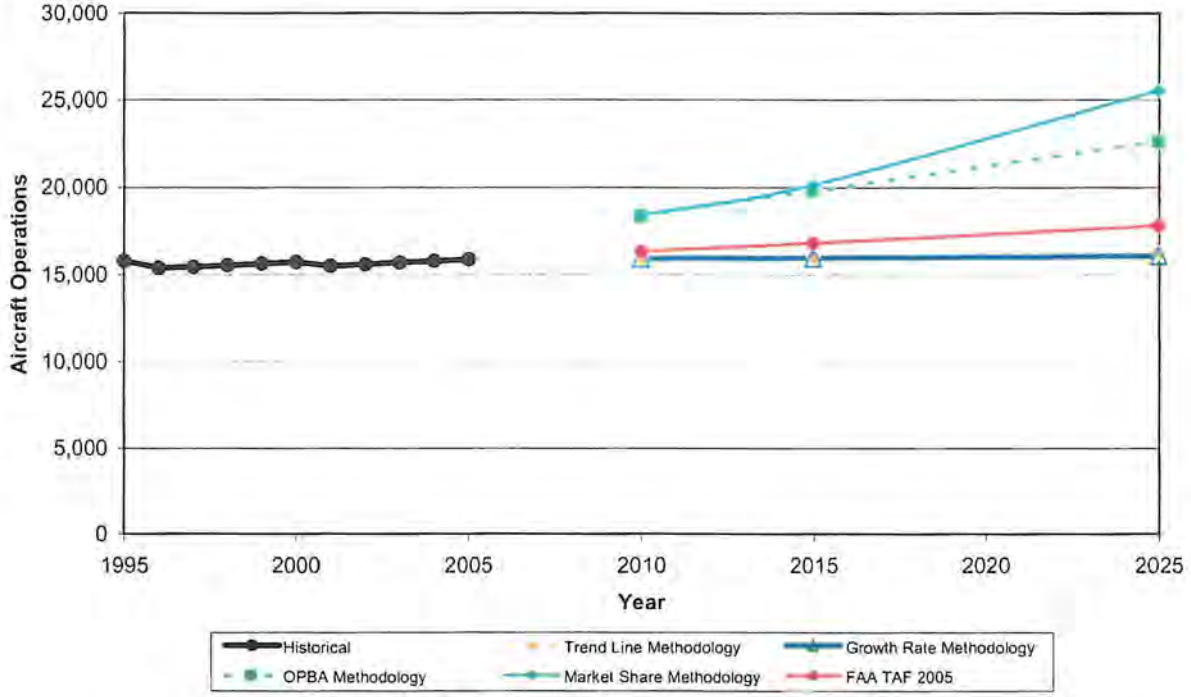
Table 2-6
Historical & Projected
Aircraft Operations

Method/Year	Trend Line	Growth Rate		Ops Per Based Aircraft			Market Share			FAA TAF
	GA Ops	GA Ops	Growth Rate	Based Aircraft	Ops per Based Aircraft	GA Ops	GA Ops	Total US GA Ops	Market Share	GA Ops
1995	15,800	15,800		52	304	15,800	15,800			15,800
1996	15,400	15,400	-2.53%	52	296	15,400	15,400			15,400
1997	15,460	15,460	0.39%	58	267	15,460	15,460			15,460
1998	15,551	15,551	0.59%	58	268	15,551	15,551			15,551
1999	15,644	15,644	0.60%	58	270	15,644	15,644			15,644
2000	15,737	15,737	0.59%	58	271	15,737	15,737	359,266,000	0.0044%	15,737
2001	15,515	15,515	-1.41%	58	268	15,515	15,515	352,983,000	0.0044%	15,515
2002	15,608	15,608	0.60%	58	269	15,608	15,608	368,333,000	0.0042%	15,608
2003	15,702	15,702	0.60%	58	271	15,702	15,702	380,467,000	0.0041%	15,702
2004	15,795	15,795	0.59%	75	211	15,795	15,795	400,409,000	0.0039%	15,795
2005	15,889	15,889	0.60%	76	209	15,889	15,889	398,510,000	0.0040%	15,889
CAGR (1995-2005)	*0.35%*	*0.06%*		*3.87%*		*0.35%*	*0.35%*	*1.04%*		*0.35%*
Projected:										
2010	15,894	15,934	*0.06%*	88	209	18,381	18,436	462,396,000	0.0042%	16,345
2015	16,019	15,979	*0.06%*	95	209	19,792	20,137	505,047,000	0.0042%	16,812
2025	16,267	16,069	*0.06%*	108	209	22,614	25,520	640,065,424	0.0042%	17,797
CAGR (2005-2025)	*0.12%*	*0.06%*		*1.78%*		*1.78%*	*2.40%*	*2.40%*		*0.57%*

Source: FAA TAF 2005, Airport Management, Mead & Hunt, Inc

Figure 2-6 illustrates the projected aircraft operations trend.

Figure 2-6
Historical & Projected Aircraft Operations



Source: FAA TAF 2005, Airport Management, Mead & Hunt, Inc.

As a general average of the various methods, the OPBA method is recommended to provide a moderate forecast of operations. As the number of based aircraft at ONO increases, the corresponding number of operations is expected to also increase. As the based aircraft are expected to increase greater than shown in the FAA TAF, the operations are expected to increase to the numbers projected by the operations per based aircraft method.

Projections Summary

Table 2-7 summarizes the forecasts developed in this section. ONO plays an important role in the State of Oregon, providing the Eastern Central Oregon region and the Boise, Idaho metropolitan area with a general aviation facility that meets many of the corporate and GA needs for business, recreation and tourism users. The based aircraft and operational projections indicate increases in both categories over the forecast period. These increases are based solely upon Oregon aviation activity. The projected aircraft operations do not consider the growth in the Boise, Idaho metropolitan area, which may very well contribute additional activity to ONO during the planning period.

Table 2-7
Summary of Forecasts

	Operations						
Year	**Air Carrier**	**Commuter/ Air Taxi**	**Military**	**GA Itinerant**	**GA Local**	**Total Operations**	**Based Aircraft**
1995	0	0	0	12,800	3,000	15,800	52
1996	0	0	0	12,400	3,000	15,400	52
1997	0	0	0	12,460	3,000	15,460	58
1998	0	0	0	12,551	3,000	15,551	58
1999	0	0	0	12,644	3,000	15,644	58
2000	0	0	0	12,737	3,000	15,737	58
2001	0	0	0	12,575	2,940	15,515	58
2002	0	0	0	12,668	2,940	15,608	58
2003	0	0	0	12,762	2,940	15,702	58
2004	0	0	0	12,855	2,940	15,795	75
2005	0	0	0	12,949	2,940	15,889	76
2006	0	0	0	12,800	3,000	16,072	82
Projected:							
2010	0	0	0	7,352	11,029	18,381	88
2015	0	0	0	7,917	11,875	19,792	95
2025	0	0	0	9,046	13,569	22,614	108
CAGR (2006-2025)	*0%*	*0%*	*0%*	*-1.78%*	*7.95%*	*1.81%*	*1.47%*

Source: FAA TAF, Airport Management, Mead & Hunt, Inc.

Chapter Three – Demand/Capacity and Facility Requirements

This chapter of the Airport Layout Plan Update assesses the relationship between demand and facility needs based on the 20 year forecasts for the planning period presented in Chapter Two. Operational areas will be evaluated to determine existing and future facility requirements. These include:

- Airside
- Landside
- Ground Access
- Airspace and Approaches
- Land Use Compatibility

The capacity of existing airport facilities, runways, taxiways, etc., will be determined based on criteria set forth in FAA Advisory Circular 150/5060-5, "Airport Capacity and Delay". The forecast aviation demand for each planning horizon year will be evaluated against the airport's specific facilities available capacity to determine any additional facilities needed within each planning period. Recommendations for facility improvements will then be developed to alleviate existing or projected deficiencies.

Demand/Capacity Analysis

Airport capacity is a function of the number of available runways and the runway/taxiway configuration. Specific capacity is determined using two principal measures, Annual Service Volume and Hourly Capacity, including Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) conditions.

Airfield capacity as presented in Advisory Circular 150/5060-5, "Airport Capacity and Delay", is referred to as Annual Service Volume (ASV). Annual Service Volume is defined as "a reasonable estimate of an airport's annual capacity".

Airfield capacity determination can involve highly detailed analysis. However, detailed analysis is generally appropriate at airports experiencing demand levels at or approaching an airfield's capacity or Annual Service Volume. Figure 2-1, Capacity and Annual Service Volume (ASV) for Long Range Planning in AC 150/5060-5, provides a quick method of determining if projected demand will approach hourly capacity and annual service volume. If using Figure 2-1 results in a decision that airfield capacity is not a constraint, a detailed airport capacity analysis will not be needed and the capacity arrived at using Figure 2-1 will be used to identify the Annual Service Volume and hourly capacity of the Ontario Municipal Airport.

Annual Service Volume

Annual Service Volume takes into consideration a number of parameters to arrive at airfield capacity levels. These include:

- Aircraft mix;
- Percentage of runway use;
- Percentage of touch & go operations;

- Taxiway exit rating; and
- Ceiling and visibility conditions.

Ontario Municipal Airport has a single runway configuration. Runway 14-32 is 4,307 feet long (with the relocated Runway 14) by 100 feet wide. Ontario Municipal Airport has a circling approach using the Ontario NDB and a straight-in non-precision GPS approach to Runway 32.

Figure 2-1 in FAA Advisory Circular 150/5060-5, provides various runway configurations typical of those at airports throughout the United States. These configurations are used for determining Annual Service Volume. The configuration most closely reflecting the operational and physical characteristics of Ontario Municipal Airport was selected from the numbered diagrams presented in Figure 2-1 to use in determining Annual Service Volume. Runway Use Diagram Number 1 most closely corresponds to the operational configuration at Ontario Municipal Airport, since the airport has a single runway. It should be noted that these runway use diagrams assume there is at least one runway that is equipped with a precision instrument landing system. This is important since the hourly IFR capacity identified for each Runway Use Diagram is based on the availability of a precision approach. Since the Ontario Municipal Airport does not currently have a precision approach, the IFR Hourly Capacity listed in Table 20 is not applicable.

The mix index is the percentage of aircraft operations by multi-engine aircraft in Aircraft Class C (aircraft with maximum certificated takeoff weights between 12,500 pounds and 300,000 pounds) and Aircraft Class D (aircraft with maximum certificated takeoff weights greater than 300,000 pounds). The formula for determining Aircraft Mix is:

%(C + 3D) = AIRCRAFT MIX

Large aircraft are assigned more weight in this equation since their wake turbulence requires increased separation for subsequent aircraft operations. The increased separation adds delays, and hence reduced capacity. **Table 3-1** is a reproduction of Runway-use diagram Number 1 from Figure 2-1 in the referenced Advisory Circular. The mix index for Ontario Municipal Airport is approximately 1%. The Annual Service Volume for Ontario Municipal Airport as identified in **Table 3-1** therefore is approximately 230,000 operations.

Projected demand at Ontario Municipal Airport by the Year 2025 is forecast to be approximately 21,400 annual operations. These projected operations represent a little more than 9 percent of the estimated (230,000 annual operations) airfield capacity. Therefore, existing airfield capacity will be adequate to accommodate projected demand throughout the planning period.

TABLE 3-1
Runway Use Diagram Number One

Runway Configuration	Mix Index %(C+3D)	Hourly Capacity Ops/Hr VFR	Hourly Capacity Ops/Hr IFR	Annual Service Volume Ops/Yr
	0 to 20	98	59	230,000
	21 to 50	74	57	195,000
	51 to 80	63	56	205,000
	81 to 120	55	53	210,000
	121 to 180	51	50	240,000

Source: FAA - AC 150/5060-5, C&B 1994.

Hourly Airfield Capacity

Hourly airfield capacity is an estimate of the number of operations an airport can accommodate during a given hour of the day. Hourly capacity is an important consideration, since this measure determines if an airport can accommodate the projected peak hour operations during the planning period.

Figure 2-1, in FAA Advisory Circular 150/5060-5, previously referenced, was also used to estimate hourly capacity at the Ontario Municipal Airport. The VFR hourly capacity at the Airport is approximately 98 operations and potential IFR capacity would total approximately 59 operations with the availability of a precision approach to the airport. Peak hour (VFR) demand at the Airport is projected to total 7 operations by the year 2025. Therefore, the hourly airfield capacity will be adequate to accommodate projected VFR demand throughout the planning period.

FAA guidelines suggest that facility improvements should be considered to increase capacity when annual operations reach 60% of the Annual Service Volume. Since demand at the Airport will not reach this threshold level within the 20-year planning period, runway development for capacity purposes is not anticipated.

Very Light Jets and the Ontario Municipal Airport

A new segment is emerging in General Aviation - the Very Light Jet (VLJ). Per the National Business Aircraft Association, the very light jet is a jet aircraft weighing 10,000 pounds or less maximum certificated takeoff weight and certificated for single pilot operations. These aircraft will possess at least some of the following features: (1) advanced cockpit automation, such as moving map GPS and multi-function displays; (2) automated engine and systems management; and (3) integrated autoflight, autopilot and flight-guidance systems.

Several manufacturers are currently producing the VLJ or have plans to do so. Predominant manufacturers include Eclipse Aviation (Eclipse 500), Cessna Aircraft (Mustang) and Adam Aircraft (A700 AdamJet) among many others.

Industry forecasts indicate the potential for 4,000 to 5,000 VLJs to be in service in the United States by 2017. Up to 40% of these new aircraft are anticipated to replace the existing turboprop fleet, 20% replacing the existing business jet fleet and 40% as additional aircraft in the business jet fleet. It is anticipated that the VLJ will be highly utilized in the air taxi market.

The many VLJs are being specifically designed and built to operate at general aviation airports with relatively shorter runway lengths and less stringent airport design requirements than those necessary for the more contemporary business jet fleet. Nearly all VLJs will have an ARC of A-I with approach speeds less than 91 knots and wingspans less than 49 feet. Because of their size and operational characteristics, the main impacts on airports like Ontario Municipal are expected to be capacity related. In other words, while the facility is designed to accommodate this ARC, a significant increase in airport operations because of VLJs may require some airports to consider capacity enhancements such as additional runways and taxiways.

Based on capacity calculations in this chapter, is not anticipated that the VLJ will have an overly significant impact on Ontario Municipal throughout the planning period even considering the optimistic VLJ forecasts. In general, as an emerging market, it is just too early to tell the exact impacts VLJs could have on the General Aviation airport system. Without doubt, the concept and progress of the VLJ market will warrant close attention throughout the planning period.

Facility Requirements

With future demand/capacity analysis complete, facility requirements necessary to meet the identified future activity and demand can now be evaluated. Requirements for Airside facilities, Landside facilities, Ground Access, Airspace, Airport Traffic Pattern and Instrument Approaches and Land Use Compatibility will be discussed.

Airside Facility Requirements

Runway

Runway Length

A description of the airport's role and a review of FAA runway length criteria are essential in determining the required runway length at the Ontario Municipal Airport. Runway length is a function of airport elevation, mean maximum temperature of the hottest month, aircraft take-off weight, aircraft engine performance, runway gradient, runway moisture, etc. All of these variables affect the lift of aircraft departing the runway surface. Runway length can be determined using the respective manufacturer's performance curves or by using the procedures outlined in the FAA Advisory Circulars.

The Ontario Municipal Airport is classified a Utility Airport, serving Category B aircraft on a regular basis. Category B aircraft are those with an approach speed of 91 knots or more but less than 121 knots.

Currently, the airport accommodates aircraft in Airplane Design Group II, i.e., aircraft with wingspans from 49 to but not including 79 feet. During the planning period the airport is expected to continue to handle more than 500 annual itinerant operations by aircraft in Design Group II (wingspans up to but not including 79 feet). For purpose of this study, the designated critical aircraft is the King Air 200. The King Air 200 has an Airport Reference Code of B-II. Per the FAA Aircraft Characteristics Database, the King Air 200 has wingspan of 54.5 feet, an approach speed of 103 knots and a maximum takeoff weight of (MTOW) 12,500 pounds.

The current and future airport role and runway functions of Ontario Municipal Airport are:

- Airport Role: Utility Airport
- Runway 14-32: Utility Runway - aircraft in Approach Categories A and B
- ***Airport Reference Code: B-II***

Typical aircraft in the B-I and B-II Airport Reference Codes include both single engine and light twin engine aircraft such as the Cessna 150/172, Mooney Ovation, Piper Cherokee/Arrow, Beech Bonanza/ Baron, Beech King Air 90F and King Air 200 etc. In addition, business jets such as the Cessna Citation I and CitationJet can be accommodated.

Table 3-2 presents runway length requirements for Runway 14-32 based on the Airport elevation of 2,193 feet above mean sea level (AMSL) and the mean maximum temperature of 95 degrees F for the hottest month of the year. The runway length requirement for Runway 14-32 ranges from approximately 1,000 feet to 4,710 feet for all small airplanes (aircraft with maximum takeoff weights of 12,500 pounds or less). If large airplanes with maximum takeoff weights of 60,000 pounds or more were to operate at the airport, the runway length would range

up to 5,780 feet. However, these large aircraft are not projected to operate at Ontario on a regular basis.

Runway 14-32 at its previous length of 4,307 feet by 100 feet, would accommodate 100% of the small Category A and B aircraft in Airplane Design Groups I and II throughout the planning period. This includes the designated critical aircraft, the King Air 200. As discussed in Chapter 1, the threshold of Runway 32 has been relocated to meet FAA Runway Safety Area and Object Free Area requirements. In addition, efforts to lengthen Runway 14-32 have preceded this study and actual construction of the extension was completed in the fall of 2007. Funded by "*Connect*Oregon" funds, the extension project consisted of lengthening Runway 14-32 by 693 feet resulting in a new runway length of 5,011 feet. In essence, this 5,000+ foot runway length could have many positive impacts on the airport, specifically the availability of the airport to more corporate jet and Life Flight aircraft. In many circumstances, insurance providers for such entities require a runway length of at least 5,000 feet before approval of fleet operations into a specific airport will be given.

It is important to note that while this additional length may provide for increased jet activity, it is not anticipated that operations of jet aircraft larger that ARC B-II will significantly increase throughout the planning period. Aircraft up to and including ARC B-II will still account for the predominant type of activity at the Ontario Municipal Airport.

TABLE 3-2
Runway Length Requirements

Airport and Runway Data	
Airport Elevation	2,193 Feet
Mean Maximum Temperature of the hottest month	95° F
Maximum difference in runway centerline elevation	5 Feet
Length of haul for airplanes of more than 60,000 pounds	500 Miles
Runway Lengths Recommended For Airport Design	
Small airplanes with approach speeds of less than 50 knots	980 Ft.
Small airplanes with less than 10 passenger seats:	
75 percent of these small airplanes	3,260 Ft.
95 percent of these small airplanes	3,950 Ft.
100 percent of these small airplanes	4,530 Ft.
Small airplanes with 10 or more passengers	4,710 Ft.
Large airplanes of 60,000 pounds or less:	
75 percent of these airplanes at 60 percent useful load	5,500 Ft.
75 percent of these airplanes at 90 percent useful load	7,090 Ft.
100 percent of these airplanes at 60 percent useful load	6,280 Ft.
100 percent of these airplanes at 90 percent useful load	9,060 Ft.
Airplanes of more than 60,000 pounds	5,780 Ft.

Source: Toothman-Orton Analysis, FAA AC 150/5300-13

Runway Width

Per FAA airport design standards, runway width for airplane design group II is 75 feet. The current width of Runway 14/32 is 100 feet thus exceeding the standard. There is currently no requirement to reduce the existing width of the runway. However, when the time comes for an overlay or reconstruction of the runway, it is anticipated that the FAA will compare the cost of paving the additional width versus relocating the runway edge lighting system inbound. Until this cost comparison is complete or unless extreme financial difficulties are experienced by the City in maintaining the existing pavement, it is recommended that the current runway width of 100 feet be retained throughout the planning period.

Runway Weight Bearing Capacity

The current Runway 14-32 pavement strength of 30,000 pounds single wheel and 50,000 pounds dual wheel loading will accommodate the majority of general aviation aircraft projected to operate at the airport throughout the planning period. The B-II Airport Reference Code includes large aircraft, those with maximum gross takeoff weights above 12,500 pounds, which range up to 65,000 pounds maximum gross takeoff weight (MGTW). The designated critical aircraft at the Ontario Municipal Airport, the Beech King Air B-200, has an MGTW of 12,500 pounds, which can be accommodated on the existing pavement section.

While foreseeable conditions do not indicate the need for additional airfield pavement strength, a regimen of routine pavement maintenance on Runway 14-32, such as crack filling and asphalt seal coat treatments every 3 to 5 years, should be utilized to extend the current pavement life. A nominal overlay will also likely be required in the latter stages of the planning period to sustain pavement quality due to the effects of weathering and oxidation. Such maintenance overlays are typically needed to reduce crack filling and other maintenance costs.

Runway Safety Area and Object Free Area

The B-II ARC also requires a 150 feet wide by 300 feet long Runway Safety Area (RSA) and a 500 feet wide by 300 feet long Object Free Area (OFA). **Table 3-3** lists all runway and taxiway width and clearance dimensions for the B-II ARC recommended for Ontario Municipal Airport. These dimensions were obtained using the FAA's Airport Design program and are referenced in subsequent sections of this chapter.

Both the Runway 14 and 32 ends currently meet the RSA and OFA criteria for the B-II ARC. The fence currently bordering the golf course and within the OFA has been approved by the FAA. The fence is built on frangible post couplings to reduce damage in the event of an aircraft accident/incident.

Runway/Taxiway Separation

The required separation distance between the runway and parallel taxiway centerlines is 240 feet for airports accommodating aircraft of B-II ARC. The current runway/taxiway centerline separation is at least 240 feet and therefore meets this requirement.

TABLE 3-3
Runway and Taxiway Width and Clearance Dimensions

AIRCRAFT APPROACH CATEGORY	B
AIRPLANE DESIGN GROUP	II (≤12,500 pounds)
Airplane wingspan	78.99 feet
Primary runway end (RWY 32) approach visibility minimums	not lower than 1 mile
Runway 14 end	visual
Airplane undercarriage width (1.15 x main gear track)	14.66 feet
Airport elevation	2193 feet

RUNWAY AND TAXIWAY WIDTH AND CLEARANCE STANDARD DIMENSION	Criteria	Existing
Runway centerline to parallel taxiway/taxilane centerline	240 Feet	240 Feet
Runway centerline to edge of aircraft parking	250 Feet	425 Feet
Taxiway centerline to parallel taxiway/taxilane centerline	105 feet	N/A
Taxiway centerline to fixed or movable object	65.5 Feet	65.5 Feet
Taxilane centerline to parallel taxilane centerline	97 Feet	>97 Feet
Taxilane centerline to fixed or movable object	57.5 Feet	57.5 Feet
Runway protection zone at the primary runway end:		
Length	1,000 Feet	N/A
Width 200 feet from runway end	500 Feet	N/A
Width 1200 feet from runway end	700 Feet	N/A
Runway protection zone at other runway end:		
Length	1000 Feet	N/A
Width 200 feet from runway end	500 Feet	N/A
Width 1200 feet from runway end	700 Feet	N/A
Runway obstacle free zone (OFZ) width	400 Feet	N/A
Runway obstacle free zone length beyond each runway end	200 Feet	N/A
Runway width	75 Feet	100 Feet
Runway shoulder width	10 Feet	10 Feet
Runway safety area width	150 Feet	150 Feet
Runway safety area length beyond each runway end or stopway end, whichever is greater	300 Feet	300 Feet
Runway object free area width	500 Feet	500 Feet
Runway object free area length beyond each runway end or stopway end, whichever is greater	300 Feet	300 Feet
Taxiway width	35 Feet	35 Feet (min)
Taxiway safety area width	79 Feet	79 Feet
Taxiway object free area width	131 Feet	131 Feet
Taxilane object free area width	115 Feet	60-115 Feet +
Taxiway wingtip clearance	26 Feet	N/A
Taxilane wingtip clearance	18 Feet	N/A

REFERENCE: AC 150/5300-13, AIRPORT DESIGN

Wind Coverage/Runway Alignment

FAA criteria recommend a minimum 95% wind coverage for airports accommodating small aircraft (less than 12,500 lbs.) in approach categories A and B, for a 12 mph (10.5 knot) crosswind component. These tabulations show that the existing Runway 14-32 alignment provides 97.2% coverage for Category A & B aircraft, which exceeds FAA design minimums.

Taxiways

Additions or improvements to an airport taxiway system are generally undertaken to increase runway capacity and improve safety. An efficient runway/taxiway system will increase an airport's ability to handle arriving and departing aircraft. An efficient taxiway system will also expedite aircraft ground movements between the runway system and the terminal areas.

It is anticipated that the existing taxiway configuration at the Ontario Municipal Airport is sufficient to accommodate demand throughout the planning period.

Based Aircraft Apron

Of the 82 aircraft currently based at the airport, 73 are stored in aircraft hangars in ratios similar to those currently experienced. **Table 3-4** presents the distribution of based aircraft projected to be tied down on the aircraft parking apron. Based aircraft tied down on the ramp represent approximately 11 percent of the total based aircraft.

It was assumed that future based aircraft will be located at tie-downs and stored in aircraft hangars in ratios similar to those currently experienced. **Table 3-4** presents the distribution of based aircraft projected to be tied-down and hangared throughout the planning period.

Transient Aircraft Apron

A number of assumptions were used in determining apron requirements for transient aircraft. The assumptions are listed as follows:

1. Transient operations represent approximately 20% of the peak day itinerant operations
2. The number of transient aircraft total 50% of peak day transient operations
3. Space should be provided for 75% of peak day transient aircraft
4. 80% of peak day transient aircraft are single-engine
5. 20% of peak day transient aircraft are multi-engine

TABLE 3-4
Ontario Municipal Airport
Based Aircraft Apron & Hangar Requirements

	2006		2010		2015		2025	
	Tiedowns	Hangars	Tiedowns	Hangars	Tiedowns	Hangars	Tiedowns	Hangars
Single Engine	9	70	10	77	11	80	12	87
Multi-Engine	-	2	-	2	-	3	-	4
Turbojet	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-
Rotor	-	1	-	1	-	1	-	1
Total	9	73	10	80	11	84	12	92

Source: Toothman-Orton analysis

There is a distinction between transient aircraft operations and itinerant aircraft operations. Transient aircraft operations are a substrate of itinerant aircraft operations. For example, an aircraft based at the Ontario Municipal Airport that is flying to or from Mountain Home would be performing an itinerant operation. In the vast majority of instances an aircraft based at the Ontario Municipal Airport would return to its hangar once it returned to the Airport. A transient aircraft would be an aircraft that is based at another airport, for instance, Lewiston, that is flying to Ontario Municipal Airport for business or other purposes. The distinction is that the aircraft based at Lewiston would require transient apron tiedown space when it is parked at the Ontario Municipal Airport while the based aircraft typically would not.

Table 3-5 summarizes the requirements for transient aircraft parking spaces at the Ontario Municipal Airport. Transient aircraft parking space requirements at the airport are projected to increase from 2 spaces at present during the peak day, to 4 spaces by the year 2025.

Overall apron space requirements can be tabulated using the information provided in **Table 3-5** and **3-6**. Per FAA guidance, approximately 360 square yards of apron space are adequate to accommodate each transient aircraft. Based aircraft generally require less apron space, approximately 300 square yards per aircraft. Additional guidelines suggest that an area large enough to support two aircraft be provided in front of a terminal building. Based on this suggestion, it is recommended that three spaces, no less than 720 square yards per space, be reserved. This is a liberal estimate and should adequately accommodate three large corporate jet aircraft if necessary.

Table 3-6 summarizes the overall Aircraft Apron Space Requirements for the airport throughout the planning period. The ability of the existing based apron to accommodate 43 based aircraft is based on an average of 360 square yards per aircraft, based and transient. In the 10 and 20 year timeframes, additional space consideration of 10% for transient parking was assumed. A review of this table shows that there is no need for additional aircraft apron space during the course of the planning period. However, there is a need to reconfigure the existing apron to allow jet traffic to operate efficiently on this apron. A detailed discussion of the configuration of the overall aircraft parking apron will be presented later in the next chapter.

TABLE 3-5
Ontario Municipal Airport
Transient Apron Space Requirements

COMPONENT	2005	2010	2015	2025
Peak Day Operations	53	58	61	68
Peak Day Itinerant Operations	21	23	24	27
Peak Day Transient Operations	4	5	5	6
Transient Aircraft	2	3	3	5
Transient Spaces	2	2	3	4
Peak Space Demand	2	2	3	4
Aircraft < 12,500 pounds	1	1	2	3
Aircraft > 12,500 pounds	1	1	1	1

Source: Toothman-Orton Analysis

TABLE 3-6
Aircraft Apron Space Requirements

	2006		2010		2015		2025	
	S. Y.	Aircraft	S. Y.	Aircraft	S. Y.	Aircraft	S. Y.	Aircraft
PROJECTED DEMAND								
Transient Aircraft								
Transient Aircraft	720	2	720	2	1080	3	1440	4
3 Additional Aircraft	2,160		2,160		2,160		2,160	
Transient Subtotal	2,180		2,180		3,240		3,600	
Based Aircraft								
Based single engine	2,700	9	3,000	10	3,300	11	4,500	15
FBO spaces	1,800	3	1,800	3	1,800	3	1,800	3
Misc. 20%	900		960		1,020		1,260	
Based Subtotal	5,400		5,760		6,120		7,560	
Total Apron Demand	**7,580**	**14**	**7,940**	**15**	**9,360**	**17**	**11,160**	**22**
Existing Apron Total	**15,400**	**43**	**15,400**	**43**	**15,400**	**43**	**15,400**	**43**
Additional Requirement	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Airfield Lighting and Approach Aids

Runway 14/32 is currently equipped with a Medium Intensity Runway Lighting (MIRL) system. The MIRL will be sufficient throughout the planning period.

Runway 32 is currently equipped with both a Runway End Identifier Light (REIL) system and a Visual Glideslope Indicator (VGI), specifically a two box Precision Approach Path Indicator (PAPI). Runway 14 is not currently equipped with either system. It is recommended that both a REIL and VGI be installed to Runway 14. It is recommended that a PAPI be installed and maintained on both runways throughout the planning period. The installation of these new systems should increase the level of safety to pilots using the Ontario Municipal Airport.

The parallel taxiway is currently not lit but is marked with blue reflectors. Although not a specific requirement, as traffic begins to increase throughout the planning period, an upgrade from the existing taxiway reflector system should be considered as a general facility improvement.

The existing electrical vault and airport rotating beacon are aging. In particular, the rotating beacon is becoming difficult to maintain. Replacement of the electrical vault and the rotating beacon with more modern systems is recommended within the planning period.

Helipads

The potential for Bureau of Land Management (BLM) helicopter operations for forest firefighting activities exists at Ontario Municipal Airport throughout the planning period. Helicopters typically hover taxi on the ramp for refueling and maneuvering. A significant amount of debris can be generated from the downwash, causing the potential for impacts of this debris on fixed wing aircraft located on the ramp. Due to the generally incompatible nature of helicopters and fixed wing aircraft, at minimum, it is recommended that at least two paved helipad locations be reserved at the airport to accommodate such operations.

Landside Requirements

Aircraft Hangars

The Ontario Municipal Airport has a variety of aircraft storage hangars housing approximately 73 aircraft. These aircraft are situated in hangars located east of Runway 14-32. Access to these hangars is provided off the parallel taxiway and then via the east-west bypass taxiway or the apron area.

The distribution of forecast based aircraft in storage hangars during the course of the planning period was determined based on present aircraft distribution, projected development of corporate hangar facilities, and experience at other airports. Aircraft owners at Ontario Municipal Airport have shown a desire to hangar their aircraft. The availability of existing storage space has enabled the vast majority of aircraft owners to hangar their aircraft out of the elements.

The following assumptions were used in distributing based aircraft in hangars throughout the planning period:

- All multi-engine turbine aircraft will be located in corporate hangar space
- Multi-engine piston aircraft will be located in T-hangar space

- Approximately 90% of single engine piston aircraft and other aircraft will be located in hangar space
- All rotor-craft will be located in corporate hangars

The larger multi-engine turbine aircraft and rotorcraft forecast to be based at the airport are projected to be located in corporate hangars. **Table 3-7** presents a breakdown of the projected hangar facilities at the airport throughout the course of the planning period. A review of this table shows the need for significant additional hangar construction at the airport.

Table 3-7 indicates that approximately 17 new small hangar sites and a minimum of one corporate hangar will be required by the end of the planning period. Additional corporate sites and fewer small hangar sites may be required during the planning period depending on the type of hangars that become popular during the period.

TABLE 3-7
Ontario Municipal Airport
Based Aircraft Hangar Requirements

Aircraft Type	2006			2010			2020		
	T-Hangars	T-Shades	Corporate Hangars	T-Hangars	T-Shades	Corporate Hangars	T-Hangars	T-Shades	Corporate Hangars
Single Engine	70	0	0	77	0	0	87	0	0
Multi-Engine	0	0	2	0	0	2	0	0	3
Turbojet	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0
Rotor	0	0	1	0	0	1	0	0	1
Total	70	0	3	77	0	3	87	0	4
Existing	70	0	3	70	0	3	70	0	3
Required	0	0	0	7	0	0	17	0	1

Source: Toothman-Orton analysis

Airport FBO/Fueling Facilities

There is currently one full-service FBO on the airport. In addition, both 100LL and Jet A fuel is available. Fuel is available through the FBO or a 24 hour card control system. The 12,000 gallon above ground tank of Jet A and the 6,000 gallon above ground tank of 100LL should be sufficient throughout the planning period.

Airport Terminal Building and Automobile Parking

The FBO and Airport Manager's office are currently co-located in the existing terminal building located off of SW 33rd Street. The existing building is old and lacks adequate space to properly accommodate the FBO and Airport Management operations throughout the planning period. It is recommended that a new terminal building be constructed at the airport. At minimum, it is recommended that a new terminal building include public restrooms, an office and counter

space for FBO activities, an Airport Manager's office and a pilot's lounge. The inclusion of eating facilities, such as a restaurant, can also be considered.

There are approximately 15 parking spaces available at the existing terminal building with additional capacity of another 15 spaces available if necessary. This is considered adequate throughout the planning period.

While the location of the existing terminal building is an option for a new terminal building, Chapter Four will discuss additional options.

Currently, securing AIP funding for terminal buildings at G.A. airports such as Ontario Municipal Airport is challenging. Considering current FAA funding availability and eligibility criteria, it should be expected that funding for a new terminal building will have to come from local funding sources.

Utilities and Storm Drainage

As the airport prepares for future hangar and terminal development, the proper access to power, water and sewer will be necessary. Access to power and water is anticipated to be sufficient throughout the planning period. However, as will be discussed in Chapter Four, moderate sewer improvements are anticipated to be needed. Based on proposed development plans, it appears a minimum of two sewer lift stations will be required to meet future demand. In addition, the need to replace portions of the existing 8" sewer line is anticipated.

Storm drain issues should also be addressed. This issue is currently proving to be a challenge while engineering projects at the airport.

To determine specific needs, further study will be necessary. It is recommended that a Utility and Drainage Master Plan Study be completed prior to any significant development occurs.

The ALP drawing set includes a drawing that identifies the layout of existing utilities at the Ontario Municipal Airport.

Snow Removal (SRE) and Aircraft Rescue Firefighting (ARFF) Equipment and Storage

Snow removal at the airport is currently conducted by City equipment and manpower based on an agreement between the City and the airport. While plowing of the runways, taxiways and ramp is properly conducted by the City, airport management has stated the desire to have a dedicated piece of SRE available at the airport for snow removal and other airport maintenance duties. It is recommended that a multi-utility piece of equipment, such a front end loader, be acquired by airport management to assist in this capacity. To help protect the new equipment from the elements, an SRE building is also recommended for this and other airport vehicles.

As a non-certificated, general aviation airport, the availability of ARFF is not required by the FAA at the Ontario Municipal Airport. While this scenario is not anticipated to change within the planning period, at minimum, it is recommended that a mutual aid agreement with a local firefighting agency be established to assist with ARFF duties in the event of an accident or incident at the airport. If able, it is further recommended the that City consider the acquisition of

a surplus piece of firefighting apparatus to locate at the airport for first response capabilities in the future.

Containment Facilities

With two agricultural operators currently operating out of the airport, the requirement for proper containment facilities should be mandated by the City of Ontario for these and future such operations. Considering the sensitivity toward environmental issues today, it is recommended that the City of Ontario approach this issue in a proactive manner.

Airport Security

After September 11th, 2001, heightened security for all aviation related activity has been a mainstay. Currently there are no mandatory security measures in place by the Federal Government or the State of Oregon that will impact the Ontario Municipal Airport. That said, both the United States Department of Homeland Security and the Aircraft Owners and Pilots Association (AOPA) have introduced voluntary measures to assist airport owners and operators in raising the security and awareness around the airport. It is highly recommended that the City of Ontario review such information and implement appropriate measures.

To better secure the airport, the installation of a perimeter fence and floodlighting is recommended. Combined with gate restricted access and additional floodlighting, fencing would be an effective measure in restricting unauthorized human access as well as wildlife access to the airport thus increasing both security and safety at the airport.

Ground Access

There are currently three locations to access the airport. Airport Way and SW 6th Avenue off of OR 201 and the main airport entrance, SW 33rd Street off of SW 4th Avenue. These three access points currently provide adequate access to existing and future development on the airport.

New access should be considered to the southwest portions of the airport where it is anticipated that new hangar and new terminal development can be accommodated. The construction of a reconfigured OR 201 with a new frontage road will provide an excellent opportunity for improved access to the airport. More specifics on this reconfiguration will be discussed in Chapter Four.

Unauthorized vehicle access is currently a concern along Airport Way. Vehicles accessing the golf shop off of Airport Way have made their way onto the airport and mixed with aircraft activity. The FAA highly discourages any such interaction between vehicles and aircraft. As previously discussed, the installation of fencing and gates should reduce such occurrences and will also greatly increase the general security at the airport.

Airspace, Airport Traffic Pattern and Instrument Approaches

To ensure the safe operation of aircraft around an airport, protection of the airspace from obstructions which may pose hazards to aircraft is extremely important. Federal Aviation Regulation (FAR) Part 77, Objects Affecting Navigable Airspace, is one of the main mechanisms in place to protect airport airspace. In general, FAR Part 77 airspace requirements

for various airports are determined by the weight of the aircraft that predominantly operate at an airport and the type of instrument approach, if any, that exists or is planned.

Airport runways which predominantly accommodate aircraft of less than or equal to 12,500 pounds maximum gross weight (MGW) are known as "Utility" runways. Runways which accommodate aircraft of greater than 12,500 pounds (MGW) are know as "Other Than Utility Runways". Either FAR Part 77 runway designation can include visual only runways or runways with a precision or non-precision instrument approach. Once a runway has been designated as either utility or other than utility and the type of approach identified, specific airspace dimensions can be determined.

For civilian airports, FAR Part 77 identifies the following "imaginary" airport airspace surfaces.

- Primary Surface
- Approach Surface
- Transitional Surface
- Horizontal Surface
- Conical Surface

For purposes of FAR Part 77, Runway 14/32 at the Ontario Municipal Airport is considered a utility runway with an existing and future non-precision instrument approach (GPS). The GPS approach is to Runway 32 only. Runway 14 is anticipated to remain a visual runway throughout the planning period. A description of each FAR Part 77 airspace surface and specific dimensions for the Ontario Airport are as follows:

Primary Surface

A rectangular surface longitudinally centered on the runway. For hard surfaced runways, the surface extends a distance of 200 feet beyond each runway end. Its elevation is the same as that of the runway. The width of the Primary Surface is set by the most demanding type of approach existing or planned for either end of the runway. Widths can be 250 feet, 500 feet or 1,000 feet if the existing or planned approach has approach visibility minimums as low as ¾ statute mile or a precision instrument approach.

The current width of the Primary Surface at the Ontario Municipal is 500 feet. There is a fence that currently penetrates the Primary Surface on the west side of Runway 14/32. The 4 foot high chain link fence was installed along the border of airport property and the golf course to restrict access of golfers onto airport property. The fence was approved by the FAA and it is built on frangible post couplings to reduce the likelihood of damage in the event of an aircraft accident/incident. The exact impacts, if any, on any future instrument approach will be ascertained upon completion of an aeronautical survey and a new non-precision instrument approach written by the FAA.

Approach Surface

The Approach Surface begins at the ends of the Primary Surface and slopes upward and outward. An Approach Surface is applied to each runway end and is based upon the type of approach planned for that runway end. For visual and utility runways, the Approach Surface slope extends for a distance of 5,000 feet at a slope of 20:1. For all non-precision instrument runways other than utility the distance is 10,000 feet at a slope of 34:1. For all precision instrument runways the slope is 50:1 for 10,000 feet then 40:1 for additional 40,000 feet. The ultimate width of the Approach Surface is dependant upon the specific visibility of the approach minima to that runway end.

The Approach Surface for both Runways 14 and 32 at the Ontario Municipal Airport is 5,000 feet in length with a slope of 20:1. Due to the non-precision instrument approach to Runway 32, the ultimate width is 2,000 feet wide. The ultimate width of the Runway 14 is 1,250 as a visual runway.

Transitional Surface

A sloping area which begins at the edge of the primary surface and slopes upward at a ratio of 7:1 until it intersects the horizontal surface.

Horizontal Surface

An oval-shaped, level area situated 150 feet above the airport elevation, the perimeter of which is established by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

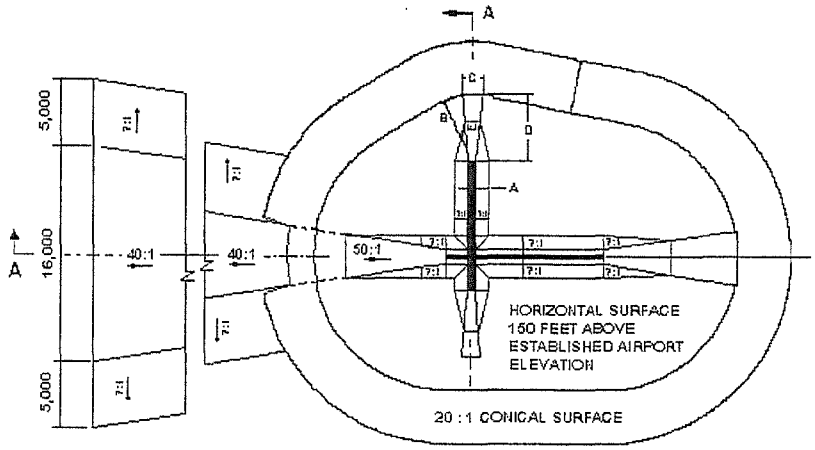
- 5,000 feet for all runways designated as utility or visual
- 10,000 feet for all other runways. The arcs at either end will have the same value.

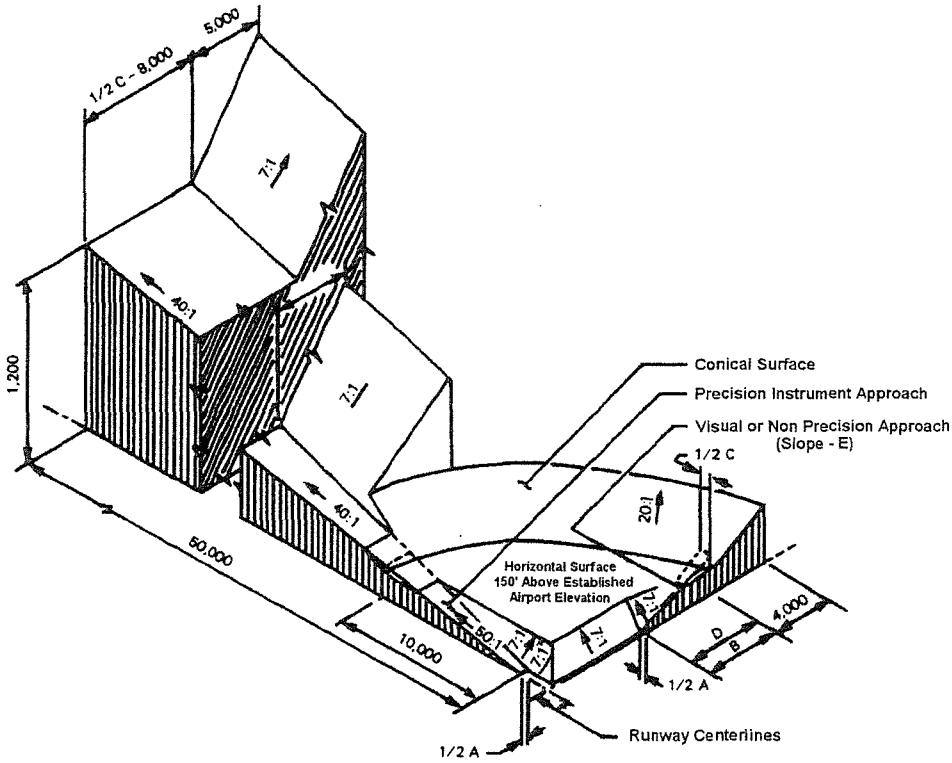
Conical Surface

A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward for a distance of 4,000 feet measured horizontally, while sloping upward at a 20:1 ratio.

Figure 3-1 depicts the FAR Part 77 Surfaces.

Figure 3-1
FAR PART 77 Surfaces
Source: National Geodetic Survey





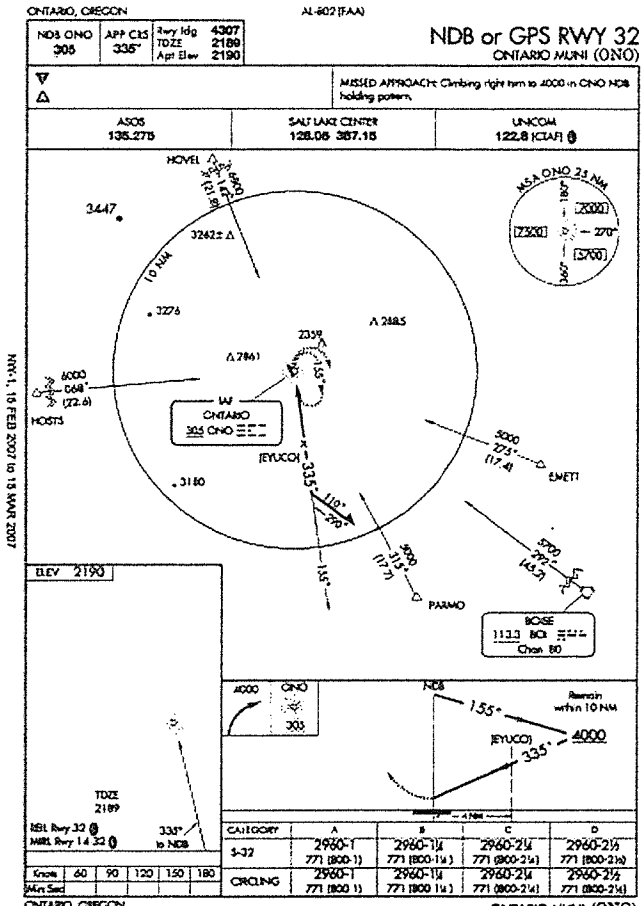


FIGURE 3-2

Instrument Approaches

The availability of an instrument approach to aircraft operators utilizing an airport is extremely important to the accessibility, capacity and safety of the airport during times of Instrument Meteorogical Conditions (IMC).

As discussed earlier, Runway 32 is currently served by a non-precision GPS approach with minimums of 800 foot ceiling and 1 ¼ statute mile visibility for B Category aircraft. This existing GPS approach is an overlay of the NDB approach to the airport. As part of the Runway 14/32 extension project previously discussed, efforts to improve minimums to the new runway end are underway. At this time, an Area Navigation (RNAV) GPS approach with Localizer Performance with Vertical Guidance (LPV) minima is being studied for Runway 32. Per the FAA, LPV approaches currently utilize the Wide Area Augmentation System (WAAS) to provide vertical guidance down to approach minimum heights as low as 250 feet above touchdown.

It remains to be seen if the Ontario Municipal Airport can support such low minimums with a new approach. An aeronautical survey to determine possible obstructions that may affect potential new approach minimums will be initiated in March of 2007. Funded locally, the findings of the survey will have direct impacts on the actual minimums that can be achieved at the airport. While improvements to the existing minimums are desired, new visibility minimums of less than 1 mile will require significant reconsideration of various FAA design standards and FAR Part 77 surfaces. It is therefore recommended that any future non-precision GPS approach obtain the lowest ceiling minimums while maintaining visibility minimums to as low as 1 mile.

It is also important to note that utilization of the new LPV approach will be subject to the proper equipment in the aircraft and the proper training of the pilot(s) flying the aircraft. In order to fly the LPV approach, specific aircraft equipment and pilot training is required. At this time, relatively few small general aviation aircraft are equipped with such equipment as the costs are still quite high. In the meantime, pilots should still be able to use the resulting non-LPV (LNAV/VNAV) minimums without the specific equipment and training requirements associated with LPV.

Figure 3-2 shows the current approach plate and associated specifics for the existing NDB/GPS approach to Runway 32 at Ontario Municipal.

Summary of Facility Requirements

Table 3-8 summarizes the facility requirements for Ontario Municipal Airport over the next 20 years. The existing runway and taxiway configuration at the Ontario Municipal Airport generally meets all major FAA airport design standards and separation requirements for ARC B-II as shown in **Table 3-3**. Although no major airfield configuration changes or additions have been identified, the recommended airside and landside facility improvements will significantly enhance the safety, viability and usability of the airport to its users and the City of Ontario throughout the planning period.

TABLE 3-8
Summary of Facility Requirements

AIRSIDE
Runway 14/32
• REIL – Runway 14 • PAPI – Runways 14 and 32 • Asphalt Overlay
Taxiway
• Medium Intensity Taxiway Lighting (MIRL) System
Apron
• Reconfiguration and expansion to accommodate B-II traffic (including business jet aircraft)
LANDSIDE
• New terminal building • Hangar development areas • New taxilanes to accommodate new hangar development • New sewer lift stations
GENERAL FACILITY ENHANCEMENTS
• Routine pavement maintenance • Perimeter fencing and access gates (security) • Apron floodlighting (security) • Snow Removal Equipment (SRE) • Airport Master Plan Update • Utility and Drainage Master Plan • Helipads

Land Use Compatibility

Perhaps one of the greatest threats to the viability of an airport today is the encroachment of incompatible land use. Height restriction zoning, per FAR Part 77, and other land use zoning to protect the airport from incompatible land uses such as residential development is highly encouraged by airport sponsors.

When discussing land use compatibility around an airport, there is a very distinct difference between height restriction zoning and basic land use zoning. As its name implies, height restriction zoning generally conforms to FAR Part 77 with the intent of protecting the airspace around an airport from objects or structures which may pose hazards to aircraft operators. On the other hand, the intent of land use zoning should be to prevent incompatible land uses from being allowed near an airport where the impacts of airport operations, such as noise and/or aircraft accidents, can have a potentially negative impact on that land use. One of the most obvious examples of an incompatible land use is residential development within various areas around and airport. A good, comprehensive municipal land use compatibility plan takes such considerations into account and incorporates both height restrictions and basic land use restrictions. Coupled with other proactive measures, such as voluntary noise abatement programs and selective fee-simple land acquisition, such a comprehensive plan will protect *both* the airport and the surrounding community.

It is also important to note that as an airport which receives FAA funds, the City of Ontario is bound by various FAA grant assurances. Regarding land use compatibility, FAA Grant Assurance 21 states that the airport sponsor will, "...take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations..."

Currently the City of Ontario, City Code, Title 10a, Substantive Zoning Regulations, includes Chapter 10a-45, AD, Airport Development Zone. Per the code, the purpose of the Airport Development Zone is, "...to protect airport facilities from incompatible land uses; to provide for future airport expansion; and to insure compatibility at the airport with future land use."

Chapter 10a-45 does contain good, comprehensive language designed to protect the airport per the grant assurances. It was observed that specific areas of applicability of the Code are predicated on FAR Part 77. It is recommend that FAR Part 77 be specifically mentioned in the Code. FAR Part 77 is federal law. As such, there are specific notification requirements under the regulation which should be discussed. Furthermore, it is strongly recommended that language in the Chapter be revised to incorporate current FAA terminology. Specifically, a "clear zone" is no longer recognized by the FAA. The new terminology and FAA airport design standard is a Runway Protection Zone (RPZ). The RPZ is depicted on in the ALP drawing set. Additionally, while the use of an avigation easement is included in the Code, the inclusion of a Fair Disclosure Statement is also recommended.

The City of Ontario Planning Department confirmed that the City currently does not have an Airport Overlay Zone in place as a supplement to Chapter 10a-45. As recommended in the 1992 Master Plan, the creation of a Airport Overly Zone by the City is still strongly recommended. When implemented properly, Airport Overly Zones are a very effective tool for local decision makers in protecting the airport from incompatible land uses.

A copy of Chapter 10a-45, the current City Land Use and Zoning Map and an example of a Fair Disclosure Statement can be found in Appendix 1.

Again, as discussed in the 1992 Master Plan, The Oregon Department of Aviation provides excellent land use compatibility guidance for airports via its "Airport Land Use Compatibility Guidebook". The State of Oregon also encourages the implementation of an Airport Overlay Zone. The State guidebook provides a comprehensive model from which municipalities can create such an overlay zone. The latest version of the recommended State overlay zone model can be found in Appendix 1.

Another challenge for many airports regarding land use compatibility, including Ontario Municipal, is multi-jurisdictional land use controls around the airport. In other words, the airport sponsor does not control land use outside of the immediate boundary of the airport – in this instance Malheur County. Malheur County currently has an Airport Overlay Zone in place for the airport. Article L. AA Airport Approach Overlay Zone, addresses both height zoning and specific land use zoning. A copy of the current Malheur County Airport Approach Overlay Zone can be found in Appendix 1.

Conversations with the City Planning and Zoning Department revealed that the City and County enjoy a cooperative relationship in regard to the airport and planning and zoning issues. The County regularly provides the City ample opportunity to view and approve development proposals that may impact the airport.

Airport Traffic Pattern and Land Use Compatibility

At the onset of this project, the feasibility of changing the current airport traffic pattern from the standard left hand pattern to a right hand pattern was to be studied. The purpose for this review was to determine if a change in the traffic pattern would help alleviate possible aircraft impacts over a proposed high school near the airport.

During the course of this study, a bond initiative to fund the proposed school failed and the Ontario School District has backed out of a land deal on which the school was to be built. In a letter to the airport manager dated November 4, 2005, the FAA states its specific concerns regarding the location of the school near the airport and the potential negative impact airport operations could have on the school. In a conversation with the Ontario School District, such concerns by the airport management and the FAA regarding the proposal were a major reason that this project failed.

Conversation with the Ontario School District also revealed that they are currently exploring other options for a new school location. More importantly, it was made clear by the school district that they now have a better understanding of the concerns of airport management and the FAA regarding a school near the airport. Any future site considerations for a new school will *not* include sites near the airport. A copy of the November 4, 2005, letter can be found in Appendix 1.

It is generally accepted by the airport community, the FAA and the Oregon Department of Aviation that schools within the immediate vicinity of an airport is considered an incompatible use. While not specifically mentioned in Chapter 10a-45 of City Code, the broad terminology in the Code, "...to protect airport facilities from incompatible land uses; to provide for future airport expansion; and to insure compatibility at the airport with future land use...," should most

certainly extend to future proposed schools. At this time, there is no further need to consider a change in the traffic pattern.

Land Use Compatibility Summary

While a change in the traffic pattern may have been helpful in reducing impacts on the school, it would have been a *reactionary* measure. The traffic pattern situation underscores the need for an airport sponsor to be *proactive* in the planning and zoning process. The creation of a comprehensive land use plan that encompasses height restriction zoning and general land use zoning, in addition to an Airport Overlay Zone, represents this proactive approach. An ordinance or other similar mechanism to enforce the recommendations in the comprehensive plan should then follow.

Via Chapter 10a-45 of City Code, the City is being proactive in its approach toward the airport and land use compatibility. To increase its effectiveness, the creation of an Airport Overly Zone to supplement Chapter 10a-45 of City Code is recommended. Also, revisions to the various language in Chapter 10a-45 to match current FAA terminology is strongly recommended. Lastly, it is encouraged that the City continue to work together with Malheur County to foster the positive, cooperative relationship they share in protecting the airport and the surrounding community from incompatible land uses.

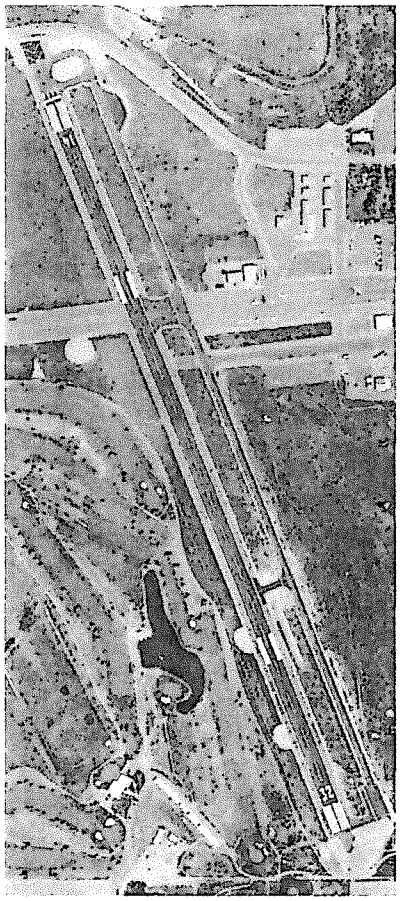
Chapter Four – Conceptual Alternatives

With future demand and facility requirements identified in previous chapters, this chapter will describe the various development alternatives considered throughout the study process to accommodate the identified demand and facility requirements. Airside, landside and ground access alternatives were all considered. A "preferred" alternative from each of these categories has been selected by the Airport Committee and the Airport Manager and each preferred alternative will serve as the basis for the ALP drawing set included in Chapter Six.

Airside Alternatives

Runways/Taxiways

As has been discussed in the previous chapters, the existing ARC of the Ontario Municipal Airport is officially listed as B-I. The recommended future ARC is B-II. The existing configuration of the airport will be able to accommodate the change in ARC with relatively few changes and impacts. Upon completion of the previously discussed runway extension, the runway and taxiway system at the Ontario Municipal Airport is anticipated to meet future demand thus, no extensive alternative discussions regarding the runway and taxiway system were necessary.



Aircraft Apron

While no major airside modifications are anticipated, the need for future transient tiedown space and the reconfiguration of the existing ramp to better accommodate anticipated future activity, including jets, will be necessary at the airport within the planning period. To meet these requirements, four aircraft apron alternatives were considered. Technical drawings of these alternatives, Options 1 through 4, can be found in Appendix 2 along with the derived advantages and disadvantages of each Option. After consideration of each of these Options, Option 1 was selected by the Airport Committee and the Airport Manager as the preferred aircraft apron alternative. **Figure 4-1** depicts preferred Option 1. Following is a summary of the pros and cons of Option 1.

Option 1 (Preferred Aircraft Apron Alternative):

Pros

- New construction in lieu of retrofit
- Minimizes disruption to existing operations during construction
- Provides three large aircraft parking spaces
- Adequate tie-down space for 20-year forecast
- Preserves the "centerfield" (See Page 9, paragraph 3)
- Sets the stage for future airport expansion and future FBO site

Cons

- Moves aircraft further away from the existing FBO
- May require phased construction due to FAA justification requirements

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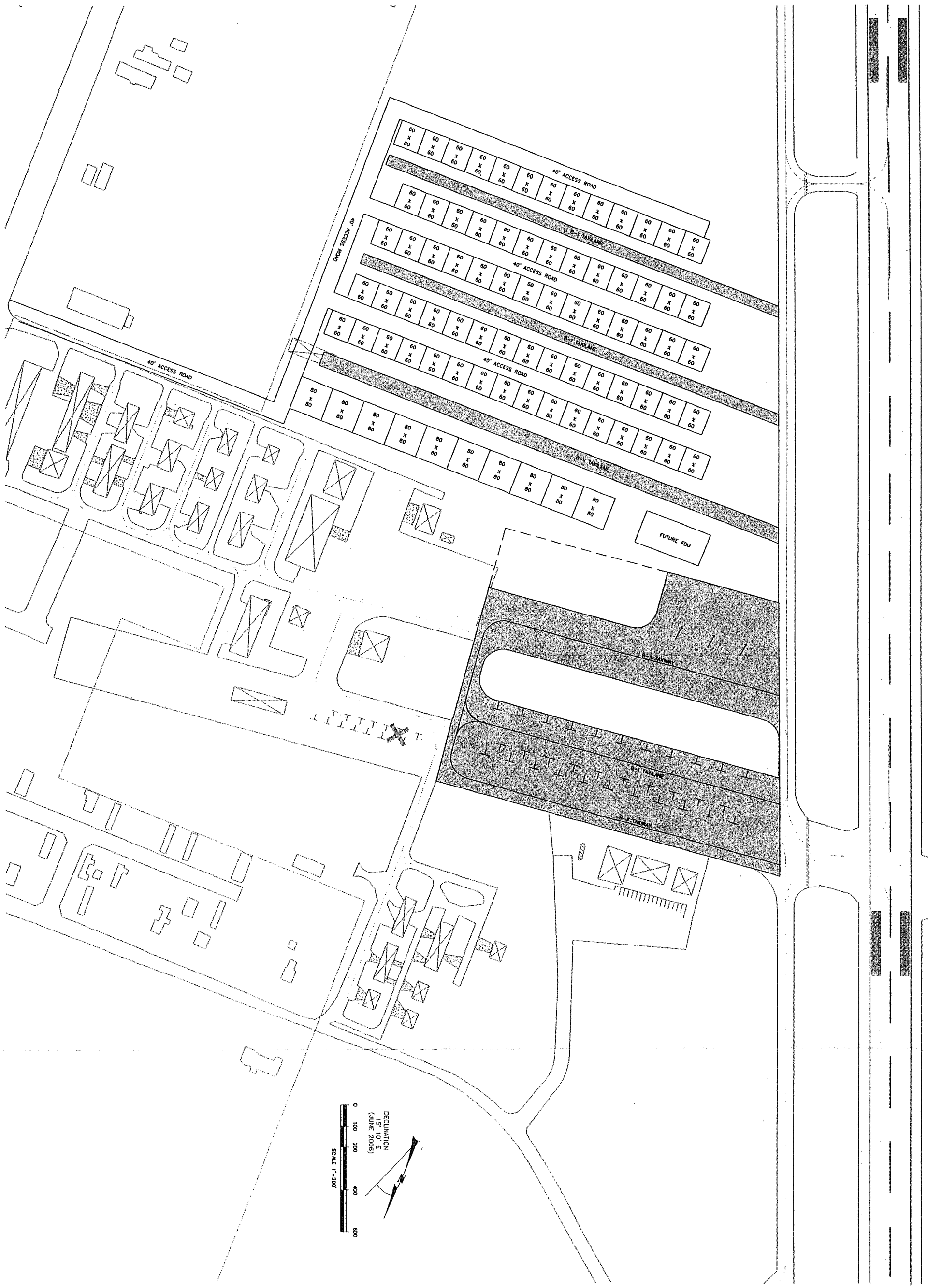

SHEET 5 OF 8	DATE: DEC 2007	ONTARIO MUNICIPAL AIRPORT	TOOTHMAN-ORTON ENGINEERING COMPANY
	PROJECT: 03184	CITY OF ONTARIO, OREGON	CONSULTING ENGINEERS, SURVEYORS AND PLANNERS
		FIGURE 4-1 OPTION 1 FUTURE APRON PLAN	9777 CHINDEN BOULEVARD BOISE, IDAHO 83714-2008 PHONE: (208) 323-2288 FAX: (208) 323-2399 OFFICE IN: CALDWELL, IDAHO COEUR d'ALENE, IDAHO

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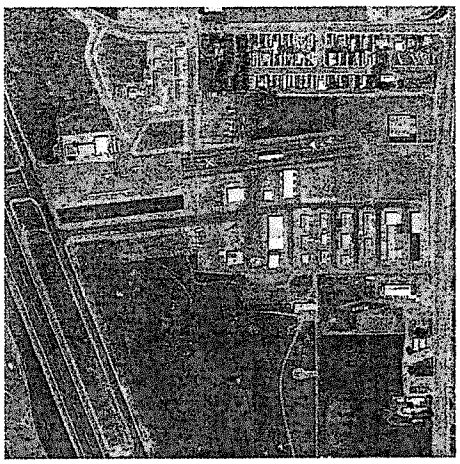
			APPROVED: TDL

Landside Alternatives

Aircraft Hangars



In addition to an improved aircraft apron, a review of the sites available on the airport for hangar expansion was conducted. Six sites were studied in detail and the drawing depicting the proposes hangar development site can be found in Appendix 3 and **Figure 4-2**. This drawing also includes the site located southwest of Runway 14 and north of the old runway. The site southwest of Runway 14 has limited auto access and utility access. Since the site is located on the opposite side of the runway from fueling and other FBO related activities, it does not appear to be suitable for hangar development. However, the area does appear to be suitable for helicopter activities including a helicopter school.

To achieve the most efficient use of the available land at the Ontario Municipal Airport, all six sites will be utilized for hangar and other aviation related development. The advantages and disadvantages of each site are discussed below along with a tabular summary, **Table 4-1**, Hangar Site Considerations.

TABLE 4-1
Hangar Site Considerations

Hangar Site No.	Advantage	Disadvantage	Capacity (num. of sites)	Conclusions
1	auto access water	sewer	Multiple sites	Useful site for museum, helicopter business; need sewer lift station
2	auto access water	sewer	3	Useful for small hangars not needing sewer;
3	auto access water	sewer	2	Useful for small hangars not needing sewer; agricultural spray expansion
4	sewer water	auto access	8	Prime location for small/corporate Hangars especially if improvements are made to roads
5	water	sewer auto access	2	Useful for small hangars not needing sewer;
6	water	sewer	unlimited	Prime ultimate development area esp. if access road could be developed. Lift station will be required and should be developed early in the planning period.

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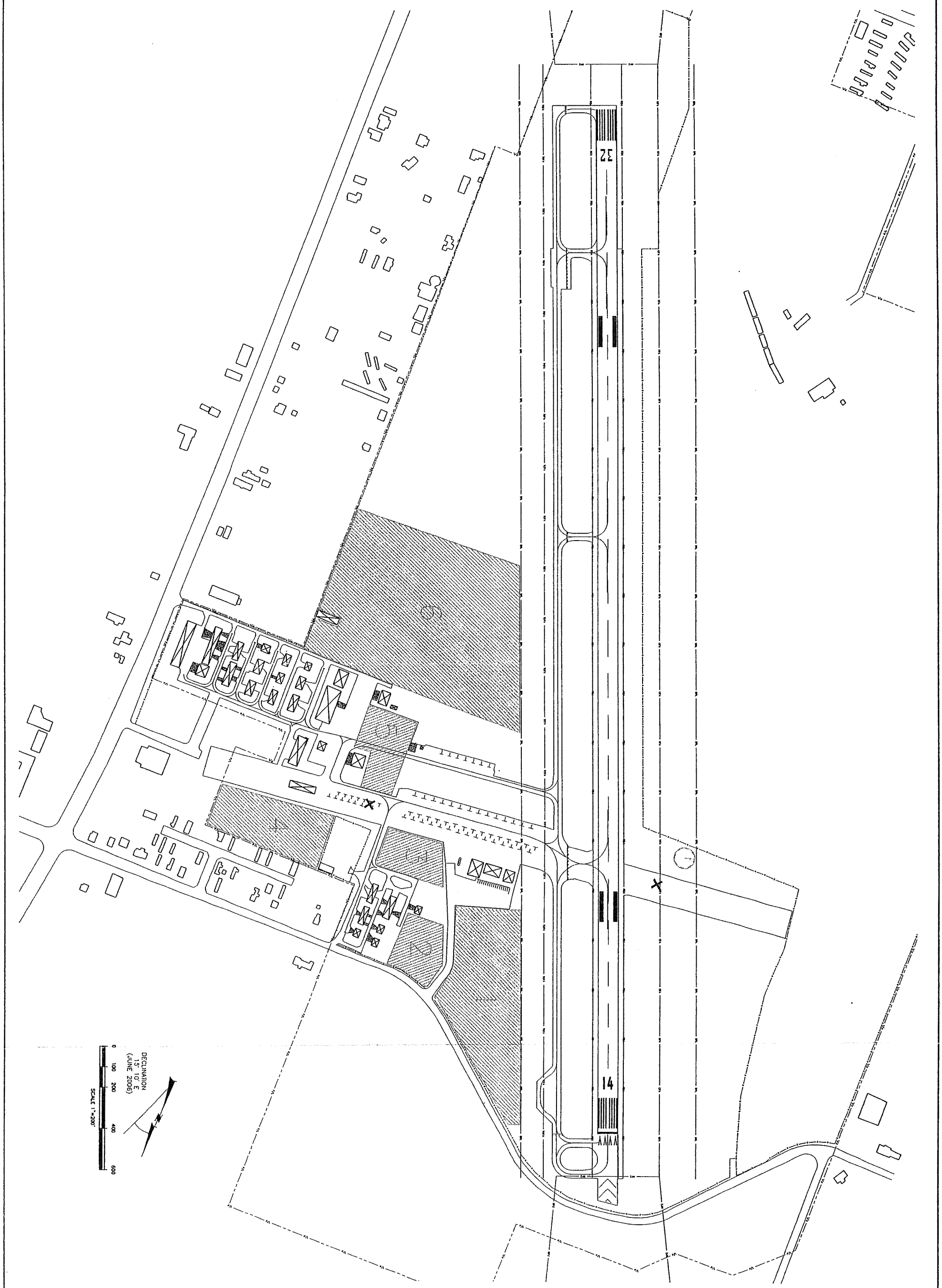

ONTARIO MUNICIPAL AIRPORT

CITY OF ONTARIO, OREGON

FIGURE 4-2
PROPOSED FUTURE HANGAR SITES

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Hangar Site number one has excellent auto access and water but will need a lift station to obtain sewer. Since there is a moratorium on septic systems it will be essential to install a sewer lift station in order to serve this area and the FBO. Site one will be more suited to large corporate hangars, airfield business, and a museum because of excellent roadway access and visibility as well as access to all utilities other than sewer.

Hangar Sites 2, 3 and 5 are similar to site one. They are basically suitable only for small hangars because of the limitation of the size of each area. Each has available water, but are limited to users who do not need sewer connections. Site 4 is a prime hangar development area suitable for both small and large hangars. Sewer and water are available but roadway access currently is not available. Roadway access to this area could be improved as Oregon Department of Transportation (ODOT) develops the current OR 201 frontage road project. These access issues will be briefly discussed later in this chapter.

Hangar Site 6 is another hangar development area that will be suitable for both small and large hangars. The size of this area allows not only small and/or larger hangars but allows options for creating a new terminal area with associated apron areas as well.

Ground Access

As previously discussed, ODOT is currently planning improvements to OR 201 to include a frontage road that parallels the southeast corner of the airport property.

Per the ODOT OR 201 Refinement Plan, in the summer of 2003 ODOT opened the Yturri Beltline (designated as OR 201), a limited access state highway in the northwest portion of the City of Ontario. The purpose of the Yturri Beltline is to provide a more efficient travel route for OR 201 through traffic by diverting it around the City grid network starting at the OR 201/SW 4th Avenue intersection and terminating at the existing I-84/OR 201 freeway interchange. In association with the Yturri Beltline project, the I-84/OR 201 interchange bridge, which has been determined to be structurally deficient, is slated for replacement through the Oregon Transportation Investment Act (OTIA). As a condition of funding for the new interchange bridge, the Oregon Transportation Commission stated that a portion of the existing section of OR 201 prior to the new Yturri Beltline (US 20/26 Junction (Cairo Junction) to Airport Way) be designated as an Expressway (an Expressway is a special subset highway classification defined as a multi-lane highway facility that safely and efficiently accommodates high traffic volumes at high speeds and with minimal interruptions from cross streets and access driveways).

ODOT has presented several alternatives for the OR 201 Expressway reconfiguration. Applicable portions of the Refinement Plan and the current ODOT Expressway alternatives can be found in Appendix 4.

After a review of the ODOT alternatives by the Airport Committee and the Airport Manager it was determined that none of the various alternatives were found to be optimal for the airport.

Of concern to the Airport Committee and the Airport Manager were those ODOT alternatives which would require a right-of-way south of SW 4th Avenue through existing airport property. This right-of-way would run through an area of existing hangars, requiring removal of these hangar, then segregate a portion of the existing hangar development completely eliminating

access on the east side of the proposed OR 201. The right-of-way and those hangars which have had access cut off will no longer have an "aeronautical" purpose. There are significant implications to the taking of airport property for other than aeronautical uses relating to airport property that was purchased with Federal dollars. As previously discussed, the airport is bound by specific FAA grant assurances. Although purchased several years ago, the FAA would have to approve a release of the land for other than aeronautical purposes. It is anticipated that it will be very difficult to obtain approval from the FAA to release the land for this right-of-way. Furthermore, if released by the FAA, the cost of the land is determined by utilizing today's fair market value, not the value of the land when purchased. The cost of existing improvements would also need to be considered.

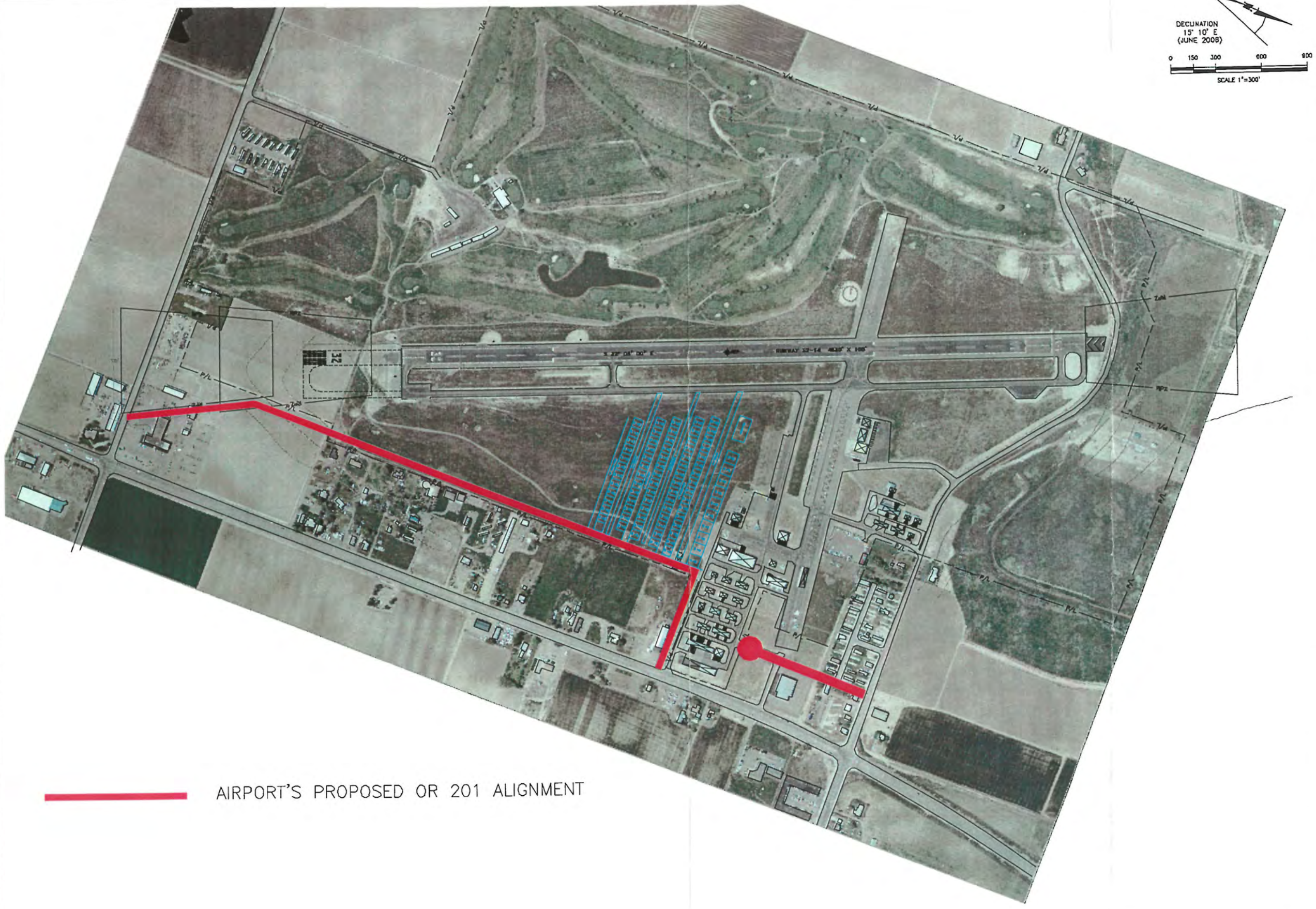
In addition, the City has established lease agreements with the current hangar owners. It would be at great expense and hardship to the City and hangar owners to terminate the lease agreements and relocate them elsewhere on the airport.

In addition to the ODOT alternatives that showed the proposed alignment through airport property, other alternatives show the proposed OR 201 penetrating the Runway Protection Zone (RPZ) for Runway 32. Per current FAA guidance, roads within an RPZ is highly discouraged.

In general, it is not believed to be in the City's best interest to entertain an OR 201 configuration where the road would segregate airport property and/or penetrate the RPZ. After careful consideration and numerous discussions between the City of Ontario and ODOT, the Airport Committee and the Airport Manager have proposed a preferred road alignment for OR 201 improvements which best considers the airports needs. **Figure 4-3** represents the airport's preferred alignment.

The airport's preferred alternative will have a positive impact on the airport. First, the road will not isolate any portion of airport property and remain clear of the RPZ. Secondly, the new road configuration will effectively increase access opportunities to Hangar Sites 4, 5 and 6. In particular, Hangar Site 6 and the ability to this configuration represents a tremendous effectively increase access for future hangar development in this area and will also allow for additional future terminal expansion/ improvement options as previously discussed. All should come at no expense to the airport.

ODOT has responded favorably to the airport's preferred alternative. It is recommended that the Airport Committee, the Airport Manager and the City remain in close contact with ODOT to ensure the proper consideration is given to the airport's needs at this project moves forward.



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ONTARIO MUNICIPAL AIRPORT
ONTARIO, OREGON

FIGURE 4-3
PROPOSED OR 201 ALIGNMENT

DATE APRIL 2007
PROJECT 08184

Chapter 5 – Development Plan and Cost Estimates

The goal of this study was to review the requirements and alternatives necessary for the Ontario Municipal Airport to meet the identified future demand. Now that this analysis has been completed, this Chapter will consider the financial and time considerations necessary to implement the recommendations.

Funding Sources

There are typically three primary sources utilized to fund airport development. They include:

- Federal Aviation Administration (FAA) – Airport Improvement Program (AIP) Funds
- State Funds
- Local Funds

In addition to these primary sources, other sources may be available to airports. They include:

- Private Funds
- "Other" Funds

FAA Funds

Current FAA legislation funds eligible airports and eligible projects at 95% of capital construction costs. The Ontario Municipal Airport is an eligible airport and has received FAA funds for previous projects. The remaining 5% of capital construction costs are required to come from local sources. Current FAA-AIP funding pots include the Non-Primary Entitlement (NPE) program, State Apportionment and Discretionary funding.

Since 2001, the NPE program has provided small General Aviation Airports, on average, $150,000 a year in the form of an entitlement for eligible projects. This program has given airports such as Ontario Municipal the opportunity to enhance the facility via maintenance and small capital improvement projects. The following development plan assumes the continuation of the NPE program throughout the planning period.

FAA State Apportionment (ST) funding is formulated for each of the 50 states. In essence, State Apportionment funding is a discretionary pot of money that all eligible, Non-Primary airports in Oregon compete for. Currently there are 51 such airport is Oregon that compete for an average of $5 Million of State Apportionment annually. State Apportionment funding is typically reserved for large scale, high priority projects such as runway reconstructions, runway extensions, parallel and taxiway construction projects to name a few. It is anticipated that State Apportionment funding will be necessary to complete some of the projects included in the proposed development plan.

FAA Discretionary (DI) funding is typically reserved for the very expensive, highest priority projects at primary airports and large General Aviation Reliever airports. Such projects and airports compete for Discretionary funds on a national and regional basis. While Ontario Municipal is technically eligible for Discretionary funding, the priority of the projects identified in the proposed development plan will not warrant the use of DI funds and should therefore not be expected during the planning period.

State Funds

State funds are those typically available from State agency sources. In regard to airport funding, nearly all States have an Aeronautics office or Division as part of the various Departments of Transportation. These agencies typically have funding sources available to local communities. It is very common for local communities to utilize the available State funding for local match requirements of the FAA as well as airport improvement projects not eligible for FAA funding. The State of Oregon Aviation Department does offer funding assistance via its Financial Aid to Municipalities (FAM) grant program. Also, the Aviation Department implements a pavement maintenance program to assist airports with pavement maintenance needs as warranted by the airport's specific PCI values. Currently FAM grants are capped at $25,000. The availability of funding for FAM grants and the pavement maintenance program is dependant on annual appropriations from the State Legislature. The Ontario Municipal Airport is eligible to participate in both programs and has received such assistance in the past.

In addition to State Aviation Department funds, "*Connect*Oregon" is a lottery-based bond initiative intended to be used on modes of transportation other than highways such as aviation. The Oregon Transportation Commission oversees the fund and selects project priority. As previously mentioned, the Ontario Airport has been selected to receive *Connect*Oregon funds to construct the Runway 14/32 extension.

Local Funds

Local funding sources can be those derived from the airport operation itself or the sponsoring agency (or agencies) of the airport. Again, local funds are typically used for FAA local match requirements, airport operations, administration, maintenance or other projects not eligible for FAA or State funding sources. Due to FAA and State project eligibility criteria, local funding sources are often drawn upon for utilities and infrastructure development such as hangars and terminal buildings.

Private Funds

Private funding sources are typically those which come from private donations to the airport or airport sponsor. Many times the donors are extensive users of an airport who are helping with the maintenance and/or expansion of the facility. Considering the many expensive needs of airports and the limited amount of public funding available to meets these needs, the use of private funds to offset airport costs is a concept that continues to grow in importance.

Other Funds

In addition to the previously discussed funding sources, other sources of funding may also be available. Typically these other sources are federal agencies other than the FAA. For instance, if extensive forest firefighting activity is taking place at an airport, supplemental funding from the U.S. Bureau of Land Management (BLM) and/or the U.S. Forest Service may be available to airport sponsors to help support such activities at the airport.

For many communities, the airport is an important part of planned economic growth. Agencies such as the Southeast Regional Alliance, farm loan boards or the U.S. Department of Agriculture via its rural economic development grant program, aid rural, agricultural communities with economic development opportunities which can extend to the airport. It is highly

encouraged that the City of Ontario research these additional potential funding sources to aid future development of the airport.

Development Plan and Cost Estimates

When formulating the following development plan, only FAA, State and Local funding sources were considered. At this time, no private donors or other sources have been identified to assist with any airport development.

Furthermore, based on comments by the FAA, Seattle Airport District Office (SEA-ADO), the plan was developed utilizing a phased approach rather than assigning projects to a specific year. Due to the fluid nature of FAA funding, the SEA-ADO cannot accurately determine where each of the projects identified in the "phases" will actually fit into the Federal CIP. Proposed projects from this development plan are prioritized by project and timeframe. Also, FAA and local cost shares are based on the current 95% Federal, 5% Local split and the associated cost estimates represent 2007 dollars.

Table 5-1 identifies a phased development plan for the Ontario Municipal Airport per the analysis conducted in Chapters 3 and 4. Phases I, II and III represent short, mid and long-term project goals whereas;

- Short-Term = Phase 1 (1-5 years)
- Mid-Term = Phase 2 (6-10 year)
- Long-Term= Phase 3 (11-20 years)

Figure 5-1 depicts the major projects identified in the phased development plan for the Ontario Municipal Airport. Please note that some projects overlap in the Figure. For example, the overlay of Runway 14/32 and the parallel taxiway identified in Phase 1 versus the pavement maintenance identified in Phase 2. Because of the significance of the overlay, the Phase 1 color coding has been applied in the Figure.

TABLE 5-1
Phased Development Plan and Cost Estimates

PHASE 1 (1-5 Years) SHORT-TERM DEVELOPMENT PROJECTS AND COST ESTIMATES			
Project	**Cost Estimate and Funding Source**		
	Federal	**State**	**Local**
Install Perimeter Fencing and 3 Access Gates	$200,000	$13,158	$13,158
New Rotating Beacon	25,000	658	658
Apron and Auto Parking Flood Light Installation (4)	20,000	526	526
Existing Taxilane Reconstruction	400,000	10,526	10,526
REIL RY 14	20,000	526	526
PAPI - Runways 14 and 32	80,000	2,105	2,105
Runway and Taxiway Overlay	$3,500,000	$25,000	$159,211
SRE/SRE Building	350,000	9,210	9,210
Utility and Drainage Master Plan			100,000
Sewer Lift Stations (2)			350,000
Primary Apron Rehab and Expansion (Ph. 1 - N Side)	600,000	15,789	15,789
SHORT-TERM TOTAL	**$5,195,000**	**$77,498**	**$661,709**

PHASE 2 (6-10 Years) MID-TERM DEVELOPMENT PROJECTS AND COST ESTIMATES			
Project	**Cost Estimate and Funding Source**		
	Federal (95%)	**State (2.5%)**	**Local (2.5%)**
Primary Apron Expansion (Ph. 2 - S Side)	$500,000	$13,158	$13,158
New Taxilane Construction (B-II)	$350,000	$9,210	$9,210
Terminal Building			600,000
Taxiway Lighting System (MITL)	200,000	5,263	5,263
New Electrical Vault	250,000	6,579	6,579
Pavement Maintenance	200,000	5,263	5,263
Helipads (2)	50,000	1,316	1,316
Airport Master Plan Update	150,000	3,947	3,947
Replace Existing 8" Sewer Line			150,000
MID-TERM TOTAL	**$1,700,000**	**$44,736**	**$794,736**

PHASE 3 (11-20) LONG-TERM DEVELOPMENT PROJECTS AND COST ESTIMATES			
Project	**Cost Estimate and Funding Source**		
	Federal	**State**	**Local**
New Taxilane Construction (B-I)	250,000	6,579	6,579
Pavement Maintenance (RWY, TWY and Aprons)	200,000	5,263	5,263
LONG-TERM TOTAL	**$450,000**	**$11,842**	**$11,842**

Development Plan Summary

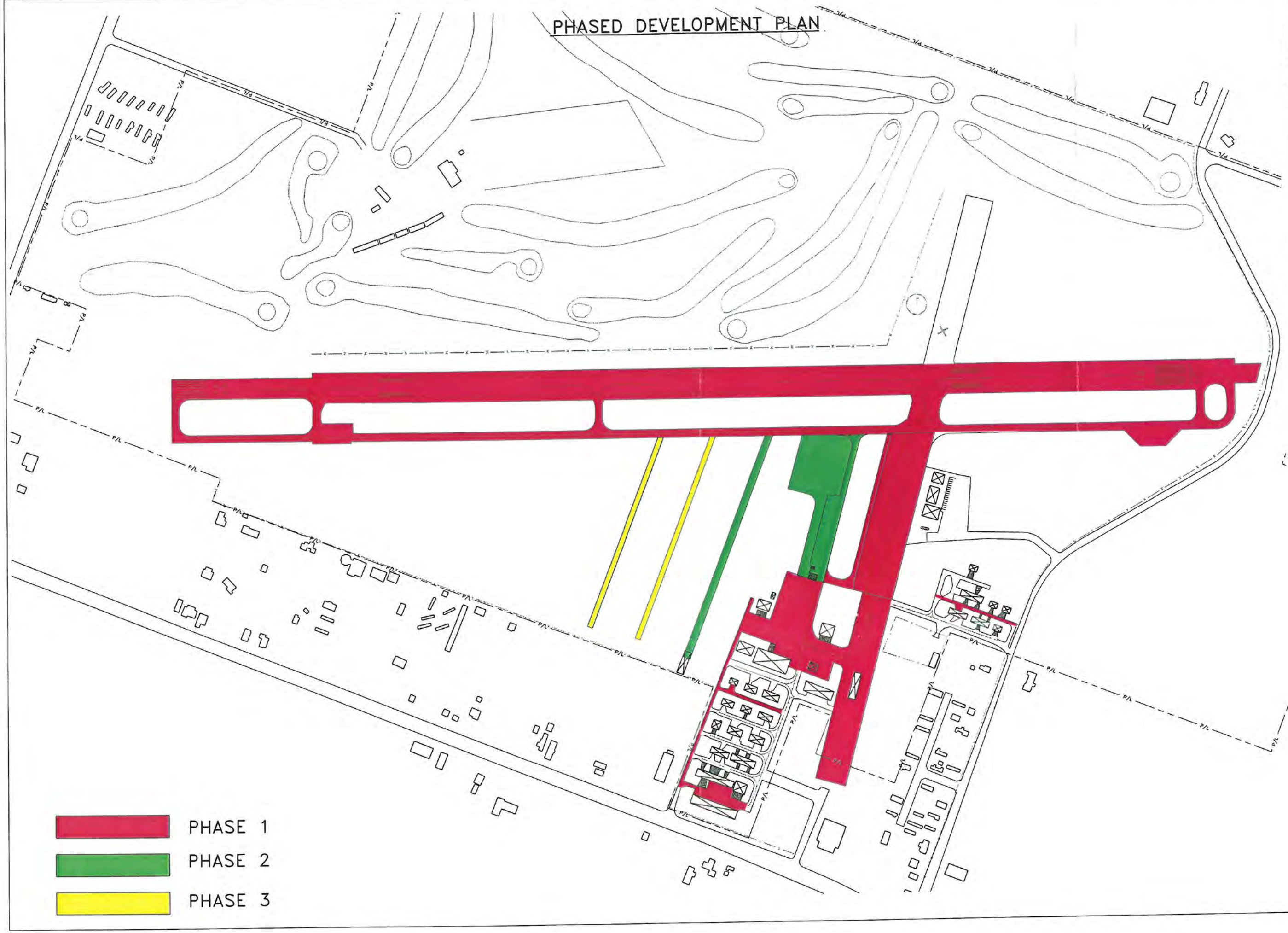
Table 5-1 represents the phased needs of the airport and the associated costs to meets these needs throughout the 20 year planning period. Because Phase 1 identifies the immediate needs of the airport, these projects should be integrated into the FAA 5 year Capital Improvement Program (CIP) as soon as possible.

Table 5-2 summarizes the total cost to implement the proposed development plan. The proposed 20 year development plan total represent an average of approximately $372,000 of federal AIP funds per year. This is not believed to be an unreasonable goal. It is important to reiterate that the development plan and the ALP Update process in general is a "snap shot in time." In other words, this a 20 year plan that is being developed based on the variables and information available to the City of Ontario and Toothman-Orton today. The funding and CIP process is very fluid in nature and can and does change frequently. The City of Ontario should work very closely with the FAA to fit the identified projects derived from this ALP Update into the Federal CIP when possible and revise the plan as circumstances at the airport warrant.

TABLE 5-2
20 Year Development Plan Summary

20 YEAR SUMMARY AND AVERAGES DEVELOPMENT PROJECTS AND COST ESTIMATES			
Phases	**Cost Estimate and Funding Source**		
	Federal	**State**	**Local**
Phase 1 (1-5 Years)	$5,195,000	$77,498	$661,709
Phase 2 (6-10 Years)	1,700,000	44,736	794,736
Phase 3 (11-20 Years)	450,000	11,842	11,842
TOTAL 20 YEAR	**$7,345,000**	**$134,076**	**$1,468,287**

PHASED DEVELOPMENT PLAN



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ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON

FIGURE 5-1
PHASED DEVELOPMENT PLAN

DATE: DEC 2007
PROJECT: 05184

SHEET 2 OF 8

Chapter 6 – Airport Layout Plan (ALP) Drawing Set

As discussed in the introduction portion of this narrative, this ALP Update for the Ontario Municipal Airport includes the preparation of a series of drawings depicting the existing airport and the proposed changes to the airport over the next twenty years. Again, this drawing set is commonly referred to as the Airport Layout Plan (ALP). A description of each drawing and its contents is included below.

Airport Layout Plan (ALP)

The ALP presents airport features, the wind rose, topographic date, elevations, runway details, taxiway details, aprons, RPZ details, approach details, visual approach aids, airport data table, runway data table, roads, building restriction lines (BRL) buildings, etc. The plan will also identify future development plans for the terminal area including hangars, taxilanes, access road and auto parking areas.

Terminal Area Plan

The Terminal Area plan presents airport features specific to the terminal area including hangars, taxilanes, access roads and auto parking areas.

Airspace Plan

The plan shows all areas under the imaginary surfaces as defined in FAR Part 77, "Objects Affecting Navigable Airspace" and includes 50 foot contours on sloping surfaces

Runway Protection Zone and Approach Plan and Profile for Runway

Plan and Profile of the Runway Protection Zones and Runway approach for each runway will be depicted. Obstruction with the RPZ and approach will be identified and recommended action will be indicated

On and Off Airport Land Use Drawings

The Land Use Drawings depict the existing and recommended use of land located within the ultimate airport property and in the vicinity of the airport. The Off-Airport Land Use drawing classifies zoning and use types and general use categories as well as providing guidance for establishing appropriate zoning in the vicinity of the airport.

Airport Utilities Drawing

The Airport Utilities Drawing depicts the existing airport utilities.

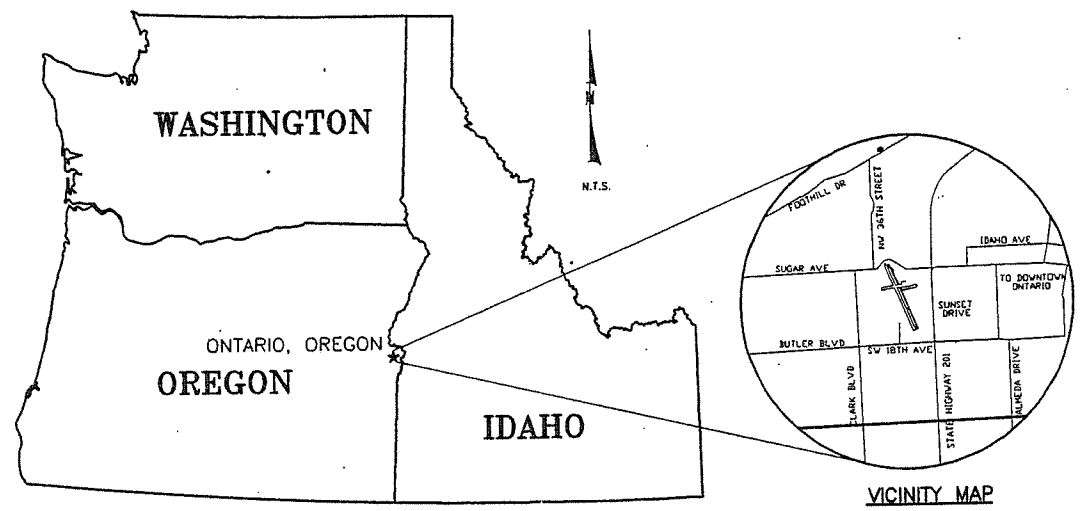
Exhibit A - Airport Property Map

The Airport Property Map is a drawing depicting current airport boundaries compiled from deed research, available mapping surveys, and field verification as required. A data table and/or notes show an inventory of all parcels by number, including grantor, grantee, type of interest, acreage, book and page, date of recording.

ONTARIO MUNICIPAL AIRPORT

AIRPORT LAYOUT PLAN

AIP 3-41-0044-006



LOCATION MAP

VICINITY MAP

ONTARIO, OREGON

DECEMBER 2007

AIRPORT SPONSOR

CITY OF ONTARIO
444 SW 4TH STREET
ONTARIO, OREGON 97914
(541) 889-7684

AIRPORT CONSULTANT

TOOTHMAN-ORTON ENGINEERING COMPANY
9777 CHINDEN BOULEVARD
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SHEET INDEX

SHEET	SHEET TITLE
1	TITLE SHEET
2	AIRPORT LAYOUT PLAN
3	TERMINAL AREA PLAN
4	PART 77 AIRSPACE & APPROACH PLAN
5	RPZ (INNER APPROACH) PLAN
6	OFF AIRPORT LAND USE PLAN
7	ON AIRPORT LAND USE PLAN
8	EXHIBIT A - PROPERTY MAP

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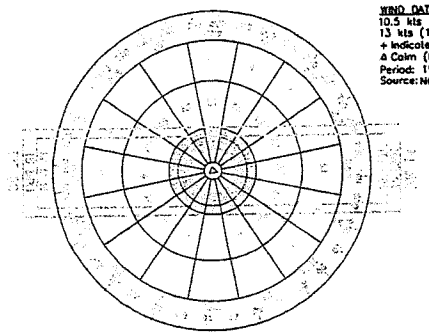
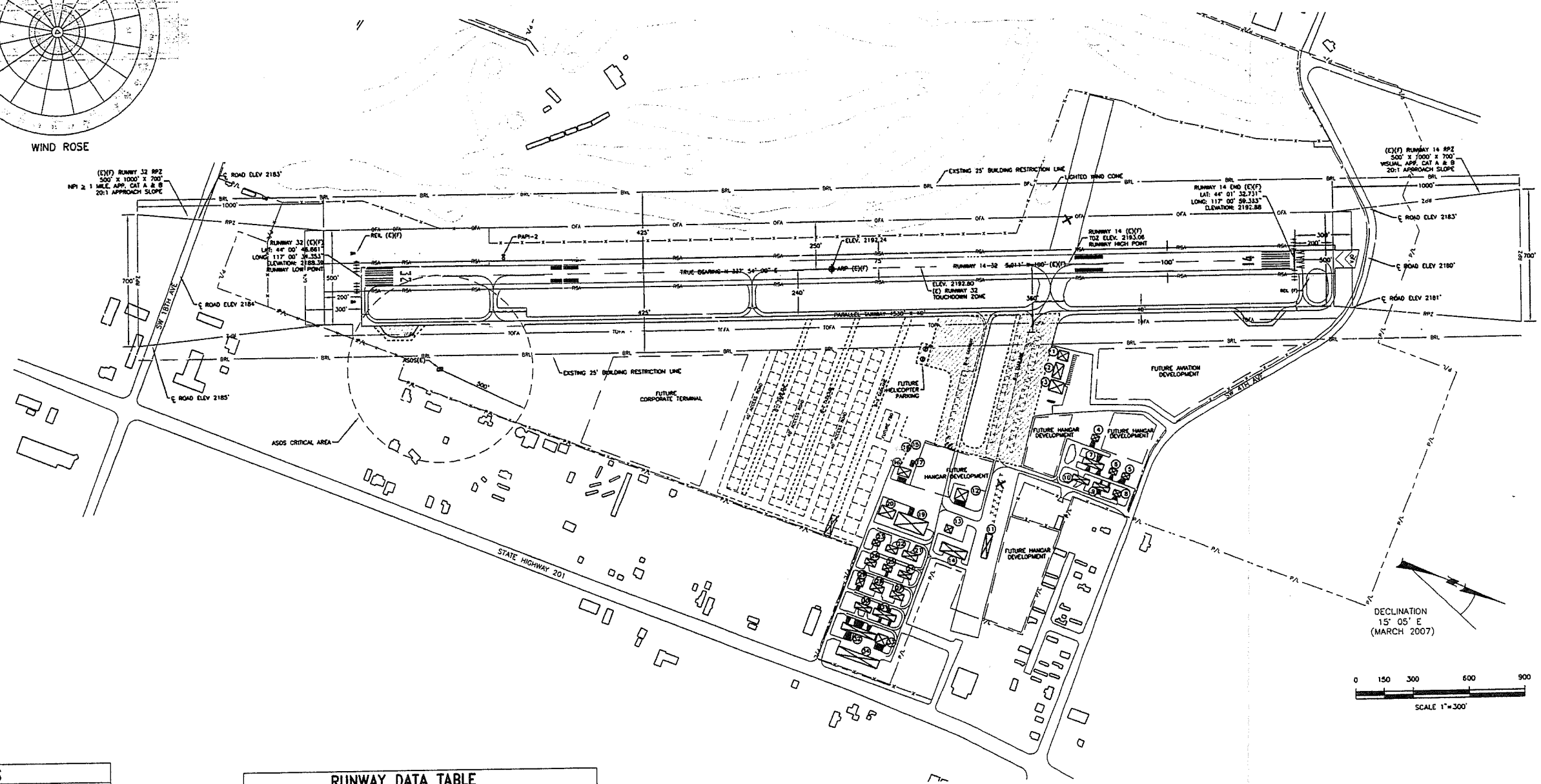


WIND DATA
10.5 kts (12 MPH) = 97.2%
13 kts (15 MPH) = 98.2%
+ indicates an occurance, but less than 0.1%.
∆ Calm (0-4 MPH) = 70.4%.
Period: 1965-1969
Source: NOAA-EDS, Ashville, N.C.



NOTES

1. NO MODIFICATIONS TO STANDARDS.
2. NO NON-STANDARD CONDITIONS.
3. ALL ELEVATIONS ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
4. ALL LATITUDE AND LONGITUDE COORDINATES ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983.
5. AIRPORT PROTECTED BY CITY OF ONTARIO, CITY CODE, TITLE 10a, SUBSTANTIVE ZONING REGULATIONS, AIRPORT DEVELOPMENT ZONE. ALSO PROTECTED BY MALHEUR COUNTY, ARTICLE L AA, AIRPORT APPROACH OVERLAY ZONE.

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Joe Dominic MAYOR, CITY OF ONTARIO DATE

FAA APPROVAL

MANAGER, SEATTLE AIRPORTS DISTRICT OFFICE APPROVAL LETTER DATED

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RUNWAY DATA TABLE

Description	Existing	Future
% Effective Gradient	0.08%	SAME
% Wind Coverage (10.5 and 13 kts)	97.2%/98.2%	97.2%/98.2%
FAR Part 77 Approach Surface Slopes	(14) (32) 20:1 UTILITY	(14) (32) 20:1
Instrument Approach Aids	(32) GPS-NPI ≥ 1 MILE	SAME
Runway Lighting	MIRL	MIRL
Approach/Visual Aids	(32) REIL/PAPI 2	(14) (32) REIL/PAPI 2
Runway Marking	NPI	SAME
Runway Length	5011'	SAME
Runway Width	100'	100'
Pavement Type	Asphalt	Asphalt
Pavement Strength (1,000 lbs)	SW 30,000/DW 50,000	SW 30,000/DW 50,000
Runway Safety Area Length/Width	5611'/150'	SAME
Runway Object Free Area Length/Width	5611'/500'	SAME
Runway Object Free Zone Length/Width	5611'/250'	SAME
Runway OFZ Penetrations	NO OFZ PENETRATIONS	
Approach Category and Design Group	B-II	SAME
Critical Aircraft	Raytheon King Air B-200	SAME
Approach Speed (Approach Category)	103 knots	SAME
Wingspan (Design Group)	54.5'	SAME
Weight	12,500 lbs MGTOW	SAME
Length of Haul (Aircraft over 60,000 lbs)	N/A	N/A
Approach Visibility Minimums	(32) 1 1/4 (14) Visual	(32) 1 Mile (14) Visual
Displaced Threshold Elevations	N/A	N/A
Touchdown Zone Elevations	(14) 2193.06 (32) 2192.80	(14) SAME (32) SAME
Runway High/Low Point Elevations	2193.06/2188.39	SAME
Declared Distance	N/A	N/A
TORA	5011'	SAME
TODA	5011'	SAME
ASDA	5011'	SAME
LDA	5011'	SAME
FAA Line of Site	MEETS FAA LINE OF SIGHT REQUIREMENTS	

RUNWAY END COORDINATES (SURVEYED)

	Existing		Future	
14	Lat: 44° 01' 32.731" Long: 117° 00' 59.326"	Elev. 2192.88	SAME	SAME
			SAME	
32	Lat: 44° 00' 46.661" Long: 117° 00' 34.353"	Elev. 2188.39	SAME	SAME
			SAME	

AIRPORT DATA TABLE

Description	Existing	Future
Airport Identifier Code	ONO	
Airport Elevation	2193' MSL	2193' MSL
ARP	Lat: 44° 01' 16.016"	SAME
	Long: 117° 00' 50.298"	SAME
Mean Daily Max Temperature	90°	90°
Wind Coverage (10.5 and 13 knots)	97.2%/98.2%	97.2%/98.2%
Airport Magnetic Variation	15° 5' E	0° 8' W Annual Change
Airport Reference Code	B-II (Small Aircraft)	SAME
NPIAS SERVICE ROLE	General Aviation	General Aviation
Airport and Terminal NAVAIDS	NDB/GPS(NPI)	NDB/GPS(NPI)
Taxiway Lighting	None	MITL
Taxiway Marking	Centerline	Centerline

BUILDING/FACILITY LEGEND*

NO.	BUILDING DECRIPTION	ELEV.	NO.	BUILDING DECRIPTION	ELEV.
1	Terminal	2204	21	Hangar	2212
2	Hangar	2214	22	Hangar	2208
3	Hangar	2215	23	Hangar	2207
4	Hangar	2216	24	Hangar	2204
5	Hangar	2206	25	Hangar	2207
6	Hangar	2210	26	Hangar	2211
7	Hangar	2213	27	Hangar	2213
8	Hangar	2205	28	Hangar	2213
9	Hangar	2212	29	Hangar	2206
10	Hangar	2212	30	Hangar	2209
11	Hangar	2211	31	Hangar	2216
12	Hangar	2218	32	Hangar	2205
13	Hangar	2211	33	Hangar	2212
14	Hangar	2209	34	Hangar	2210
15	Lighted Beacon	2223	35		
16	Electrical Vault	2204	36		
17	Hangar	2209	37		
18	Hangar	2219	38		
19	Hangar	2223	39		
20	Hangar	2212	40		

*ALL STRUCTURES MEET LATERAL CLEARANCE REQUIREMENTS

AIRPORT PAC AND SAC COORDINATES

PAC	LAT: 44° 01' 35.30" N
	LONG: 117° 01' 02.05" W
	2191.70 FT
SAC	LONG: 44° 01' 00.46" N
	LAT: 117° 00' 37.34" W
	2189.90 FT
SAC	LONG: 44° 01' 17.26" N
	LAT: 117° 00' 48.57" W
	2191.20 FT

LEGEND

EXISTING	FUTURE	DESCRIPTION
		AIRPORT PAVEMENT
P/L	N/A	AIRPORT PROPERTY LINE
	N/A	SECURITY FENCE
		AIRPORT BUILDING
BRL		BUILDING RESTRICTION LINE (BRL)
RSA		RUNWAY SAFETY AREA (RSA)
OFA		RUNWAY OBJECT FREE AREA (OFA)
RPZ		RUNWAY PROTECTION ZONE (RPZ)
TOFA		PARALLEL TAXIWAY OBJECT FREE AREA (TOFA)
ARP (E)		AIRPORT REFERENCE POINT (ARP)
VASI	PAPI-2	NAVIGATIONAL AID INSTALLATION
		RUNWAY END INDICATOR LIGHT
		RUNWAY THRESHOLD LIGHTS
		WINDCONE AND SEGMENTED CIRCLE
		TOPOGRAPHIC CONTOURS

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OFFICE IN:
CALDWELL, IDAHO
COEUR d'ALENE, IDAHO

ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
AIRPORT LAYOUT PLAN

DATE: DEC 2007
PROJECT: 05184
SHEET 2 OF 8

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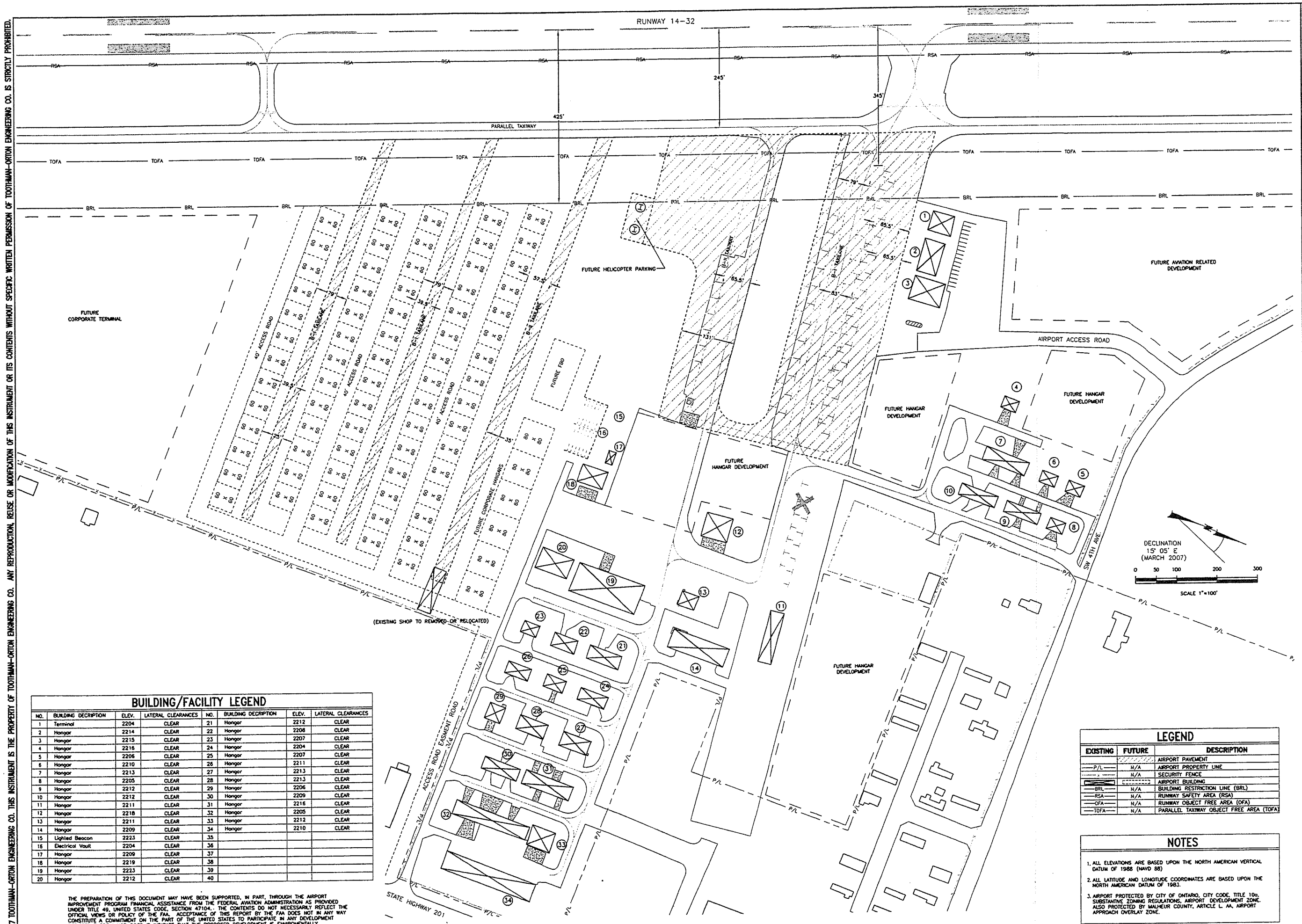

BUILDING/FACILITY LEGEND

NO.	BUILDING DECRIPTION	ELEV.	LATERAL CLEARANCES	NO.	BUILDING DECRIPTION	ELEV.	LATERAL CLEARANCES
1	Terminal	2204	CLEAR	21	Hangar	2212	CLEAR
2	Hangar	2214	CLEAR	22	Hangar	2208	CLEAR
3	Hangar	2215	CLEAR	23	Hangar	2207	CLEAR
4	Hangar	2216	CLEAR	24	Hangar	2204	CLEAR
5	Hangar	2206	CLEAR	25	Hangar	2207	CLEAR
6	Hangar	2210	CLEAR	26	Hangar	2211	CLEAR
7	Hangar	2213	CLEAR	27	Hangar	2213	CLEAR
8	Hangar	2205	CLEAR	28	Hangar	2213	CLEAR
9	Hangar	2212	CLEAR	29	Hangar	2206	CLEAR
10	Hangar	2212	CLEAR	30	Hangar	2209	CLEAR
11	Hangar	2211	CLEAR	31	Hangar	2216	CLEAR
12	Hangar	2218	CLEAR	32	Hangar	2205	CLEAR
13	Hangar	2211	CLEAR	33	Hangar	2212	CLEAR
14	Hangar	2209	CLEAR	34	Hangar	2210	CLEAR
15	Lighted Beacon	2223	CLEAR	35			
16	Electrical Vault	2204	CLEAR	36			
17	Hangar	2209	CLEAR	37			
18	Hangar	2219	CLEAR	38			
19	Hangar	2223	CLEAR	39			
20	Hangar	2212	CLEAR	40			

THE PREPARATION OF THIS DOCUMENT MAY HAVE BEEN SUPPORTED, IN PART, THROUGH THE AIRPORT IMPROVEMENT PROGRAM FINANCIAL ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER TITLE 49, UNITED STATES CODE, SECTION 47104.. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THIS REPORT BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED THEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIROMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS.

LEGEND

EXISTING	FUTURE	DESCRIPTION
		AIRPORT PAVEMENT
P/L	N/A	AIRPORT PROPERTY LINE
	N/A	SECURITY FENCE
		AIRPORT BUILDING
BRL	N/A	BUILDING RESTRICTION LINE (BRL)
RSA	N/A	RUNWAY SAFETY AREA (RSA)
OFA	N/A	RUNWAY OBJECT FREE AREA (OFA)
TOFA	N/A	PARALLEL TAXIWAY OBJECT FREE AREA (TOFA)

NOTES

1. ALL ELEVATIONS ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
2. ALL LATITUDE AND LONGITUDE COORDINATES ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983.
3. AIRPORT PROTECTED BY CITY OF ONTARIO, CITY CODE, TITLE 10a, SUBSTANTIVE ZONING REGULATIONS, AIRPORT DEVELOPMENT ZONE. ALSO PROTECTED BY MALHEUR COUNTY, ARTICLE L, AA, AIRPORT APPROACH OVERLAY ZONE.

REVISIONS			
NO.	ITEM	DATE	

E-FILE NAME:	SHEET 3-TOP.dwg
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ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
TERMINAL AREA PLAN

DATE: DEC 2007
PROJECT: 06184

SHEET 3 OF 8

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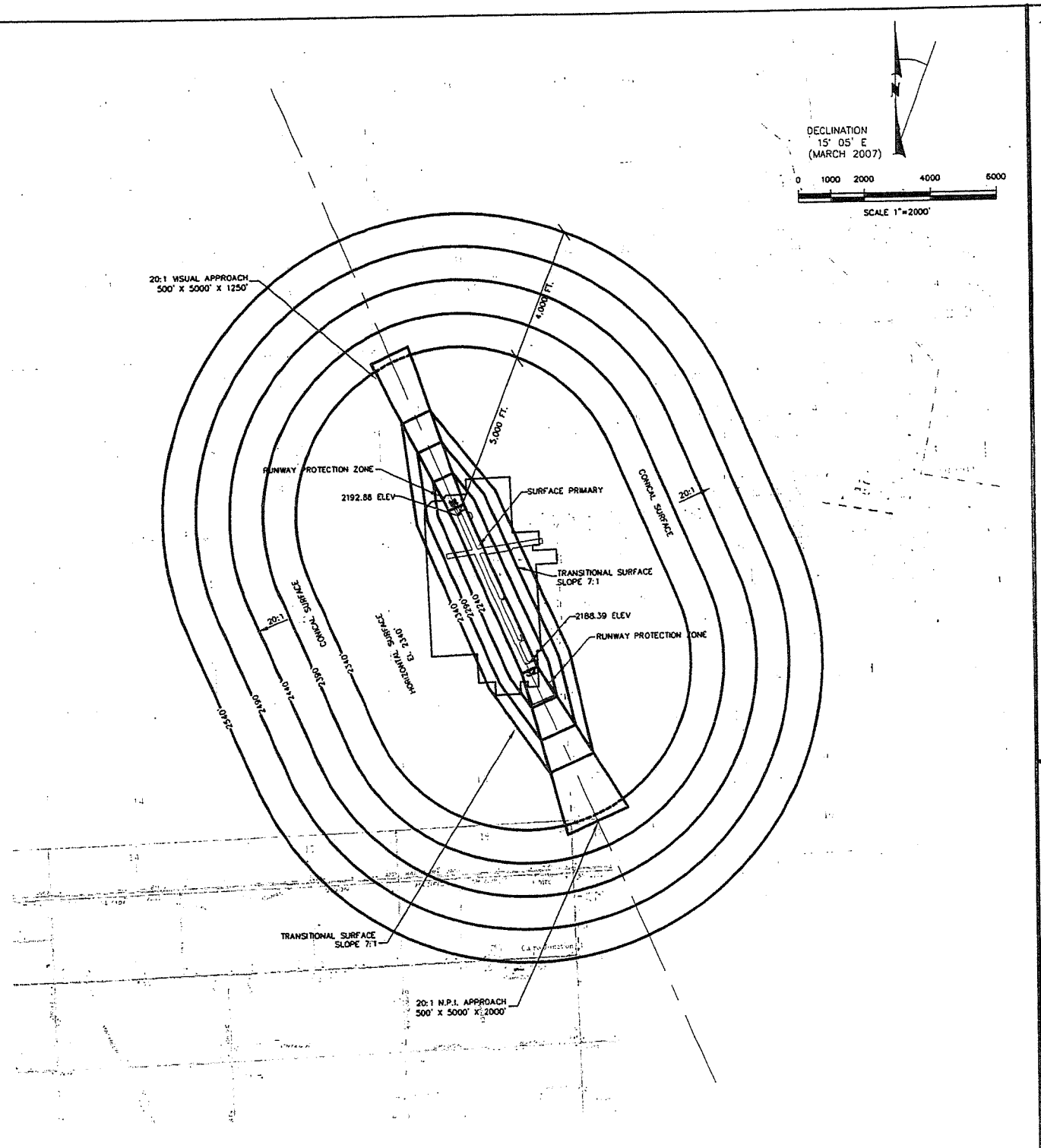
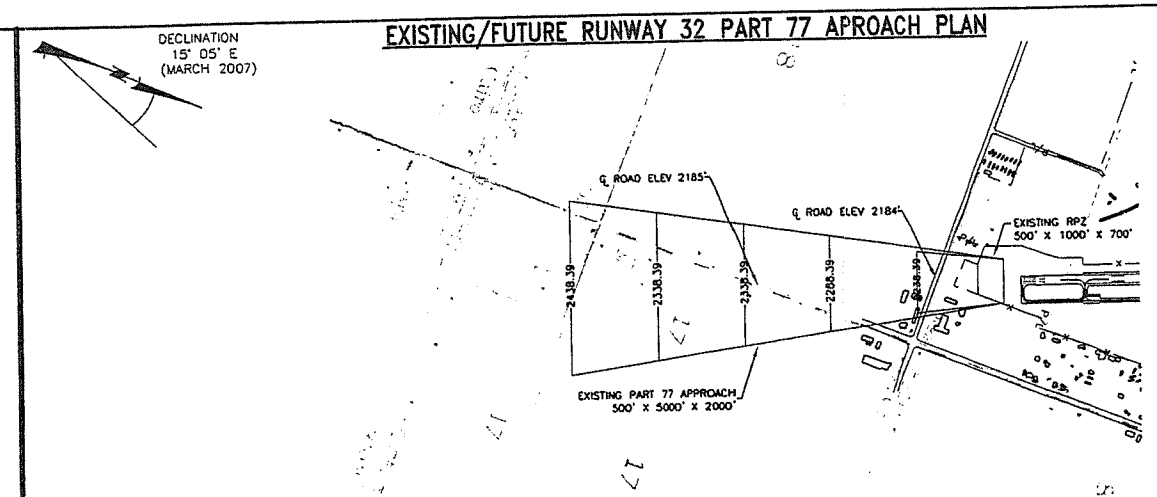
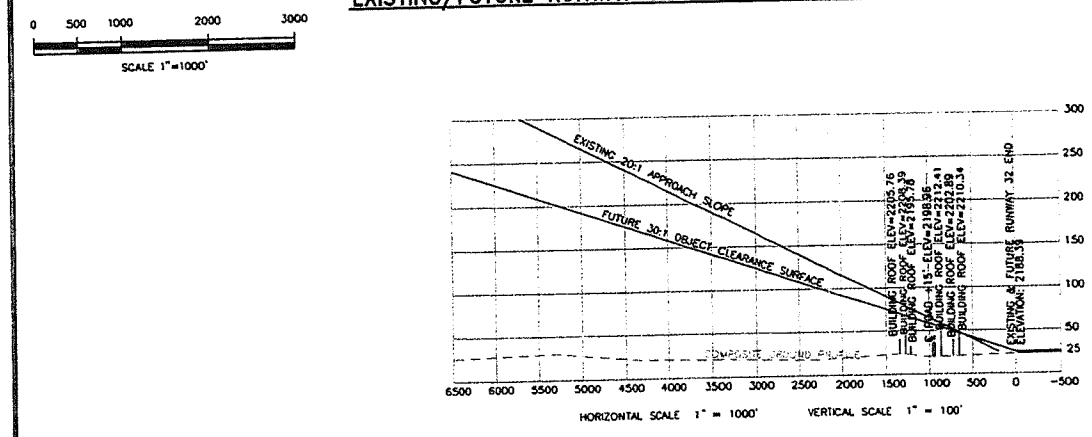


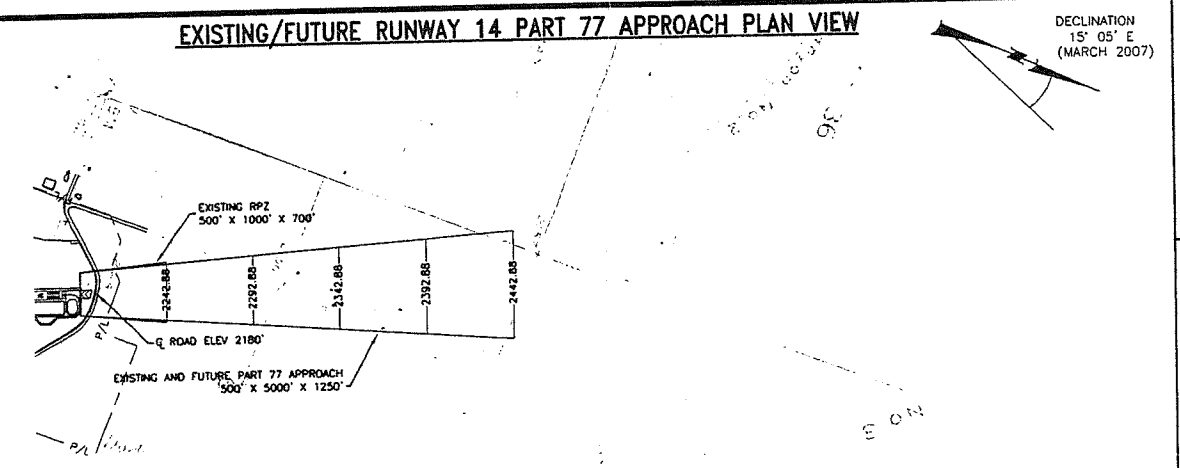
EXISTING/FUTURE RUNWAY 32 PART 77 APROACH PLAN



EXISTING/FUTURE RUNWAY 32 PART 77 APPROACH PROFILE



EXISTING/FUTURE RUNWAY 14 PART 77 APPROACH PLAN VIEW



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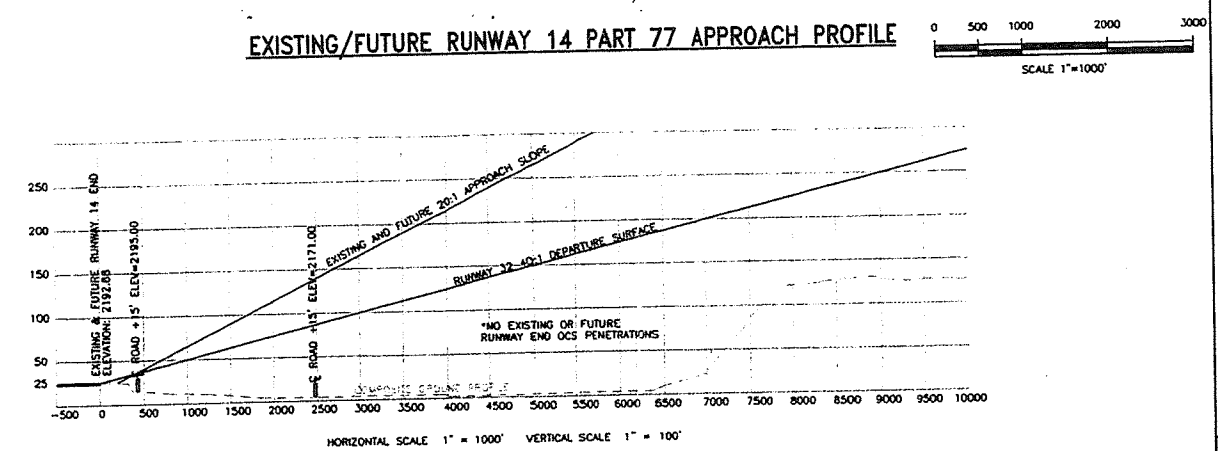

ULTIMATE OBSTRUCTION SCHEDULE

APPROACH 14

ID #	DESCRIPTION	SURFACE PENETRATION	PROPOSED DISPOSITION
	NO EXISTING OR FUTURE OBSTRUCTIONS		

ULTIMATE OBSTRUCTION SCHEDULE

APPROACH 32

ID #	DESCRIPTION	SURFACE PENETRATION	PROPOSED DISPOSITION
	NO EXISTING OR FUTURE OBSTRUCTIONS		

NOTES

1. ALL ELEVATIONS ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)
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3. AIRPORT PROTECTED BY CITY OF ONTARIO, CITY CODE, TITLE 10a, SUBSTANTIVE ZONING REGULATIONS, AIRPORT DEVELOPMENT ZONE. ALSO PROTECTED BY MALHEUR COUNTY, ARTICLE L. AA, AIRPORT APPROACH OVERLAY ZONE.
4. SEE SHEET 5 FOR INNER APPROACH DRAWING.
5. RUNWAY 32 AT THE ONTARIO MUNICIPAL AIRPORT IS CURRENTLY UNDERGOING COMPLETION OF A LOCALIZER PERFORMANCE WITH VERTICAL GUIDANCE (LPV) AREA NAVIGATION (RNAV) APPROACH SURVEY. THE PURPOSE OF THIS SURVEY WILL BE TO DETERMINE IF IMPROVEMENTS TO THE EXISTING GPS APPROACH MINIMUMS CAN BE ACHIEVED WITH A NEW LPV APPROACH.
6. PER AC 150/5300-13, APPENDIX 2, A 30:1 OBSTRUCTION CLEARANCE SURFACE (OCS) IS REQUIRED FOR APPROACHES WITH POSITIVE VERTICAL GUIDANCE, INCLUDING AN LPV APPROACH. THE EXTENT TO WHICH THE RUNWAY 32 END CAN ACCOMMODATE AN LPV APPROACH WILL BE ASCERTAINED WHEN THE LPV SURVEY HAS BEEN COMPLETED, APPROVED AND THE DATA REVIEWED BY THE FLIGHT PROCEDURES OFFICE.
7. FOR FURTHER INFORMATION ON THE OCS, PLEASE REFER TO AC 150/5300-13, APPENDIX 2.
8. 40:1 DEPARTURE SURFACE NOT APPLICABLE TO THE RUNWAY 14 DEPARTURE END BECAUSE (E) AND (F) APPROACH IS VISUAL. FOR FURTHER INFORMATION ON THE 40:1 DEPARTURE SURFACE. PLEASE REFER TO AC 150/5300-13, APPENDIX 2.

NO.	REVISIONS TITLE	DATE

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ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
PART 77 AIRSPACE & APPROACH PLAN AND PROFILE

DATE: DEC 2007
PROJECT: 06184

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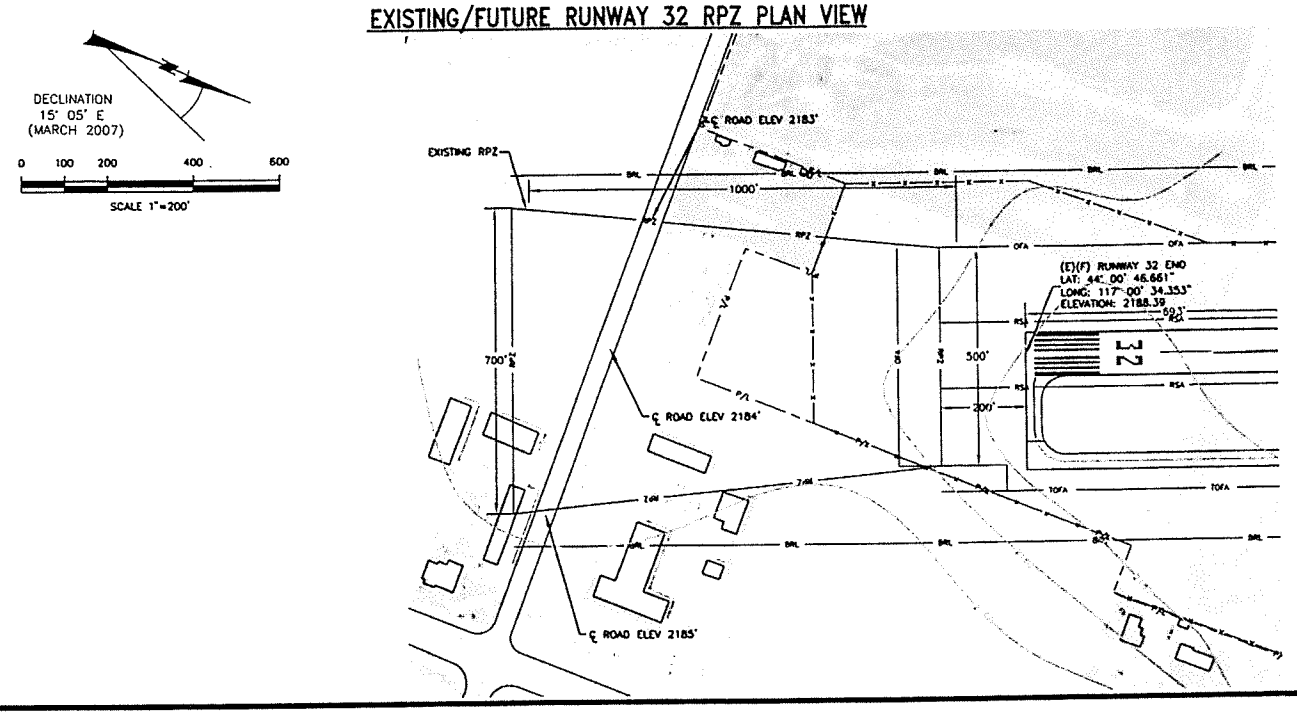
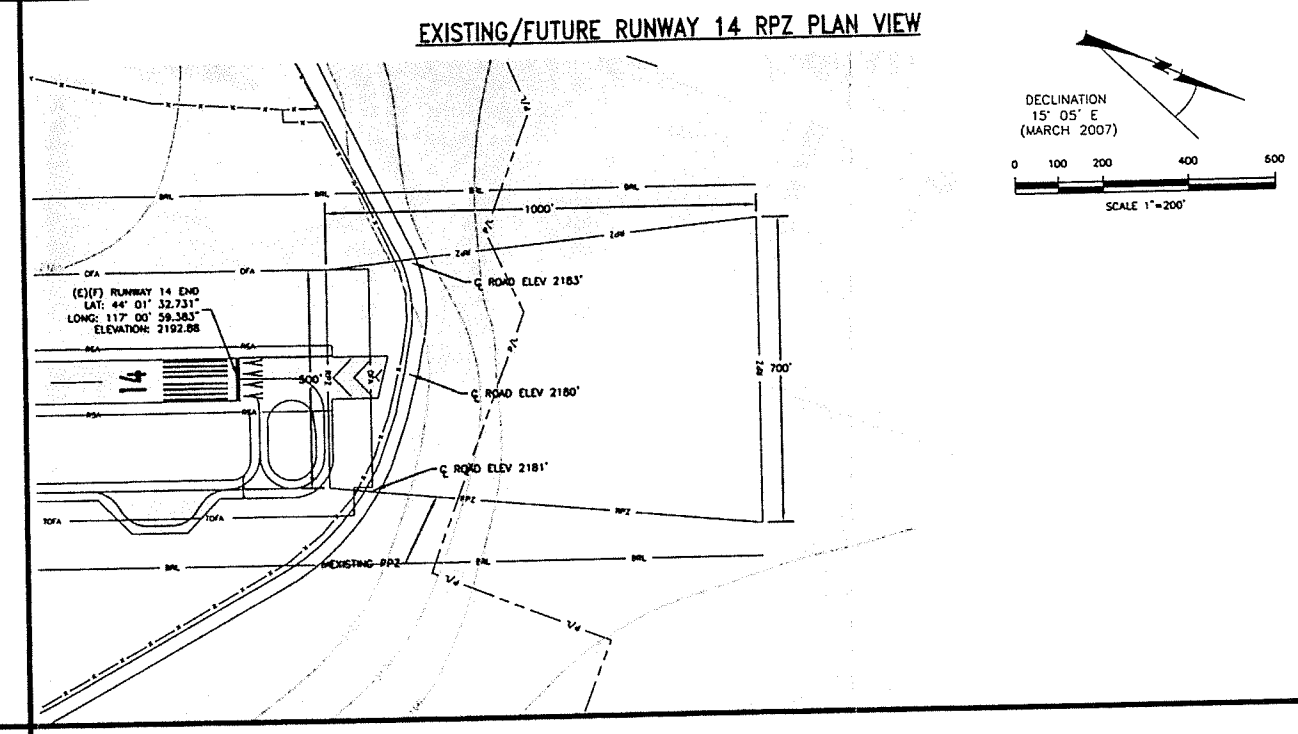
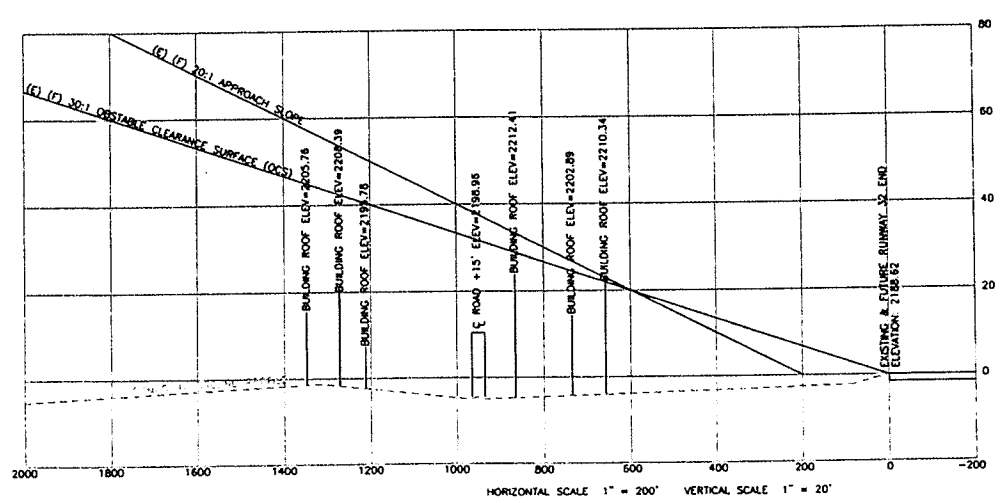
EXISTING/FUTURE RUNWAY 32 RPZ PLAN VIEW



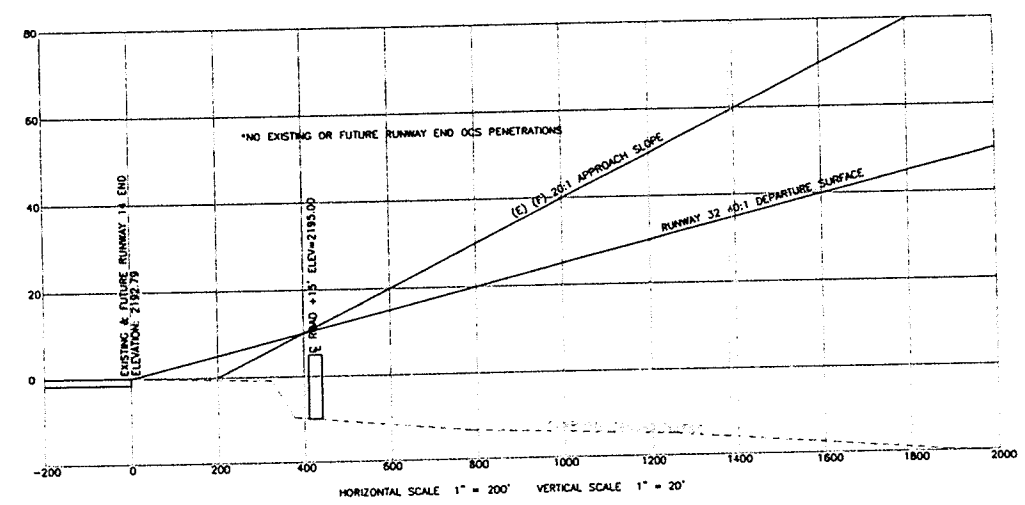
EXISTING/FUTURE RUNWAY 14 RPZ PLAN VIEW



EXISTING/FUTURE RUNWAY 32 APPROACH PROFILE



EXISTING/FUTURE RUNWAY 14 APPROACH PROFILE



ULTIMATE OBSTRUCTION SCHEDULE

APPROACH 14

ID #	DESCRIPTION	SURFACE PENETRATION	PROPOSED DISPOSITION
	NO EXISTING OR FUTURE OBSTRUCTIONS		

ULTIMATE OBSTRUCTION SCHEDULE

APPROACH 32

ID #	DESCRIPTION	SURFACE PENETRATION	PROPOSED DISPOSITION
	NO EXISTING OR FUTURE OBSTRUCTIONS		

NOTES

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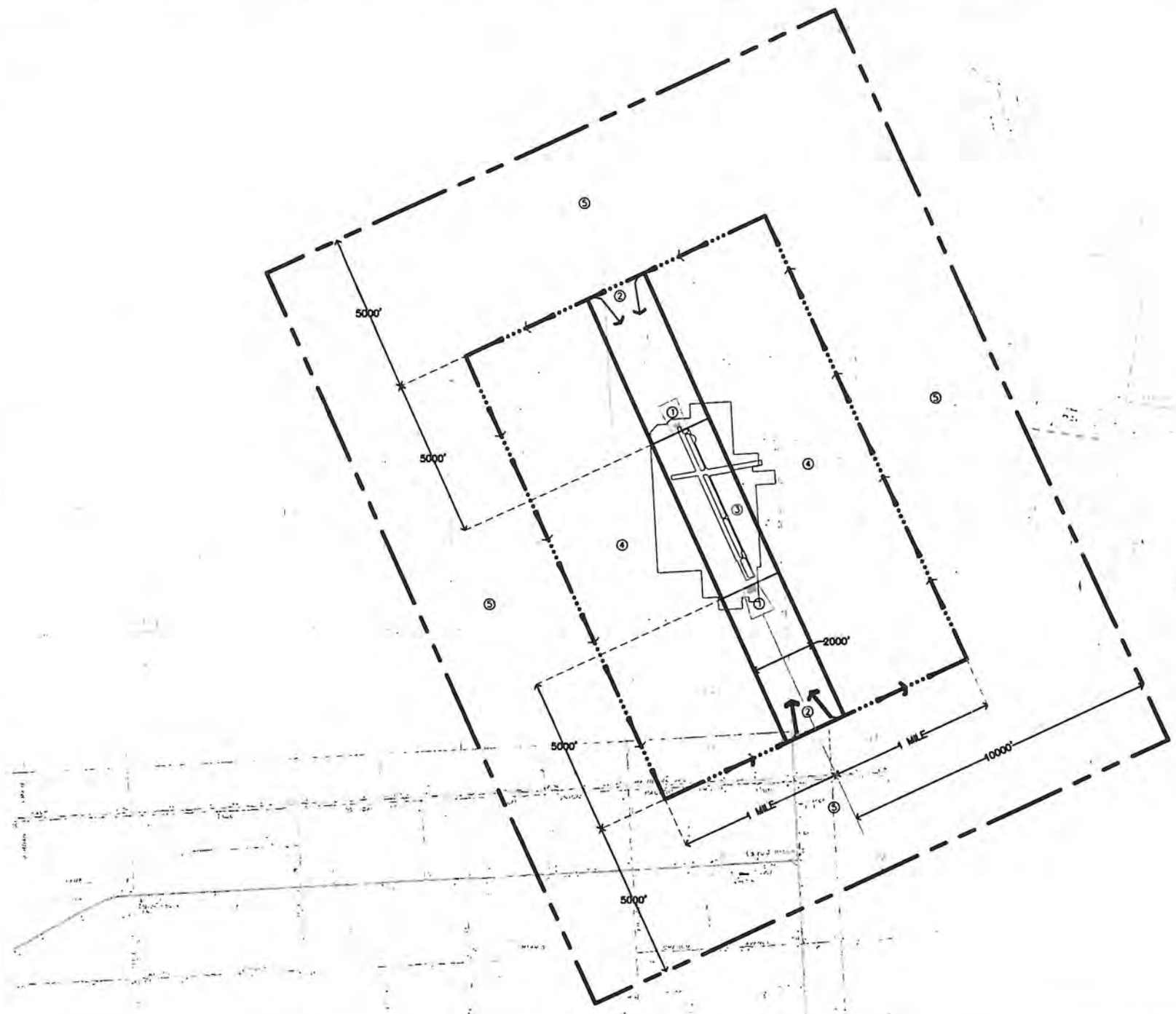
ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
RPZ (INNER APPROACH) PLAN

DATE: DEC 2007
PROJECT: 06184



NOTES

THIS AIRPORT LAND USE PLAN IS INTENDED TO BE USED BY THE AIRPORT'S SPONSORING AGENCY AND/OR OTHER AGENCIES SURROUNDING THE AIRPORT FOR COMPATIBLE LAND USE GUIDANCE. UNLESS ADOPTED BY SUCH AGENCIES, THE RECOMMENDATIONS CONTAINED HEREIN ARE NOT REGULATORY. IT IS HIGHLY RECOMMENDED THAT THE AIRPORT'S SPONSORING AGENCY AND OTHER SURROUNDING AGENCIES ENACT COMPREHENSIVE COMPATIBLE LAND USE POLICIES TO PROTECT BOTH THE AIRPORT AND SURROUNDING COMMUNITY FROM THE BY- PRODUCTS OF AIRPORT OPERATIONS INCLUDING, BUT NOT LIMITED TO, AIRCRAFT ACCIDENTS AND AIRCRAFT NOISE.

FEDERAL AVIATION REGULATION (FAR) PART 77 AND NOTICE OF PROPOSED CONSTRUCTION

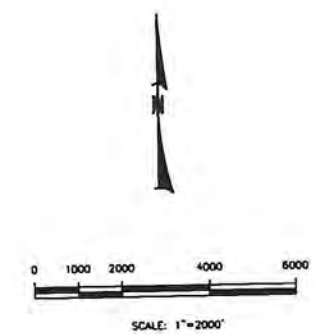
PER FAR PART 77, NOTICE OF PROPOSED CONSTRUCTION MUST BE SENT VIA, FAA FORM 7460-1, TO A PUBLIC-USE AIRPORT RUNWAY.

* ON AIRPORT CONSTRUCTION
* PROPOSED OBJECTS GREATER THAN 200 FEET ABOVE THE GROUND
* ANY PROPOSED OBJECT THAT PENETRATES A 100:1 IMAGINARY SURFACE WITHIN 20,000(3.8 MILES) OF A PUBLIC-USE AIRPORT RUNWAY

CURRENT ZONING IN EFFECT AROUND THE ONTARIO MUNICIPAL AIRPORT (SEE ALP NARRATIVE REPORT FOR DETAILS)

* MALHEUR COUNTY, ARTICLE L, AA AIRPORT APPROACH OVERLAY ZONE.
* CITY OF ONTARIO, CITY CODE, TITLE 10A, SUBSTANTIVE ZONE REGULATIONS, CHAPTER 10A-45, AO, AIRPORT DEVELOPMENT ZONE.

AIRPORT NOT IN OR AFFECTED BY FLOOD PLAIN
NO DOT SECTION 4F LAND IDENTIFIED IN THE VICINITY OF THE AIRPORT
NO AREAS IN THE VICINITY OF THE AIRPORT HAVE BEEN IDENTIFIED FOR SHPO COORDINATION
NO LANDFILLS ARE WITHIN 5 MILES OF THE AIRPORT



LEGEND

1. RUNWAY PROTECTION ZONE (RPZ)
2. APPROACH CRITICAL ZONE (ACZ)
3. LATERAL SAFETY ZONE (LSZ)
4. AIRPORT TRAFFIC PATTERN AREA (LEFT HANDED TRAFFIC)
5. AIRPORT INFLUENCE AREA

CONDITIONS

GENERAL

ALL PROPOSED CONSTRUCTION MUST SUBMIT FAA FORM 7460-1 TO THE FAA IF APPLICABLE PER THE REGULATION.

(1) DISCLOSURE OF AIRPORT PROXIMITY AND RECORDATION OF AVIOATION EASEMENT SHOULD BE REQUIRED AS A CONDITION OF DEVELOPMENT AND APPROVAL. DENSITY LIMITATIONS SHOULD BE CONSIDERED FOR RESIDENTIAL AND COMMERCIAL DEVELOPMENT.

(2) DISCLOSURE OF AIRPORT PROXIMITY SHOULD BE REQUIRED AS A CONDITION OF DEVELOPMENT AND APPROVAL. DENSITY LIMITATIONS SHOULD BE CONSIDERED FOR RESIDENTIAL AND COMMERCIAL DEVELOPMENT

(3) ONLY IF NO REASONABLE ALTERNATIVE EXISTS. SUCH A USE SHOULD BE LOCATED AS FAR AWAY FROM THE EXTENDED RUNWAY CENTERLINE AS FEASIBLE.

(4) SUCH USES MAY BE A BIRD ATTRACTANT WHICH MAY INTERFERE WITH THE SAFE OPERATION OF AIRCRAFT USING THE AIRPORT. IF APPROVED, APPROPRIATE MITIGATION MEASURES SHOULD BE REQUIRED AS A CONDITION OF APPROVAL.

RECOMMENDED LAND USE COMPATIBLITY GUIDELINES

X = NOT ALLOWED A = NORMALLY ACCEPTABLE C = CONDITIONAL

LAND USE COMPATIBILITY CRITERIA	① RUNWAY PROJECTION ZONE (RPZ)	② APPROACH CRITICAL ZONE (ACZ)	③ LATERAL SAFETY ZONE (LSZ)	④ TRAFFIC PATTERN AREA (TPA)	⑤ AIRPORT INFLUENCE AREA (AIA)
RESIDENTIAL					
SINGLE-FAMILY, MOBILE HOMES	X	X	X	C(1)	C(2)(3)
MULTI-FAMILY, APARTMENTS CONDOS, NURSING HOMES, HOTELS	X	X	X	C(1)	C(2)(3)
PUBLIC					
SCHOOLS, CHURCHES, HOSPITALS	X	X	X	C(1)	C(2)(3)
PARKING, CEMETARIES	X	A	A	A	A
COMMERCIAL AND INDUSTRIAL					
OFFICE, RETAIL TRADE, SERVICE COMMERCIAL	X	C(1)(3)	C(1)	A	A
WAREHOUSE, LIGHT INDUSTRIAL, MANUFACTURING	X	C(1)(3)	C(1)	A	A
EXTRACTIVE INDUSTRY	X	C(1)(3)	C(1)	A	A
AGRICULTURAL AND INTERNATIONAL					
CROPS AND/OR PASTURE LAND	A	A	A	A	A
LIVESTOCK BREEDING	X	A	X	A	A
PARKS, ZOOS, GOLF COURSES, RIDING STABLES	X	X	C(1)(4)	C(1)(4)	A
OUTDOOR SPECTATOR SPORTS	X	X	X	X	C(3)
AMPITHEATERS	X	X	X	X	C(3)
OPEN SPACE	A	A	A	A	A

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APPROVED: RWB

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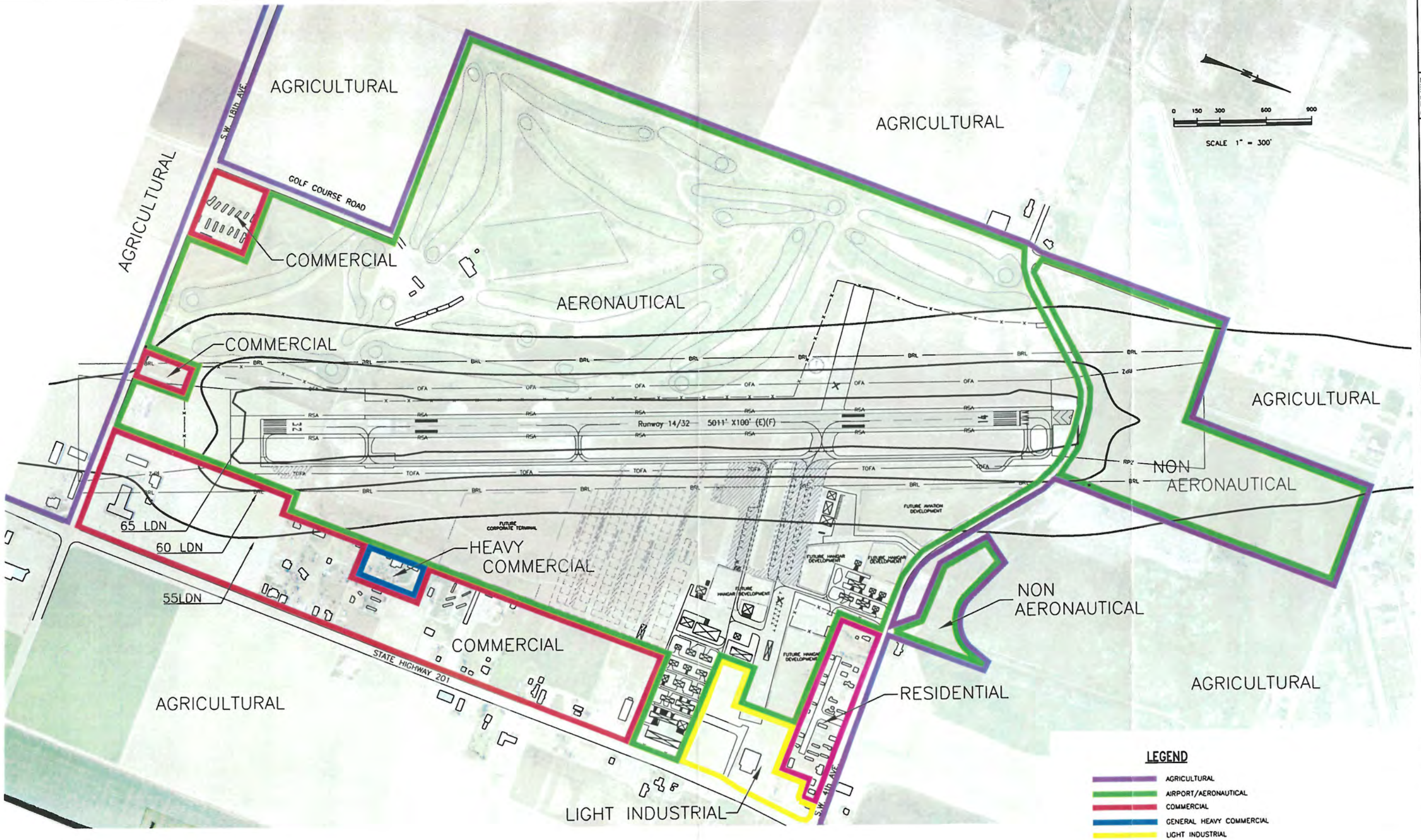
COEUR d'ALENE, IDAHO

ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
OFF-AIRPORT LAND USE PLAN

DATE: DEC 2007
PROJECT: 06184



NOTES

CURRENT ZONING IN EFFECT AROUND THE ONTARIO MUNICIPAL AIRPORT (SEE ALP NARRATIVE REPORT FOR DETAILS)

- MALHEUR COUNTY, ARTICLE L, AA AIRPORT APPROACH OVERLAY ZONE.
- CITY OF ONTARIO, CITY CODE, TITLE 10A, SUBSTANTIVE ZONE REGULATIONS, CHAPTER 10A-45, AD, AIRPORT DEVELOPMENT ZONE.

AIRPORT NOT IN OR AFFECTED BY FLOOD PLAIN
NO DOT SECTION 4F LAND IDENTIFIED IN THE VICINITY OF THE AIRPORT
NO AREAS IN THE VICINITY OF THE AIRPORT HAVE BEEN IDENTIFIED FOR SHPO COORDINATION
NO LANDFILLS ARE WITHIN 5 MILES OF THE AIRPORT

REVISIONS			
NO.	ITEM	DATE	

E-FILE NAME: 05184.dwg
DESIGNED: NSC
DRAWN: NSC
CHECKED: CMP
APPROVED: RDB

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COEUR d'ALENE, IDAHO

ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
ON AIRPORT LAND USE PLAN

DATE: DEC 2007
PROJECT: 05184
SHEET 7 OF 8

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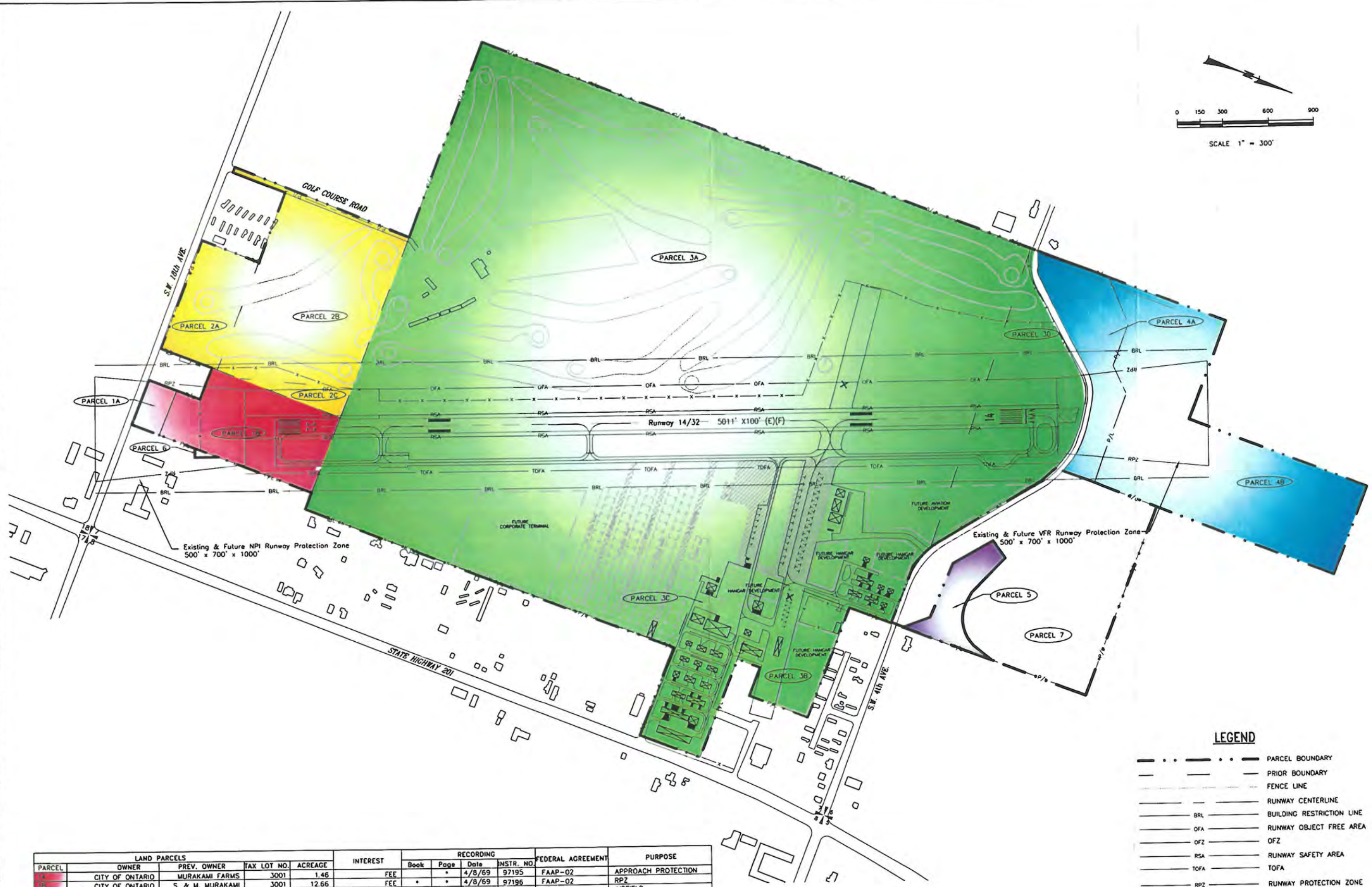

LAND PARCELS					INTEREST	RECORDING				FEDERAL AGREEMENT	PURPOSE
PARCEL	OWNER	PREV. OWNER	TAX LOT NO.	ACREAGE		Book	Page	Date	INSTR. NO.		
1A	CITY OF ONTARIO	MURAKAMI FARMS	3001	1.46	FEE	*	*	4/8/69	97195	FAAP-02	APPROACH PROTECTION
1B	CITY OF ONTARIO	S. & M. MURAKAMI	3001	12.66	FEE	*	*	4/8/69	97196	FAAP-02	RPZ
2A	CITY OF ONTARIO	TSURUYO NISHI ET VIR	3400	7.08	FEE	*	*	12/16/41	6061	AP-4	AIRFIELD
2B	CITY OF ONTARIO	IDA WATANABE ET VIR	3300	23.54	FEE	*	*	12/15/41	6062	AP-4	RIGHT OF WAY
2C	CITY OF ONTARIO	RAYMOND HASHITANI	3200	1.85	FEE	*	*	12/16/41	6060	AP-4	AIRFIELD
3A	CITY OF ONTARIO	MALHUER CO	4100	281.03	FEE	38	437	2/15/35	98480	AP-4	AIRFIELD
3B	CITY OF ONTARIO	MALHUER CO	4100	10	FEE	39	428	10/1/35	101054	AP-4	AIRPORT DEVELOPMENT
3C	CITY OF ONTARIO	A.W. CONOVER	4100	5	FEE	51	421	8/4/42	11314	AP-4	AIRPORT DEVELOPMENT
3D	CITY OF ONTARIO	EST OF BELLE LEES	4100	18.8	FEE	52	355	5/29/41	*	AP-4	AIRFIELD
4A	CITY OF ONTARIO	Wm. TOEDTER	500	9	FEE	*	*	2/20/42	7103	AP-4	AIRFIELD
4	CITY OF ONTARIO	C.H.& EDNA TOEDTER	500	N/A	EASEMENT	*	*	8/18/70	114094	FAAP-02	RPZ
4B	CITY OF ONTARIO	MONTGOMERY/SNOW	500	36.81	FEE	*	*	7/2006	*	N/A	APPROACH PROTECTION
5	CITY OF ONTARIO	STATE LAND BOARD	800	3.71	FEE	52	109	3/22/41	*	AP-4	APPROACH PROTECTION
6	CITY OF ONTARIO	MURAKAMI & LEE	*	N/A	EASEMENT	141	371	3/5/69		FAAP-02	RPZ
7	SNAKE RIVER SPORTSMAN	CITY OF ONTARIO	700	29.13	FEE	*	*	9/6/06	2006-6611	LAND RELEASE	APPROVED BY FAA 4/06

* INDICATES THAT DATA IS UNAVAILABLE

LEGEND

- PARCEL BOUNDARY
- PRIOR BOUNDARY
- FENCE LINE
- RUNWAY CENTERLINE
- BRL — BUILDING RESTRICTION LINE
- OFA — RUNWAY OBJECT FREE AREA
- OFZ — OFZ
- RSA — RUNWAY SAFETY AREA
- TOFA — TOFA
- RPZ — RUNWAY PROTECTION ZONE

GENERAL NOTES

Data contained in the Exhibit is based on recorded information and has not been surveyed.

NO.	REVISIONS ITEM	DATE

E-FILE NAME: 8810 Map
DESIGNED: MDG
DRAWN: MDG
CHECKED: CMP
APPROVED: JTB

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ONTARIO MUNICIPAL AIRPORT
CITY OF ONTARIO, OREGON
AIRPORT PROPERTY MAP EXHIBIT 'A'

DATE: DEC 2007
PROJECT: 05184

Glossary of Aviation Terms

abandoned runway: A runway permanently closed to all aircraft operations, which may be marked in accordance with current FAA standards for marking and lighting of deceptive, closed and hazardous areas on airports.

access taxiway: A taxiway that provides access to a particular location or area.

active aircraft: Aircraft registered with the FAA and reported or estimated to have been flown at least one hour during the preceding year.

active runway: The runway at an airport that is being used for landing, taxiing or takeoff operations.

actual runway length: The length of a full-width usable runway from end to end of full strength pavement where those runways are paved.

Advisory Circular (AC): A series of external FAA publications consisting of all non-regulatory material of a policy, guidance and informational nature.

AGL: Above Ground Level

aircraft: A device that is used or intended to be used for flight in the air (FAR Part 1).

aircraft approach category: A grouping of aircraft based on 1.3 times their stall speed in their landing configuration at their maximum certificated landing weight. The categories are as follows:

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

aircraft mix: The type of aircraft which are to be accommodated at the airport.

aircraft operations: The airborne movement (landing or take-off) of aircraft in controlled or uncontrolled airport terminal areas and about given en route fixes or at other points where counts can be made. There are two types of operations - local and itinerant.

local operations are performed by aircraft which: Operate in the local traffic pattern or within sight of the airport (if: training). Are known to be departing for or arriving from flight in local practice area within a 20-mile radius of the airport. Execute simulated instrument approaches or low passes at the airport.

itinerant operations are all aircraft operations other than local operations.

aircraft tiedowns: Positions on the ground surface that are available for securing aircraft.

Airplane Design Group (ADG): A grouping of planes based on their wingspan. The groups are as follows:

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 VI:214 feet up to but not including 262 feet.

airport: An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.

airport beacon: A visual navigation aid displaying alternating white and green Rashes to indicate a lighted airport or white flashes only for an unlighted airport.

airport elevation: The highest point of an airport's usable runways measured in feet above mean sea level.

airport imaginary surfaces: Imaginary surfaces established at an airport for obstruction determination purposes and consisting of primary, approach_departure, horizontal, vertical, conical, and transitional surfaces.

Airport Improvement Program (AIP): The Airport Improvement Program of the Airport and Airways Improvement Act of 1982 as amended by the Airport and Airway Safety and Capacity Expansion Act of 1987. Under this program, the FAA provides funding assistance for the planning, design and development of airports and airport facilities.

Airport Layout Plan (ALP): A graphic presentation, to scale, of existing and proposed airport facilities, their location on the airport, and the pertinent clearance and dimensional information required to show conformance with applicable standards. To be eligible for AIP funding assistance, an airport must have an FAA approved airport layout plan.

Airport Master Plan: Presents the planner's conception of the ultimate development of a specific airport. It presents the research and logic from which the plan was evolved and displays the plan in a graphic and written report.

Airport Reference Code (ARC): The ARC combines two separate factors of aircraft design (aircraft approach category and wingspan) into one code. The first designator, represented by letters A through E, is the "aircraft approach category" and relates to an aircraft's speed as it approaches an airport for landing. The second designator, represented by Roman numerals I through VI, is the airplane "design group", and relates to an aircraft's wingspan.

Airport Reference Point (ARP): The latitude and longitude of the approximate center of the airport.

airport sponsor: A public agency or tax-supported organization such as an airport authority, that is authorized to own and operate the 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.

airspace: Space in the air above the surface of the earth or a particular portion of such space, usually defined by the boundaries of an area on the surface projected upward.
approach and runway protection zone layout: A graphic- presentation to scale of the imaginary surfaces defined in FAR Part 77.

approach area: The defined area the dimensions of which are measured horizontally beyond the threshold over which the landing and takeoff operations are made.

approach slope ratio: The ration of horizontal to vertical distance indicating the degree of inclination of the approach surface.

Approach surface: An imaginary surface longitudinally centered on the extended centerline of the runway, beginning at the end of the primary surface and rising outward and upward to a specified height above the established airport elevation.

apron: A defined area, on a land airport, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance.

Automated Weather Observation System (AWOS):
This equipment automatically gathers weather data from various locations on an airport and transmits the information directly to pilots by means of computer generated voice messages over a discrete frequency.

avigation easement: A land use easement permitting the unlimited operation of aircraft in the airspace above the land area involved.

based aircraft: The total number of active general aviation aircraft which use or may be expected to use an airport as a "home base."

building area: An area on an airport to be used, considered, or intended to be used, for airport buildings or other airport facilities or rights-of-way, together with all airport buildings and facilities located thereon.

building restriction line (BRL): A line shown on the airport layout plan beyond which airport buildings must not be positioned in order to limit their proximity to aircraft movement areas.

commercial service: Commercial service airports are public use airports which receive scheduled passenger service aircraft, and which annually enplane 2,500 or more passengers.

conical surface: A surface extending from the periphery of the horizontal surface outward and upward at a slope of 20 to 1 for the horizontal distances and the elevations above the airport elevation as prescribed by FAR Part 77.

controlled airspace: Airspace in which some or all aircraft may be subject to air traffic control to promote safe and expeditious flow of air traffic.

crosswind: A wind blowing across the line of flight of an aircraft.

crosswind component: A wind component that is at a right angle to the longitudinal axis of the runway or the flight path of the aircraft.

crosswind runway: A runway additional to the primary runway to provide for wind coverage not adequately provided by the primary runway.

downwind leg: A flight path in the traffic pattern parallel to the landing runway in the direction opposite to landing. It extends to the intersection of the base leg.

executive aircraft operator: A corporation, company, or individual which operates owned or leased aircraft, flown by pilot(s) whose primary duties involve pilotage of aircraft, as a means of transportation or personnel or cargo in the conduct of company business.

exit taxiway: A taxiway used as an exit from a runway to the apron or other aircraft operating area.

FAR Part 77: Contains obstruction requirements at or near airports.

Federal Aviation Administration (FAA): Created by the act that established the Department of Transportation. Assumed all of the responsibilities of the former Federal Aviation Agency.

fixed base operator (FBO): An individual or company located at an airport, and providing commercial general aviation services.

flight plan: Specified information relating to the intended flight of an aircraft, which is filed orally or in writing with air traffic control.

fuel flowage fees: Fees levied by the airport operator per gallon of aviation gasoline and jet fuel sold at the airport.

general aviation: That portion of civil aviation which encompasses all facets of aviation except air carriers holding a certificate of convenience and necessity from the Civil Aeronautics Board, and large aircraft commercial operators.

general aviation airports: Those airports with fewer than 2,500 annual enplaned passengers and those used exclusively by private and business aircraft not providing common-carrier passenger service.

general aviation itinerant operations: Takeoffs and landings of civil aircraft (exclusive of air carrier) operating on other than local fights.

hangar: A building used to store one or more aircraft, and/or conduct aircraft maintenance.

horizontal surface: A specified portion of a horizontal plane located 150 feet above the established airport elevation which establishes the height above which an object is determined to be an obstruction to air navigation.

IFR airport: An airport with an authorized instrument approach procedure.

IFR conditions: Weather conditions below the minimum for flight under visual fight rules.

ILS Category I: An ILS which provides acceptable guidance information from the coverage limits of the ILS to the point at which the localizer course line intersects the glide path at a height of 100 feet above the horizontal plane containing the runway threshold. A Category I ILS supports landing minima as low as 200 ft. HAT and 1800 ft. RVR.

instrument approach: An approach to an airport, with intent to land, by an aircraft flying in accordance with an IFR flight plan, when the visibility is less than 3 miles and/or when the ceiling is at or below the minimum initial altitude.

instrument approach runway: A runway served by an electronic aid providing at least directional guidance adequate for a straight-in approach.

Instrument Flight Rules (IFR): Rules governing the procedures for conducting instrument flight. Pilots are required to follow these rules when operating in controlled airspace with a visibility of less than three miles and/or a ceiling lower than 1,000 feet.

Instrument Landing System (ILS): A system which provides in the aircraft, the lateral, longitudinal, and vertical guidance necessary for a landing.

itinerant operations: All aircraft arrivals and departures other than local operations.

jet noise: The noise generated externally to a jet engine in the turbulent jet exhaust.

landing gear: That part of an aircraft which is required for landing. Gear may be configured as Single Wheel Gear (SWG), Dual Wheel Gear (DWG), or Dual Tandem Wheel Gear (DTWG).

landing roll: The distance from the point of touchdown to the point where the aircraft can be brought to a stop, or exit the runway.

landside operations: Those parts of the airport designed to serve passengers including the terminal buildings, vehicular circular drive, and parking facilities.

land use plan: Shows on-airport land uses as developed by the airport sponsor under the master plan effort and off-airport land uses as developed by surrounding communities.

large aircraft: Aircraft of more than 12,500 pounds maximum certificated takeoff weight.

Ldn: A quantity indicating a day-night noise exposure level calculated using the Ldn noise-forecasting methodology. This quantity can be used to predict community response to projected levels of aircraft activity.

local traffic: Aircraft operating in the local traffic pattern or within sight of the tower, or aircraft known to be departing for or arriving from flight in local practice areas, or aircraft executing simulated instrument approaches at the airport.

location map: Shown on the airport layout plan drawing, it depicts the airport, cities, railroads, major highways, and roads within 20 to 50 miles of the airport.

marking: On airports, a pattern of contrasting colors placed on the pavement, turf, or other usable surface by paint or other means to provide specific information to aircraft pilots and sometimes to operators of ground vehicles, on the movement areas.

minimums: Minimum altitude a pilot can descend to when conducting an instrument approach. Also refers to the minimum visibility a pilot must have to initiate an instrument approach.

MIRL: Medium Intensity Runway Lighting.

Multi-engine aircraft: Reciprocating, turbo-prop or jet powered fixed wing aircraft having more than one engine.

municipally operated airport: An airport owned by a city and run as a department of the city, with policy direction by the city council and, in some cases, by a separate airport commission or advisory board.

National Plan of Integrated Airport Systems (NPIAS): A plan prepared by the FAA which identifies, for the Congress and the public, the composition of a national system of airports together with the airport development necessary to anticipate and meet the present and future needs of civil aeronautics, to meet requirements in support of the national defense, and to meet the special needs of the postal service. The plan includes both new facilities and qualitative improvements to existing airports to increase their capacity, safety, technological capability, etc.

NAVAID: Any facility used as, available for use as, or designed for use as an aid to air navigation, including landing areas, lights, any apparatus or equipment for disseminating weather information, for signaling, for radio direction-finding, or for radio or other electronic communication, and any other structure or mechanism having similar purpose and controlling flight in the air or the landing or takeoff of aircraft.

navigable airspace: Airspace at and above the minimum flight altitudes prescribed in the FARs, including airspace needed for safe takeoff and landing.

non-precision instrument runway: A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance for which straight-in non-precision instrument approach procedure has been approved.

non-precision approach procedure: A standard instrument approach procedure in which no electronic glide slope is provided.

non-precision instrument approach aid: An electronic aid designed to provide an approach path for aligning an aircraft on its final approach to a runway. It lacks the high accuracy of the precision approach equipment and does not provide descent guidance. The VHF Omnirange (VOR) and the non-directional beacon (NDB) are two examples of non-precision instrument equipment.

Notice to Airmen (NOTAM): A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure) of, or hazard in the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.

obstruction: An object which penetrates an imaginary surface described in the FAA's Federal Aviation Regulation (FAR) Part 77.

parking apron: An apron intended to accommodate parked aircraft.

pavement structure: The combination of runway base and subbase courses and surface course which transmits the traffic load to the subgrade.

pavement subgrade: The upper part of the soil, natural or constructed, which supports the loads transmitted by the runway pavement structure.

pavement surface course: The top course of a pavement, usually Portland cement concrete or bituminous concrete, which supports the traffic load.

precision approach: A standard instrument approach using a precision approach procedure. See precision approach procedure.

Precision Approach Path Indicator (PAPI): A system of lights on an airport that provides visual descent guidance to the pilot of an aircraft approaching a runway.

precision approach procedure: A standard instrument approach procedure in which an electronic glide slope is provided, such as ILS and PAR.

Primary Surface: A rectangular surface longitudinally centered about a runway. Its width is a variable dimension and it usually extends 200 feet beyond each end of the runway. The elevation of any point on this surface coincided with the elevation of its nearest point on the runway centerline or extended runway centerline.

public airport: An airport for public use, publicly owned and under control of a public agency.

ramp: A defined area, on a land airport, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refueling, parking, or maintenance.

rotating lighted beacon: An airport aid allowing pilots the ability to locate an airport while flying under VFR conditions at night.

runway: A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length.

runway bearing: The magnetic or true bearing of the runway centerline as measured from magnetic or true north.

runway configuration: Layout or design of a runway or runways, where operations on the particular runway or runways being used at a given time are mutually dependent. A large airport can have two or more runway configurations operating simultaneously.

runway direction number: A whole number to the nearest tenth of the magnetic bearing of the runway and measured in degrees clockwise from magnetic north.

runway end identification lights (REIL): An airport lighting facility in the terminal area navigation system consisting of one flashing white high intensity light installed at each approach end corner of a runway and directed toward the approach zone, which enables the pilot to identify the threshold of a usable runway.

runway environment: The runway threshold or approach lighting aids or other markings identifiable with the runway.

runway gradient (effective): The average gradient consisting of the difference in elevation of the two ends of the runway divided by the runway length may be used provided that no intervening point on the runway profile lies more than 5 feet above or below a straight line joining the two ends of the runway. In excess of 5 feet, the runway profile will be segmented and aircraft data will be applied for each segment separately.

runway lights: Lights having a prescribed angle of emission used to define the lateral limits of a runway. Runway light intensity may be controllable or preset, and are uniformly spaced at intervals of approximately 200 feet.

runway markings: (1) Basic marking-markings on runways used for operations under visual flight rules, consisting of centerline marking and runway direction numbers, and if required, letters. (2) Instrument marking-markings on runways served by nonvisual navigation aids and intended for landings under instrument weather conditions, consisting of basic marking plus threshold marking. (3) All-weather marking- markings on runways served by nonvisual precision approach aids and on runways having special operational requirements, consisting of instrument markings plus landing zone marking and side strips.

runway orientation: The magnetic bearing of the centerline of the runway.

runway protection zone (formerly called the "clear zone"): A runway protection zone is a trapezoidal area at ground level, under the control of the airport authorities, for the purpose of protecting the safety of approaches and keeping the area clear of the congregation of people. The runway protection zone begins at the end of each primary surface and is centered upon the extended runway centerline.

runway safety area: A runway safety area is a rectangular area, centered on the runway centerline, which includes the runway (and stopway, if present) and the runway shoulders. The portion abutting the edge of the runway shoulders, runway ends, and stopways is cleared, drained, graded, and usually turfed. Under normal conditions, the runway safety area is capable of supporting snow removal, firefighting, and rescue equipment and accommodating the occasional passage of aircraft without causing major damage to the aircraft.

runway strength: The assumed ability of a runway to support aircraft of a designated gross weight for each of single-wheel, dual-wheel, and dual-tandem-wheel gear types.

segmented circle: A system of visual indicators designed to provide traffic pattern information at an airport without an operating control tower.

shoulder: As pertaining to airports, an area adjacent to the edge of a paved surface so prepared to provide a transition between the pavement and the adjacent surface for aircraft running off the pavement, for drainage and sometimes for blast protection.

single runway: An airport having one runway.

small aircraft: Aircraft of 12,500 pounds or less maximum certificated takeoff weight.

straight-in approach (IFR): An instrument approach wherein final approach is commenced without first having executed a procedure turn (not necessarily completed with a straight-in landing).

straight-in approach (VFR): Entry into the traffic pattern by interception of the extended runway centerline without executing any other portion of the traffic pattern.

taxiway: A defined path, usually paved, over which aircraft can taxi from one part of an airport to another.

taxiway safety area: A cleared, drained and graded area, symmetrically located about the extended taxiway centerline and adjacent to the end of the taxiway safety area.

terminal area: The area used or intended to be used for such facilities as terminal and cargo buildings, gates, hangars, shops and other service buildings; automobile parking, airport motels and restaurants, and garages and vehicle service facilities used in connection with the airport; and entrance and service roads used by the public within the boundaries of the airport.

T-hangar: An aircraft hangar in which aircraft are parked alternately tail to tail, each in the T-shaped space left by the other row of aircraft or aircraft compartments.

threshold: The designated beginning of the runway that is available and suitable for the landing of airplanes.

threshold crossing height (TCH): The height of the straight-line extension of the visual or electronic glide slope above the runway threshold.

threshold lights: Lighting arranged symmetrically about the extended centerline of the runway identifying the runway threshold. They emit a fixed green light.

total operations: All arrivals and departures performed by military, general aviation and air carrier aircraft.

touchdown: (1) The point at which an aircraft first makes contact with the landing surface. (2) In a precision radar approach, the point on the landing surface toward which the controller issues guidance instructions.

touchdown zone: The area of a runway near the approach end where airplanes normally align.

traffic pattern: The traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from an airport. The usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

transient: Operations or other activity performed by aircraft not based at the airport.
transitional surface: A surface which extends outward and upward from the sides of the primary and approach surfaces normal to the runway centerline which identifies the height limitations on an object before it becomes an obstruction to air navigation.

turning radius: The radius of the arc described by an aircraft in making a self-powered turn, usually given as a minimum.

UNICOM: Frequencies authorized for aeronautical advisory services to private aircraft. Only one such station is authorized at any landing area. The frequency 123.0 MHz is used at airports served by airport traffic control towers, and 122.8 MHz is used for other landing areas. Services available are advisory in nature, primarily concerning the airport services and airport utilization.

utility airport (or runway): An airport (or runway) which accommodates small aircraft excluding turbojet powered aircraft.

VFR airport: An airport without an authorized or planned instrument approach procedure.

VHF Omnidirectional Range (VOR): A radio transmitter facility in the navigation system radiating a VHF radio wave modulated by two signals, the relative phases of which are compared, resolved and displayed by a compatible airborne receiver to give the pilot a direct indicating of bearing relative to the facility.

vicinity map: Shown on the airport layout plan drawing, it depicts the relationship of the airport to the city or cities, nearby airports, roads, railroads, and built-up areas.

visual approach: An approach wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having an air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

visual approach aid: Any device, light, or marker used to provide visual alignment and/or descent guidance on final approach to a runway. Also see REIL, VASI.

Visual Flight Rules (VFR): Rules that govern the procedures for conducting flight under visual conditions (FAR Part 91).

visual runway: A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan, a military service approved military airport layout plan, or by a planning document submitted to the FAA by competent authority (FAR Part 77).

VORTAC: Very High Frequency Omni Range Facility (VOR co-located with a Tactical Air Navigation (TACAN) facility.

wind cone: A free-rotating fabric truncated cone which when subjected to air movement indicates wind direction and wind force.

windrose: A diagram for a given location showing relative frequency and velocity of wind from all compass directions.

Zulu time (Z): Time at the prime meridian in Greenwich, England.

CHAPTER 10A-45, AD, AIRPORT DEVELOPMENT ZONE

10A-45-01 PURPOSE. The airport development (AD) Zone is intended to protect airport facilities from incompatible uses; to provide for future airport expansion; and to insure compatibility at the airport with adjacent land use.

10A-45-05 PRINCIPAL PERMITTED USES. The following principal uses are permitted as of right in the AD Zone:

1. Agriculture and farm uses.
2. Air cargo terminals.
3. Aircraft sales, repair, service, storage, and schools relating to aircraft operations.
4. Facilities on the airport property essential for the operation of airports, such as fuel storage, hangers, fixed base operator office.
5. Passenger terminals.
6. Public facilities or services.
7. Snack bar for airport patrons, with total floor area not to exceed 1,000 square feet.
8. Open spaces.
9. Public parking and /or auto or vehicular storage.

10A-45-10 CONDITIONAL USES. The following uses are permitted conditionally in the AD Zone.

1. Golf course, park, or other recreation facilities.
2. Community service facilities owned and operated by a government agency or nonprofit organization.
3. Other uses where ongoing operations and the use thereof are directly dependent upon or associated with the airport.
4. Warehousing and storage facilities, including mini-warehouses.
5. Eating establishment.

10A-45-15 ACCESSORY USES.Accessory uses. Accessory uses and structures common to all zones as listed in chapter 10A-53 are allowed in the BP Zone.

10A-45-20 SPACE LIMITS AND PERFORMANCE STANDARDS. The building, development site and accessory uses shall be subject to the following additional standards:

1. Lot size. There shall be no minimum lot size, width, or depth provided that minimum landscaping, setback, loading, and off street parking requirements are satisfied.
2. Building Setbacks. Front yard, side yard, and rear yard setbacks are not required except where the property line abuts, faces, or adjoins a residential zone. Property abutting, facing, or adjoining a

residential zone shall be set back a minimum of 50 feet to provide a buffer strip from adjoining residential uses. Said buffer strip shall be landscaped with trees and shrubs to minimize the visual and noise impact on the adjacent residential use.

3. All uses in an AD Zone shall be subject to the site plan review provisions of this title, and shall comply with all applicable site and performance standards in the general provisions chapter of this Title.

4. Building or landscaping materials shall not produce glare which may conflict with any present or planned operations of the airport.

5. No use may produce electromagnetic interference which may conflict with any present or planned operations of the airport.

6. No use shall cause, encourage, foster, or promote the attraction, increase, or collection of fowl or birds.

7. No structure or obstructing vegetative growth shall be constructed or permitted in the clear zone as defined and mapped in the Ontario Airport Master Plan.

8. Ongoing operations or uses must be directly dependent upon or directly associated with the airport, except for the specified permitted recreational and open space uses.

9. Uses shall not conflict with any present or planned operations of the airport.

10. Uses shall comply with any and all applicable requirements of this Title, and all other applicable portions of the City Code.

11. An aviation easement acceptable to the City shall be executed by all uses prior to any construction or occupancy of said uses.

12. Storage of animal, vegetable, or other wastes which attract insects, rodents or birds, or otherwise create hazards, shall be prohibited.

13. There shall be no emissions of smoke, fly ash, dust, vapor, gases, or other forms of air pollution that may cause nuisance, impair visibility, or cause injury to human, plant, animal life, or property, or that may conflict with any present or planned operations of the airport.

14. Sign lighting and exterior lighting shall not project directly into any adjoining residential zone.

15. Unless necessary for safe and convenient air travel, sign lighting and exterior lighting shall not project directly onto airport runways, taxiways, or approach zones.

16. There shall be a minimum of ten percent of any lot area devoted to landscaping.

17. Uses which abut a residential zone shall provide and maintain a dense evergreen landscape buffer, site obscuring fence, or landscaped berm, which must attain a mature height of at least six feet.

18. All open and non-landscaped portions of any site shall be graded for proper drainage, and maintained in a good condition free from weeds, trash, and debris.

19. Construction of "T" hangers does not require the installation of landscaping; however, construction of auto parking areas for any permitted or conditional use will require the installation of landscaping as specified above.

10A-45-25 MISCELLANEOUS PROVISIONS. The provisions of Chapter 10A-57, Miscellaneous Provisions, when not in conflict with the performance standards of this zone shall apply to all developments in the AD Zone.

SAMPLE
FAIR DISCLOSURE STATEMENT

A disclosure statement, adhering to the form of the statement below, shall be provided to and signed by each potential purchaser of property within the Ontario Municipal Airport, Airport Development Zone as shown on the approved Ontario Municipal Airport Land Use Plan Drawing. The signed statement will then be affixed by the Seller to the agreement of the sale.

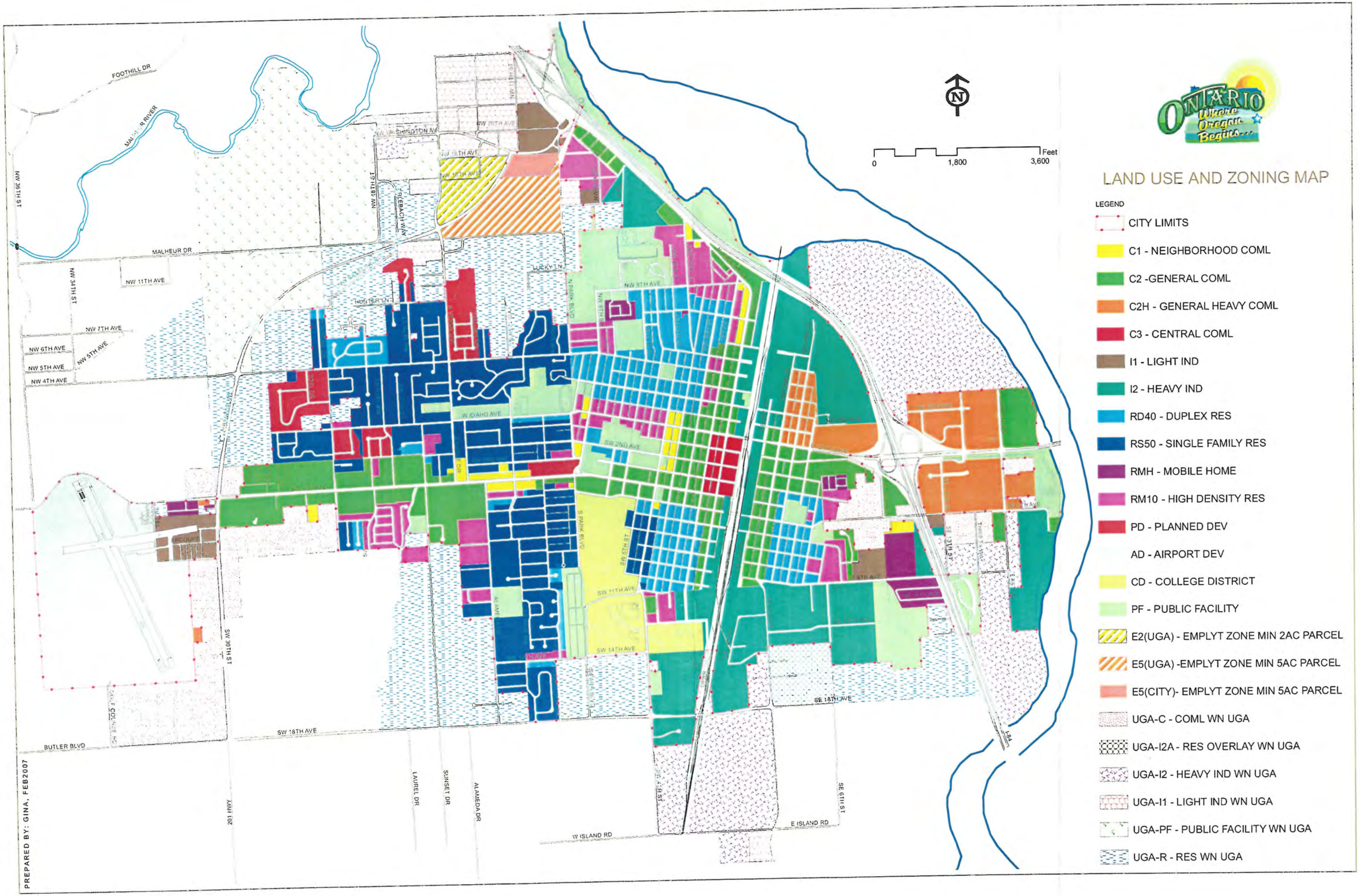
The tract of land situated at _____in _____ , consisting of approximately _____ acres which is being conveyed from _____to _____lies within _____ miles of the Ontario Municipal Airport may be subjected to aircraft overflight both now and in the future. Airport operations are expected to increase and the fleet mix of aircraft operating at the airport may change as industry and community needs change, as the same is shown and depicted on the official Zoning Maps.

CERTIFICATION

The undersigned purchaser(s) of said tract of land certify(ties) that (he) (they) (has) (have) read the above disclosure statement and acknowledge(s) the pre-existence of the airport named above and the overflight exposure due to the operation of said airport.

_____

(Signed)


LAND USE AND ZONING MAP
LEGEND
CITY LIMITS
C1 - NEIGHBORHOOD COML
C2 -GENERAL COML
C2H - GENERAL HEAVY COML
C3 - CENTRAL COML
I1 - LIGHT IND
I2 - HEAVY IND
RD40 - DUPLEX RES
RS50 - SINGLE FAMILY RES
RMH - MOBILE HOME
RM10 - HIGH DENSITY RES
PD - PLANNED DEV
AD - AIRPORT DEV
CD - COLLEGE DISTRICT
PF - PUBLIC FACILITY
E2(UGA) - EMPLYT ZONE MIN 2AC PARCEL
E5(UGA) -EMPLYT ZONE MIN 5AC PARCEL
E5(CITY)- EMPLYT ZONE MIN 5AC PARCEL
UGA-C - COML WN UGA
UGA-I2A - RES OVERLAY WN UGA
UGA-I2 - HEAVY IND WN UGA
UGA-I1 - LIGHT IND WN UGA
UGA-PF - PUBLIC FACILITY WN UGA
UGA-R - RES WN UGA
0
1,800
3,600
Feet
N
ONTARIO
Where Oregon Begins...
FOOTHILL DR
MALHEUR RIVER
NW 36TH ST
MALHEUR DR
NW 11TH AVE
NW 34TH ST
NW 7TH AVE
NW 6TH AVE
NW 5TH AVE
NW 4TH AVE
NW 18TH ST
NW 20TH AVE
NW 15TH AVE
NW 10TH AVE
NW 9TH AVE
LUCKY LN
HUNTER LN
W IDAHO AVE
SW 2ND AVE
S PARK BLVD
SW 11TH AVE
SW 14TH AVE
SW 30TH ST
SW 18TH AVE
BUTLER BLVD
LAUREL DR
SUNSET DR
ALAMEDA DR
HWY 201
W ISLAND RD
E ISLAND RD
SE 18TH AVE
SE 6TH ST
I-84
PREPARED BY: GINA, FEB2007

ARTICLE L. AA AIRPORT APPROACH OVERLAY ZONE

6-3L-1: PURPOSE:

In order to carry out the provisions of this overlay zone, there are hereby created and established certain zones which include all the land lying beneath the airport imaginary surfaces as they apply to all currently existing or future public use airports in Malheur County.

Further, this overlay zone is intended to prevent the establishment of air space obstructions in air approaches through height restrictions and other land use controls as deemed essential to protect the health, safety and welfare of the people of Malheur County. (Ord. 86, 12-7-1993)

6-3L-2: COMPLIANCE:

In addition to complying with the provisions of the primary zoning district, uses and activities shall comply with the provisions of this overlay zone. In the event of any conflict between any provisions of this overlay zone and the primary zoning district, the more restrictive provision shall apply. (Ord. 86, 12-7-1993)

6-3L-3: SPECIAL DEFINITIONS:

AIRPORT APPROACH SAFETY ZONE: A fan-shaped area twenty feet (20') outward for each foot upward (20:1), two hundred fifty feet (250') wide beginning two hundred feet (200') beyond the end of and at the same elevation as the runway and extending to horizontal distance of five thousand feet (5,000') along the extended runway center line to a width of one thousand two hundred fifty feet (1,250').

AIRPORT HAZARD: Any structure, tree or use of land which exceeds height limits established by the airport imaginary surfaces.

AIRPORT IMAGINARY SURFACES: Those imaginary areas in space which are defined by the airport approach safety zone, transitional zones, horizontal zone, clear zone and conical surface and in which any object extending above these imaginary surfaces is an obstruction.

CLEAR ZONE: Extended from the primary surface to a point where the approach surface is fifty feet (50') above the runway end elevation.

CONICAL SURFACE: Extends one foot (1') upward for each twenty feet (20') outward (20:1) for four thousand feet (4,000') beginning at the edge of the horizontal surface (5,000 feet from the end of the runway at 150 feet above the airport elevation) and upward extending to a height of three hundred fifty feet (350') above the airport elevation.

HORIZONTAL ZONE: A horizontal plane one hundred fifty feet (150') above the established airport elevation, the perimeter of which is constructed by swinging arcs of five thousand feet (5,000') from the center of each of the primary surfaces of each runway and connecting the adjacent arcs by linestangent to those arcs.

NOISE IMPACT: Noise levels exceeding fifty five (55) Ldn.

PLACE OF PUBLIC ASSEMBLY: A structure or place which the public may enter for such purposes as deliberation, education, worship, shopping, entertainment, amusement, awaiting transportation or similar activity.

TRANSITIONAL ZONES: Extended one foot (1') upward for each seven feet (7') outward (7:1) beginning one hundred twenty five feet (125') on each side of the runway center line (primary surface), which point is the same elevation as the

runway surface, and from the sides of the approach surfaces thus extending upward to a height of one hundred fifty feet (150') above the airport elevation (horizontal surface). (Ord. 86, 12-7-1993)

6-3L-4: PERMITTED USES:

A. Farm use, excluding the raising and feeding of animals which would be adversely affected by aircraft passing overhead.

B. Landscape nursery, cemetery or recreation areas which do not include buildings or structures.

C. Roadways, parking areas and storage yards located in such a manner that vehicle lights will not make it difficult for pilots to distinguish between landing lights and vehicle lights or result in glare, or in any way impair visibility in the vicinity of the landing approach. Approach surfaces must clear these areas by a minimum of fifteen feet (15').

D. Pipeline.

E. Underground utility wire. (Ord. 86, 12-7-1993)

6-3L-5: CONDITIONAL USES:

A. A structure or building accessory to a permitted use.

B. A single-family dwelling, when authorized in the primary zoning district, provided the landowner signs and records in the deed and mortgage records of Malheur County a hold harmless agreement and aviation and hazard easement and submits them to the airport sponsor and County Planning Department.

C. Commercial and industrial uses, when authorized in the primary zoning district, provided the use does not result in the following:

1. Creating electrical interference with navigational signals or radio communication between the airport and aircraft.
2. Making it difficult for pilots to distinguish between airport lights or others.
3. Impairing visibility.
4. Creating bird strike hazards.
5. Endangering or interfering with the landing, taking off or maneuvering of aircraft intending to use the airport.
6. Attracting a large number of people. (Ord. 86, 12-7-1993)

6-3L-6: PROCEDURES:

An applicant seeking a conditional use under Section 6-3L-5 of this Chapter shall follow procedures set forth in the urban growth management plan/agreement between the respective city and Malheur County. Information accompanying the application shall also include the following:

A. Property boundary lines as they relate to the airport imaginary surfaces;

B. Location and height of all existing and proposed buildings, structures, utility lines and roads; and a

C. Statement from the Oregon Aeronautics Division indicating that the proposed use will not interfere with operation of the landing facility. (Ord. 86, 12-7-1993)

6-3L-7: LIMITATIONS:

A. To meet the standards and reporting requirements established in FAA Regulations, part 77, no structure shall penetrate into the airport imaginary surfaces as defined above under Section 6-3L-3 of this Article.

B. No place of public assembly shall be permitted in the airport approach safety zone.

C. No structure or building shall be allowed within the clear zone.

D. Whenever there is a conflict in height limitations prescribed by this overlay zone and the primary zoning district, the lowest height limitation fixed shall govern; provided, however, that the height limitations here imposed shall not apply to such structures customarily employed for aeronautical purposes.

E. No glare producing materials shall be used on the exterior of any structure located within the airport approach safety zone. (Ord. 86, 127-1993)

Appendix D

Model Public Use Airport Safety and Compatibility Overlay Zone for Public Use Airports with Instrument Approaches

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MODEL PUBLIC USE AIRPORT SAFETY AND COMPATIBILITY OVERLAY ZONE FOR PUBLIC USE AIRPORTS WITH INSTRUMENT APPROACHES

.010 **Purpose.** The purpose of this overlay zone is to encourage and support the continued operation and vitality of public use airports with instrument approaches by establishing compatibility and safety standards to promote air navigational safety at such public use airports and to reduce potential safety hazards for persons living, working or recreating near such public use airports. [ORS 836.600; ORS 836.619; OAR 660-013-0070; OAR 660-013-0080]

.020 **Definitions.** [ORS 836.605; ORS 836.623(6); OAR 660-013-0020; OAR 660-013- 0070(1)(a), (b); OAR 660-013-0080(1)(a)]

Airport. The strip of land used for taking off and landing aircraft, together with all adjacent land used in connection with the aircraft landing or taking off from the strip of land, including but not limited to land used for existing airport uses.

Airport Direct Impact Area. The area located within 5,000 feet of an airport runway, excluding lands within the runway protection zone and approach surface.

Airport Elevation. The highest point of an airport's usable runway, measured in feet above mean sea level.

Airport Imaginary Surfaces. Imaginary areas in space and on the ground that are established in relation to the airport and its runways. Imaginary areas are defined by the primary surface, runway protection zone, approach surface, horizontal surface, conical surface and transitional surface.

Airport Noise Impact Boundary. Areas located within 1,500 feet of an airport runway or within established noise contour boundaries exceeding 55 Ldn.

Airport Secondary Impact Area. The area located between 5,000 and 10,000 feet from an airport runway.

Airport Sponsor. The owner, manager, or other person or entity designated to represent the interests of an airport.

Approach Surface. A surface longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface.

(A) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(1) 2,000 feet for a utility runway having a non-precision instrument approach;

(2) 3,500 feet for a non-precision instrument runway, other than utility, having visibility minimums greater than three-fourths statute mile;

(3) 4,000 feet for a non-precision instrument runway, other than utility, having visibility minimums at or below three-fourths statute mile; and

(4) 16,000 feet for precision instrument runways.

(B) The approach surface extends for a horizontal distance of:

(1) 5,000 feet at a slope of 20 feet outward for each foot upward for all utility runways;

(2) 10,000 feet at a slope of 34 feet outward for each foot upward for all non-precision instrument runways, other than utility; an

(3) 10,000 feet at a slope of 50 feet outward for each one foot upward, with an additional 40,000 feet at slope of 40 feet outward for each one foot upward, for precision instrument runways.

(C) The outer width of an approach surface will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

Conical Surface. A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Department of Aviation. The Oregon Department of Aviation, formerly the Aeronautics Division of the Oregon Department of Transportation.

FAA. The Federal Aviation Administration.

FAA's Technical Representative. As used in this ordinance, the federal agency providing the FAA with expertise on wildlife and bird strike hazards as they relate to airports. This may include, but is not limited to, the USDA-APHIS-Wildlife Services.

Height. The highest point of a structure or tree, plant or other object of natural growth, measured from mean sea level.

Horizontal Surface. A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(A) 5,000 feet for all runways designated as utility.

(B) 10,000 feet for all other runways.

(C) The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway. When a 5,000 foot arc is encompassed by tangents connecting two adjacent 10,000 foot arcs, the 5,000 foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

Non-precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach has been approved, or planned, and for which no precision approach facilities are planned or indicated on an FAA-approved airport layout plan or other FAA planning document.

Obstruction. Any structure or tree, plant or other object of natural growth that penetrates an imaginary surface.

Other than Utility Runway. A runway that is constructed for and intended to be used by turbine driven aircraft or by propeller-driven aircraft exceeding 12,500 pounds gross weight.

Precision Instrument Runway. A runway having an existing instrument approach procedure utilizing air navigation facilities that provide both horizontal and vertical guidance, such as an Instrument Landing System (ILS) or Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan or other FAA planning document.

Primary Surface. A surface longitudinally centered on a runway. When a runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway. When a runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is:

(A) 500 feet for utility runways having non-precision instrument approaches,

(B) 500 feet for other than utility runways having non-precision instrument approaches with visibility minimums greater than three-fourths statute mile, and

(C) 1,000 feet for non-precision instrument runways with visibility minimums at or below three-fourths statute mile, and for precision instrument runways.

Public Assembly Facility. A permanent or temporary structure or facility, place or activity where concentrations of people gather in reasonably close quarters for purposes such as deliberation, education, worship, shopping, employment, entertainment, recreation, sporting events, or similar activities. Public assembly facilities include, but are not limited to, schools, churches, conference or convention facilities, employment and shopping centers, arenas, athletic fields, stadiums, clubhouses, museums, and similar facilities and places, but do not include parks, golf courses or similar facilities unless used in a manner where people are concentrated in reasonably close quarters. Public assembly facilities also do not include air shows, structures or uses approved by the FAA in an adopted airport master plan, or places where people congregate for short periods of time such as parking lots or bus stops.

Runway. A defined area on an airport prepared for landing and takeoff of aircraft along its length.

Runway Protection Zone (RPZ). An area off the runway end used to enhance the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. The inner width of the RPZ is the same as the width of the primary surface. The outer width of the RPZ is a function of the type of aircraft and specified approach visibility minimum associated with the runway end. The RPZ extends from each end of the primary surface for a horizontal distance of:

(A) 1,000 feet for utility runways.

(B) 1,700 feet for other than utility runways having non-precision instrument approaches.

(C) 2,500 feet for precision instrument runways.

[NOTE: the outer width of the RPZ is specified by airport type in OAR 660, Division 13, Exhibit 4]

Significant. As it relates to bird strike hazards, "significant" means a level of increased flight activity by birds across an approach surface or runway that is more than incidental or occasional, considering the existing ambient level of flight activity by birds in the vicinity.

Structure. Any constructed or erected object which requires location on the ground or is attached to something located on the ground. Structures include but are not limited to buildings, decks, fences, signs, towers, cranes, flagpoles, antennas, smokestacks, earth formations and overhead transmission lines. Structures do not include paved areas.

Transitional Surface. Those surfaces that extend upward and outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to the point of intersection with the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at a 90 degree angle to the extended runway centerline.

Utility Runway. A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight or less.

Visual Runway. A runway intended solely for the operation of aircraft using visual approach procedures, where no straight-in instrument approach procedures or instrument designations have been approved or planned, or are indicated on an FAA-approved airport layout plan or any other FAA planning document.

Water Impoundment. Includes wastewater treatment settling ponds, surface mining ponds, detention and retention ponds, artificial lakes and ponds, and similar water features. A new water impoundment includes an expansion of an existing water impoundment except where such expansion was previously authorized by land use action approved prior to the effective date of this ordinance.

.030 Imaginary Surface and Noise Impact Boundary Delineation. The airport elevation, the airport noise impact boundary, and the location and dimensions of the runway, primary surface, runway protection zone,

approach surface, horizontal surface, conical surface and transitional surface shall be delineated for each airport subject to this overlay zone and shall be made part of the Official Zoning Map. **[NOTE: Airports utilizing best management practices should include direct and secondary impact boundaries in this list.]** All lands, waters and airspace, or portions thereof, that are located within these boundaries or surfaces shall be subject to the requirements of this overlay zone. [ORS 836.619; OAR 660-013-0040(8); OAR 660-013-0070(1); OAR 660-013-0080(1)]

.040 **Notice of Land Use and Permit Applications within Overlay Zone Area.** Except as otherwise provided herein, written notice of applications for land use or limited land use decisions, including comprehensive plan or zoning amendments, in an area within this overlay zone, shall be provided to the airport sponsor and the Department of Aviation in the same manner as notice is provided to property owners entitled by law to written notice of land use or limited land use applications. [ORS 836.623(1); OAR 738-100-010; ORS 215.416(6); ORS 227.175(6)]

A. Notice shall be provided to the airport sponsor and the Department of Aviation when the property, or a portion thereof, that is subject to the land use or limited land use application is located within 10,000 feet of the sides or ends of a runway:

B. Notice of land use and limited land use applications shall be provided within the following timelines.

1. Notice of land use or limited land use applications involving public hearings shall be provided prior to the public hearing at the same time that written notice of such applications is provided to property owners entitled to such notice.

2. Notice of land use or limited land use applications not involving public hearings shall be provided at least 20 days prior to entry of the initial decision on the land use or limited land use application.

C. Notice of the decision on a land use or limited land use application shall be provided to the airport sponsor and the Department of Aviation within the same timelines that such notice is provided to parties to a land use or limited land use proceeding.

D. Notices required under Paragraphs A-C of this section need not be provided to the airport sponsor or the Department of Aviation where the land use or limited land use application meets all of the following criteria:

1. Would only allow structures of less than 35 feet in height;

2. Involves property located entirely outside the approach surface;

3. Does not involve industrial, mining or similar uses that emit smoke, dust or steam; sanitary landfills or water impoundments; or radio, radiotelephone, television or similar transmission facilities or electrical transmission lines; and

4. Does not involve wetland mitigation, enhancement, restoration or creation.

.050 **Height Limitations on Allowed Uses in Underlying Zones.** All uses permitted by the underlying zone shall comply with the height limitations in this Section. When height limitations of the underlying zone are more restrictive than those of this overlay zone, the underlying zone height limitations shall control. [ORS 836.619; OAR 660-013-0070]

A. Except as provided in subsections B and C of this Section, no structure or tree, plant or other object of natural growth shall penetrate an airport imaginary surface. [ORS 836.619; OAR 660-013-0070(1)]

B. For areas within airport imaginary surfaces but outside the approach and transition surfaces, where the terrain is at higher elevations than the airport runway surfaces such that existing structures and permitted development penetrate or would penetrate the airport imaginary surfaces, a local government may authorize structures up to 35 feet in height.

C. Other height exceptions or variances may be permitted when supported in writing by the airport sponsor, the Department of Aviation and the FAA. Applications for height variances shall follow the procedures for other variances and shall be subject to such conditions and terms as recommended by the Department of Aviation and the FAA.

.060 **Procedures**. An applicant seeking a land use or limited land use approval in an area within this overlay zone shall provide the following information in addition to any other information required in the permit application: **[NOTE: where uses otherwise allowed outright become "limited" under this ordinance, the local government needs to identify the applicable administrative review process.]**

A. A map or drawing showing the location of the property in relation to the airport imaginary surfaces. The Planning Department shall provide the applicant with appropriate base maps upon which to locate the property.

B. Elevation profiles and a site plan, both drawn to scale, including the location and height of all existing and proposed structures, measured in feet above mean sea level.

C. If a height variance is requested, letters of support from the airport sponsor, the Department of Aviation and the FAA.

.070 **Land Use Compatibility Requirements**. **[Option 1 – Minimum Requirements]** Applications for land use or building permits for properties within the boundaries of this overlay zone shall comply with the requirements of this chapter as provided herein. [ORS 836.619; OAR 660-013-0080]

A. Noise. Within airport noise impact boundaries, land uses shall be established consistent with the levels identified in OAR 660, Division 13, Exhibit 5. A declaration of anticipated noise levels shall be attached to any subdivision or partition approval or other land use approval or building permit affecting land within airport noise impact boundaries. In areas where the noise level is anticipated to be at or above 55 Ldn, prior to issuance of a building permit for construction of a noise sensitive land use (real property normally used for

sleeping or as a school, church, hospital, public library or similar use), the permit applicant shall be required to demonstrate that a noise abatement strategy will be incorporated into the building design that will achieve an indoor noise level equal to or less than 55 Ldn. [OAR 340-035-0045(1)(d), (4)] [NOTE: FAA Order 5100.38A, Chapter 7 provides that interior noise levels should not exceed 45 decibels in all habitable zones.]

B. Outdoor Lighting. No new or expanded industrial, commercial or recreational use shall project lighting directly onto an existing runway or taxiway or into existing airport approach surfaces except where necessary for safe and convenient air travel. Lighting for these uses shall incorporate shielding in their designs to reflect light away from airport approach surfaces. No use shall imitate airport lighting or impede the ability of pilots to distinguish between airport lighting and other lighting.

C. Glare. No glare producing material, including but not limited to unpainted metal or reflective glass, shall be used on the exterior of structures located within an approach surface or on nearby lands where glare could impede a pilot's vision.

D. Industrial Emissions. No new industrial, mining or similar use, or expansion of an existing industrial, mining or similar use, shall, as part of its regular operations, cause emissions of smoke, dust or steam that could obscure visibility within airport approach surfaces, except upon demonstration, supported by substantial evidence, that mitigation measures imposed as approval conditions will reduce the potential for safety risk or incompatibility with airport operations to an insignificant level. The review authority shall impose such conditions as necessary to ensure that the use does not obscure visibility.

E. Communications Facilities and Electrical Interference. Proposals for the location of new or expanded radio, radiotelephone, and television transmission facilities and electrical transmission lines within this overlay zone shall be coordinated with the Department of Aviation and the FAA prior to approval. [NOTE: See the additional safeguards set out in the Best Management Practices alternative below. The Department of Aviation highly recommends those safeguards.]

F. Use Prohibitions in RPZ. Notwithstanding the underlying zoning, the following uses are prohibited in the RPZ.

1. New residential development.

2. Public assembly facilities.

G. Landfills. No new sanitary landfills shall be permitted within 10,000 feet of any airport runway. Expansions of existing landfill facilities within these distances shall be permitted only upon demonstration that the landfills are designed and will operate so as not to increase the likelihood of bird/aircraft collisions. Timely notice of any proposed expansion shall be provided to the airport sponsor, the Department of Aviation and the FAA, and any approval shall be accompanied by such conditions as are necessary to ensure that an increase in bird/aircraft collisions is not likely to result.

OR...

.070 Land Use Compatibility Requirements. **[Option 2 – Best Management Practices]** Applications for land use or building permits for properties within the boundaries of this overlay zone shall comply with the requirements of this chapter as provided herein. [ORS 836.619; ORS 836.623(1); OAR 660-013-0080]

A. Noise. Within airport noise impact boundaries, land uses shall be established consistent with the levels identified in OAR 660, Division 13, Exhibit 5. A declaration of anticipated noise levels shall be attached to any subdivision or partition approval or other land use approval or building permit affecting land within airport noise impact boundaries. In areas where the noise level is anticipated to be at or above 55 Ldn, prior to issuance of a building permit for construction of a noise sensitive land use (real property normally used for sleeping or as a school, church, hospital, public library or similar use), the permit applicant shall be required to demonstrate that a noise abatement strategy will be incorporated into the building design that will achieve an indoor noise level equal to or less than 55 Ldn. **[NOTE: FAA Order 5100.38A, Chapter 7 provides that interior noise levels should not exceed 45 decibels in all habitable zones.]**

B. Outdoor Lighting. No new or expanded industrial, commercial or recreational use shall project lighting directly onto an existing runway or taxiway or into existing airport approach surfaces except where necessary for safe and convenient air travel. Lighting for these uses shall incorporate shielding in their designs to reflect light away from airport approach surfaces. No use shall imitate airport lighting or impede the ability of pilots to distinguish between airport lighting and other lighting.

C. Glare. No glare producing material, including but not limited to unpainted metal or reflective glass, shall be used on the exterior of structures located within an approach surface or on nearby lands where glare could impede a pilot's vision.

D. Industrial Emissions. No new industrial, mining or similar use, or expansion of an existing industrial, mining or similar use, shall, as part of its regular operations, cause emissions of smoke, dust or steam that could obscure visibility within airport approach surfaces, except upon demonstration, supported by substantial evidence, that mitigation measures imposed as approval conditions will reduce the potential for safety risk or incompatibility with airport operations to an insignificant level. The review authority shall impose such conditions as necessary to ensure that the use does not obscure visibility.

E. Communications Facilities and Electrical Interference. No use shall cause or create electrical interference with navigational signals or radio communications between an airport and aircraft. Proposals for the location of new or expanded radio, radiotelephone, and television transmission facilities and electrical transmission lines within this overlay zone shall be coordinated with the Department of Aviation and the FAA prior to approval. Approval of cellular and other telephone or radio communication towers on leased property located within airport imaginary surfaces shall be conditioned to require their removal within 90 days following the expiration of the lease

agreement. A bond or other security shall be required to ensure this result.

F. Limitations and Restrictions on Allowed Uses in the RPZ, Approach Surface, and Airport Direct and Secondary Impact Areas. The land uses identified in Table 1, and their accessory uses, are permitted, permitted under limited circumstances, or prohibited in the manner therein described. In the event of conflict with the underlying zone, the more restrictive provisions shall control. As used in this section, a limited use means a use that is allowed subject to special standards specific to that use.

TABLE A-1: LIMITATIONS & RESTRICTIONS ON ALLOWED USES

KEY: P = Use is Permitted
L = Use is Allowed Under Limited Circumstances (see footnotes)
N = Use is Not Allowed

	RPZ [1]	Approach Surface [8]	Direct Impact Area	Secondary Impact Area
Public Airport	L [2]	L [9]	P	P
Residential	N	L [10]	L [14]	P
Commercial	N	L [9]	L [15]	P
Industrial	N	L [9]	P	P
Institutional	N	L [9]	L [15]	P
Farm Use	P [3]	P [3]	P [3]	P [3]
Roads/Parking	L [4]	P	P	P
Utilities	L [5]	L [5]	L [5]	L [5]
Parks/Open Space	L [6]	P	P	P
Golf Courses	L [7]	L [7 9]	L [7]	L [7]
Athletic Fields	N	L [9]	L [14]	P
Sanitary Landfills	N	N	N	N
Water Treatment Plants	N	N	N	N
Mining	N	L [11]	L [11]	L [11]
Water Impoundments	N	N [12]	N [16]	N [16]
Wetland Mitigation	N	L [13]	L [13]	L [13]

Source: Model Public Use Airport Safety And Compatibility Overlay Zone (Visual and Instrument Approach Airports), ODA

Notes:

1 No Structures shall be allowed within the Runway Protection Zone (RPZ). Exceptions shall be made only for structures accessory to airport operations whose location within the RPZ has been approved by the Federal Aviation Administration.

2 In the RPZ, public airport uses are restricted to those uses and facilities that require location in the RPZ.

3 Farming practices that minimize wildlife attractants are encouraged.

4 Roads and parking areas are permitted in the RPZ only upon demonstration that there are not practicable alternatives. Lights, guardrails, and related accessory structures are prohibited. Cost may be considered in determining whether practicable alternatives exist.

5 In the RPZ, utilities, powerlines and pipelines must be underground. In approach surfaces and in airport direct and secondary impact areas, the proposed height of utilities shall be coordinated with the airport sponsor and Department of Aviation (ODA).

6 Public assembly facilities are prohibited in the RPZ.

7 Golf courses may be permitted only upon demonstration, supported by substantial evidence, that management techniques will be utilized to reduce existing wildlife attractants and avoid the recreation of new wildlife attractant. Such techniques shall be required as conditions of the approval. Structures are not permitted within the RPZ. For purposes of this document, tee markers, tee signs, pin cups and pins are not considered to be structures.

8 Within 10,000 feet from the end of the primary surface of a non-precision instrument runway, and within 50,000 feet from the end of the primary surface of a precision instrument runway.

9 Public assembly facilities may be allowed in an approach surface only if the potential danger to public safety is minimal. In determining whether a proposed use is appropriate, consideration shall be given to: proximity to the

RPZ; density of people per acre; frequency of use; level of activity at the airport,; and other factors relevant to public safety. In general, high density uses should not be permitted within airport approach surfaces, and on-residential structures should be located outside approach surfaces unless no practicable alternatives exist.

[10] Residential densities within approach surfaces should not exceed the following densities: (1) within 500 feet of the outer edge of the RPZ, 1 unit per acre; (2) within 500 to 1,500 feet of the outer edge of the RPZ, 2 units per acre; (3) within 1,500 to 3,000 feet of the outer edge of the RPZ, 4 units per acre.

[11] Mining operations involving the creation or expansion of water impoundments shall comply with the requirements of this document regarding water impoundments.

[12] Water impoundments are prohibited within 5,000 feet from the edge or end of a runway.

[13] Wetland Mitigation required for projects located within an approach surface, the airport direct or secondary impact area shall be authorized only upon demonstration, supported by substantial evidence, that it is impracticable to provide mitigation outside of these areas. Proposals for wetland mitigation shall be coordinated with the airport sponsor, the Department of Aviation, the FAA and the wetland-permitting agencies prior to the issuance of required permits. Wetland mitigation shall be designed and located to avoid creating a wildlife hazard or increasing hazardous movements of birds across runway and approach surfaces. Conditions shall be imposed as are appropriate and necessary to prevent in perpetuity an increase in hazardous bird movements across runway and approach surfaces. See section 0.90 of Appendix D or E for the best management practices for airports located near significant wetlands or wildlife habitat areas.

[14] Within the transitional surface, residential uses and athletic fields are not permitted.

[15] Within the transitional surface, overnight accommodations, such as hotels, motels, hospitals and dormitories, are not permitted.

[16] See section .08 of Appendix D or E prohibiting or regulating water impoundments within 5,000 or 10,000 feet of the end or edge of a runway.

.080 <u>Water Impoundments within Approach Surfaces and Airport Direct and Secondary Impact Boundaries</u>. Any use or activity that would result in the establishment or expansion of a water impoundment shall comply with the requirements of this section. (ORS 836.623(2); OAR 660-013-0080(1)(f)]

A. No new or expanded water impoundments of one-quarter acre in size or larger are permitted:

1. Within an approach surface and within 5,000 feet from the end of a runway; or

2. On land owned by the airport sponsor that is necessary for airport operations.

OR...

[for airports where it can be demonstrated with substantial evidence that new water impoundments would result in a significant increase in hazardous movements of birds across runways or approach surfaces, taking into consideration mitigation measures or conditions that could reduce safety risks and incompatibility] [ORS 836.623(2)(b), (c); ORS 836.623(4), (5)]

A. No new or expanded water impoundments of one-quarter acre in size or larger are permitted within 5,000 feet from the end or edge of a runway.

B. The establishment of a new water impoundment one-quarter acre in size or larger between 5,000 and 10,000 feet of a runway outside an approach surface and between 5,000 feet and 40,000 feet within an approach corridor for an airport with an instrument approach may be permitted only upon determination that such water impoundment, with reasonable and practicable mitigation measures, is not likely to result in a significant increase in hazardous movements of birds feeding, watering or roosting in areas across runways or approach surfaces. **[NOTE: FAA Part 77 discourages water impoundments within 50,000 feet of a runway within an approach surface.] [ORS 836.623(2)(c); OAR 660, Division 13, Exhibit 1, Section 3(b)(C);]**

1. Process. An application for approval of a new water impoundment shall be considered utilizing the review process applied to applications for conditional use permits. In addition to the parties required by law to be mailed written notice of the public hearing on the application, written notice of the hearing shall be mailed to the airport sponsor, the Seattle Airports District Office of the FAA, the FAA's technical representative, and the Oregon Department of Aviation.

   a. Prior to filing its application, the applicant shall coordinate with the airport sponsor, the Department of Aviation, and the FAA (Seattle Airports District Office) and FAA's technical representative regarding the proposed water impoundment, its short and long term potential to significantly increase hazardous movements of birds feeding, watering or roosting in areas across runways or approach surfaces, and proposed mitigation.

      (1) For water impoundments individually or cumulatively exceeding five (5) acres in size on the subject property, the applicant shall prepare a draft bird strike study as provided in subsection .2 of this section. The airport sponsor, the Department of Aviation, and the FAA and FAA's technical representative shall have 45 days to review the study draft. Their comments shall be included and addressed in a final bird strike study.

      (2) For water impoundments that do not individually or cumulatively exceed five (5) acres in size on the subject property, the bird strike study requirements in subsection 2 of this section may be reduced or waived upon agreement by the airport sponsor, the Department of Aviation, and the FAA and FAA's technical representative if the applicant can demonstrate, to the satisfaction of the airport sponsor, the Department of Aviation, and the FAA and FAA's technical representative that the proposed water impoundment, with appropriate short and long term mitigation, will not result in a significant increase in hazardous movements of birds feeding, watering or roosting in areas across runways or approach surfaces. As used herein, "appropriate mitigation" means small-scale measures of proven reliability that can be applied in perpetuity and that the applicant has the financial resources to support.

   b. An application shall not be deemed complete for land use review purposes until the applicant has filed with the Director the final bird strike study addressing comments from the airport sponsor, the Department of Aviation, and the FAA and FAA's technical representative. When no bird strike study is required, the application shall not be deemed complete until the applicant has filed with the Director correspondence or other proof demonstrating agreement among the airport sponsor, the Department

of Aviation, and the FAA and FAA's technical representative that no bird strike study is required.

2. Bird Strike Study. A bird strike study required under this section shall contain at least the following information:

   a. A description of the proposed project, its location in relation to the airport and the bird strike study area, which shall include at least the project site, the airport property, all lands within 10,000 feet from the end or edge of the airport runway, and other surrounding habitat areas which form the local bird ecosystem.

   b. A description of bird feeding, watering and roosting habitats in the bird strike study area, including discussion of feeding behavior and food sources and identification of loafing, watering, roosting and nesting area locations.

   c. A description of existing and planned airport operations and air traffic patterns and any available history of bird strike incidents.

   d. Wildlife surveys and documentation of existing bird species, populations, activities and flight patterns in the bird strike study area. The surveys shall address bird species and their composition; bird population estimates and densities per unit area; feeding behavior; food sources; seasonal use patterns; frequency of occurrence; location of loafing, roosting and nesting areas; and analysis of the relation of bird flight movements to airport traffic patterns and navigational safety. The airport sponsor shall provide approach and departure air space information up to five statutory miles from the airport.

   e. An evaluation of the anticipated effects of the proposal on the population density, behavior patterns, movements and species composition of birds within the bird strike study area and of the impact of these effects on air navigation and safety considering possible mitigation.

   f. Identification and evaluation of proposed and alternative short and long term mitigation measures that would prevent a significant increase in hazardous movements of birds feeding, watering or roosting in areas across runways and approach surfaces that otherwise might result from the proposed use. The evaluation shall discuss the proven reliability of proposed measures, their effectiveness over both the short and long term, their costs, and the applicant's financial ability to assure their perpetual implementation, *i.e.* ongoing implementation for as long as a potential bird strike hazard persists.

   g. Such other information as is recommended by the FAA's technical representative or is required to demonstrate

compliance with the requirements of subsection .3 of this section.

3. Required Findings. The determination whether a proposed new water impoundment, with reasonable and practicable mitigation measures, is likely to significantly increase hazardous movements of birds feeding, watering or roosting in areas across runways or approach surfaces shall be based upon the proposal's potential, both in the short term and in the long term, to significantly increase bird strike hazards to air navigation, and the appropriateness, effectiveness and affordability of proposed mitigation measures or other conditions needed to reduce bird strike hazards. In determining compliance with this standard, the findings shall address each of the following factors:

   a. The demonstrated overall effectiveness and reliability of proposed measures and conditions, in both the short and long term and under similar circumstances and conditions, to avoid a significant increase in bird strike hazards to air navigation. Experimental measures or measures not based on accepted technology and industry practices shall be considered ineffective, inappropriate and of unproven reliability.

   b. The economic, social and environmental impacts of proposed measures to the neighboring community and the affected natural environment.

   c. The applicant's ability to pay for necessary short and long-term mitigation measures, including fallback measures that may be required if initially proposed mitigation measures prove ineffective, and to assure the perpetual implementation of those measures for as long as a potential bird strike hazard persists. An applicant's failure to demonstrate its financial ability to assure the perpetual implementation of necessary and appropriate measures shall render those measures unreasonable and impracticable for purposes of the application.

   d. The applicant's ability to accurately monitor the effectiveness of mitigation over time.

   e. The potential impacts to navigational safety and air travel if the applicant cannot perform necessary mitigation measures or maintain those measures in perpetuity, or if those measures prove to be ineffective at avoiding a significant increase in bird strike hazards to air navigation.

   f. The applicant's reclamation plan.

4. Mitigation Measures and Approval Conditions. A decision approving an application shall require, as conditions of approval, all measures and conditions deemed appropriate and necessary to prevent in perpetuity a significant increase in hazardous movements of birds feeding, watering or roosting in areas across runways and approach surfaces.

a. Only customary measures based on accepted technology and industry practice may be considered and imposed as approval conditions.

b. Serious consideration shall be given to all measures and conditions recommended by the Department of Aviation and the FAA and FAA's technical representative. Generally, such measures and conditions shall be attached to a decision approving an application unless findings are adopted, supported by substantial evidence, demonstrating why such measures and conditions are not necessary to reduce bird hazard impacts resulting from the water impoundment to an insignificant level.

c. A decision to approve shall require from the applicant a performance bond or other form of secure financial support. Such bond or security shall be in an amount sufficient to assure perpetual implementation of appropriate and necessary mitigation measures for as long as a potential bird strike hazard persists.

d. A decision to approve shall require appropriate monitoring of the effectiveness of mitigation over time. Upon request, monitoring data and reports shall be made available to the airport sponsor, the Department of Aviation, and the FAA and FAA's technical representative. The decision shall allow for modifications to approval conditions should existing mitigation measures prove ineffective at preventing a significant increase in hazardous movements of birds feeding, watering or roosting in areas across runways and approach surfaces. Modifications to approval conditions shall be considered utilizing the review process applied to applications for conditional use permits.

5. Exemptions. The requirements of this section shall not apply to:

a. Storm water management basins established by an airport identified under ORS 836.610(1).

b. Seaplane landing areas within airports identified under ORS 836.610(1).

.090 Wetland Mitigation, Creation, Enhancement and Restoration within Approach Surfaces and Airport Direct and Secondary Impact Boundaries.

A. Notwithstanding the requirements of Section .080, wetland mitigation, creation, enhancement or restoration projects located within areas regulated under Section .080 shall be allowed upon demonstration of compliance with this requirements of this Section.

B. Wetland mitigation, creation, enhancement or restoration projects existing or approved on the effective date of this ordinance and located within areas regulated under Section .080 are recognized as lawfully existing uses.

C. To help avoid increasing safety hazards to air navigation near public use airports, the establishment of wetland mitigation banks in the vicinity of such airports but outside approach surfaces and areas regulated under Section .080 is encouraged.

D. Applications to expand wetland mitigation projects in existence as of the effective date of this ordinance, and new wetland mitigation projects, that are proposed within areas regulated under Section .080 shall be considered utilizing the review process applied to applications for conditional use permits and shall be permitted upon demonstration that:

1. It is not practicable to provide off-site mitigation; or

2. The affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water discharge, and the area proposed for mitigation is located outside an approach surface.

E. Wetland mitigation permitted under subsection D. of this Section shall be designed and located to avoid creating a wildlife hazard or increasing hazardous movements of birds across runways or approach surfaces.

F. Applications to create, enhance or restore wetlands that are proposed to be located within approach surfaces or within areas regulated under Section .080, and that would result in the creation of a new water impoundment or the expansion of an existing water impoundment, shall be considered utilizing the review process applied to applications for conditional use permits and shall be permitted upon demonstration that:

1. The affected wetlands provide unique ecological functions, such as critical habitat for threatened or endangered species or ground water discharge; and

2. The wetland creation, enhancement or restoration is designed and will be maintained in perpetuity in a manner that will not increase hazardous movements of birds feeding, watering or roosting in areas across runways or approach surfaces.

G. Proposals for new or expanded wetland mitigation, creation, enhancement or restoration projects regulated under this Section shall be coordinated with the airport sponsor, the Department of Aviation, the FAA and FAA's technical representative, the Oregon Department of Fish & Wildlife (ODFW), the Oregon Division of State Lands (DSL), the US Fish & Wildlife Service (USFWS), and the US Army Corps of Engineers (Corps) as part of the permit application.

H. A decision approving an application under this Section shall require, as conditions of approval, measures and conditions deemed appropriate and necessary to prevent in perpetuity an increase in hazardous bird movements across runways and approach surfaces.

.100 <u>Nonconforming Uses</u>.

A. These regulations shall not be construed to require the removal, lowering or alteration of any structure not conforming to these

regulations. These regulations shall not require any change in the construction, alteration or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this overlay zone.

B. Notwithstanding subsection A. of this section, the owner of any existing structure that has an adverse effect on air navigational safety as determined by the Department of Aviation shall install or allow the installation of obstruction markers as deemed necessary by the Department of Aviation, so that the structures become more visible to pilots.

C. No land use or limited land use approval or other permit shall be granted that would allow a nonconforming use or structure to become a greater hazard to air navigation than it was on the effective date of the overlay zone.

.110 **Avigation Easement.** Within this overlay zone, the owners of properties that are the subjects of applications for land use or limited land use decisions, for building permits for new residential, commercial, industrial, institutional or recreational buildings or structures intended for inhabitation or occupancy by humans or animals, or for expansions of such buildings or structures by the lesser of 50% or 1000 square feet, shall, as a condition of obtaining such approval or permits, dedicate an avigation easement to the airport sponsor. The avigation easement shall be in a form acceptable to the airport sponsor and shall be signed and recorded in the deed records of the County. The avigation easement shall allow unobstructed passage for aircraft and ensure safety and use of the airport for the public. Property owners or their representatives are responsible for providing the recorded instrument prior to issuance of building permits.

U.S. Department
of Transportation

**Federal Aviation
Administration**

Seattle Airports District Office
1601 Lind Avenue, S. W., Ste 250
Renton, Washington 98055-4056

November 4, 2005

Mr. Alan L. Daniels
Airport Manager
581 SW 33rd Street
Ontario, OR 97914

Dear Mr. Daniels:

Proposed School Siting
The Ontario Municipal Airport Vicinity

This is in response to your concern regarding a proposed high school in the vicinity of Ontario Municipal Airport. It is the proponent's (i.e., Ontario School District) obligation under Federal Aviation Regulation (FAR), Part 77, to notify the Federal Aviation Administration (FAA) of proposed construction in the immediate vicinity of a public use airport. Specifically, any proposed construction of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway requires such notification. This notification requirement does not necessarily mean that such construction may be a problem. However, submittal of the prescribed information allows FAA to conduct an aeronautical study of the proposed action to determine its effect, if any, on the navigable airspace. It also provides FAA with an opportunity to issue advisory comments on such matters as land use compatibility in the airport environs. Notification to FAA is accomplished with submittal of FAA Form 7460-1, Notice of Proposed Construction or Alteration. The form and instructions can be accessed through this website, http://forms.faa.gov/forms/faa7460-1.pdf. Typically, it takes about 90 days from receipt by FAA for a determination of findings to be issued.

FAA has long supported Ontario Municipal Airport as an important aviation facility. We fund much of the planning and development at airports, including airport noise control and land use compatibility programs, as well as the construction of public use airport facilities. This airport serves a significant role in the greater Oregon area system of airports, while at the same time providing a transportation gateway and economic asset to Ontario and surrounding communities.

With regard to airports and their environs, the FAA Seattle Airports District Office encourages airport sponsors and other local governments with airports located in their jurisdictions to take steps toward compatibility between the airport and surrounding land uses. This is usually accomplished through zoning, based on comprehensive land use planning, which recognizes the characteristics of airports, aircraft activity, and the actual and potential effects of such activity on sensitive adjacent uses, particularly residences, schools and other neighborhood components.

It is our understanding that the Ontario School System proposes to locate a high school immediately northeast of Ontario Municipal Airport. Aircraft in the traffic pattern for Runway 14/32 can be expected to fly over and near the site at low altitudes *in accordance with standard operating procedures* and in significant numbers. In some cases, these aircraft may be operating as low as 500 feet above ground.

While these types of operations represent safe and typical procedures over the presently largely vacant land, it would be disconcerting to many people on the ground in this area of the proposed development, due to a *perceived hazard* of low-flying aircraft. That is one of the main reasons that such land uses are strongly discouraged under airport traffic pattern areas.

Although the frequency of aircraft accidents is comparatively very low, the numbers of aircraft using the concentrated airspace of airport traffic areas, together with the complexities of takeoff and landing operations, does mean that accidents are proportionately higher in those areas than in other locations farther away from airports.

The proposed school site would also be subjected to considerable "single-event" noise impacts from aircraft overflight. In addition, there would also be noise and visual (perceptual) impacts from aircraft operating into and out of the airport. These types of noise impacts are not adequately predicted by the use of DNL noise contours, which assign a penalty to nighttime noise events (when schools are not in session).

It has been our experience with other airports that locating a school in relation to an airport as proposed in this case is "asking for trouble." It is a virtual certainty that many complaints would be forthcoming from parents, concerned about the appearance of "low-flying" aircraft over their children on the school grounds, and from teachers, concerned about disruptions from overflight noise. On initial observation, the proposed siting definitely cannot be considered a compatible land use at this proximity.

It is to help prevent such incompatible development that the FAA strongly encourages compatible land use planning and zoning. We have issued Airport Improvement Program (AIP) grants to the airport sponsor, The City of Ontario. As a recipient of AIP grants, the airport sponsor has provided written Assurances to the United States that "[i]t will take appropriate action, including the adoption of zoning laws, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft" (Assurance no. 21). If not already in place, an Airport Overlay Zone should be enacted in accordance with State guidelines and FAA standards to identify the areas where incompatible development (such as schools) should be avoided.

We are ready to work with you, the airport sponsor and jurisdictions surrounding Ontario Municipal Airport to address the needs of the school district, the airport, and the general public. Our objectives are to enhance the safety and utility of the airport while, at the same time, to minimize any adverse impacts on the surrounding community. We encourage all parties to continue working with us toward a safe and compatible airport environs through implementation of planning recommendations and zoning consistent with such goals.

We request that no action be taken by the City on this proposal pending an FAA determination on the aeronautical study to be commenced after receipt of your Form 7460-1 and supporting materials.

Sincerely,

Trang D. Tran
Civil Engineer, OR/ID Section

cc:
Scott Trainor, Ontario City Manager
Robert Hidley, Oregon State Aeronautics
Dennis Carter, Ontario School District

ONTARIO MUNICIPAL AIRPORT
AIRCRAFT APRON ALTERNATIVES

OPTION 1

Pros

- New construction in lieu of retrofit
- Minimizes disruption to existing operations during construction
- Provides three large aircraft parking spaces
- Adequate tie-down space for 20-year forecast
- Saves "centerfield" area (See Page 9, paragraph 3)
- Sets the stage for future airport expansion and future FBO site

Cons

- Moves aircraft further away from the existing FBO
- May require phased construction due to FAA justification requirements

OPTION 2

Pros

- Cost effective infill of existing area
- Aircraft closer to the existing FBO
- Provides three large aircraft parking spaces

Cons

- Fewer tie-down spaces
- Inadequate for 20 year forecast Does not facilitate future airport development
- Takes up a portion of the "centerfield" area

OPTION 3

Pros

- New construction in lieu of retrofit
- Minimizes disruption to existing operations during construction
- Adequate space for 20 year forecast
- Could provide additional small aircraft tie-downs
- Saves "centerfield" area
- Keeps aircraft close to existing FBO

Cons

- Limited pull-through capability
- Does not facilitate future airport development

OPTION 4

Pros

- Major reconfiguration of airport apron
- Improved traffic movement
- Aircraft close to existing FBO
- Sets the stage for future airport expansion
- Adequate tie-down space for 20-year forecast (25 + 5 jets)

Cons

- Major disruption to airport operations during construction
- Eliminates "centerfield" area
- Most expensive option
- May require phased construction due to FAA justification requirements

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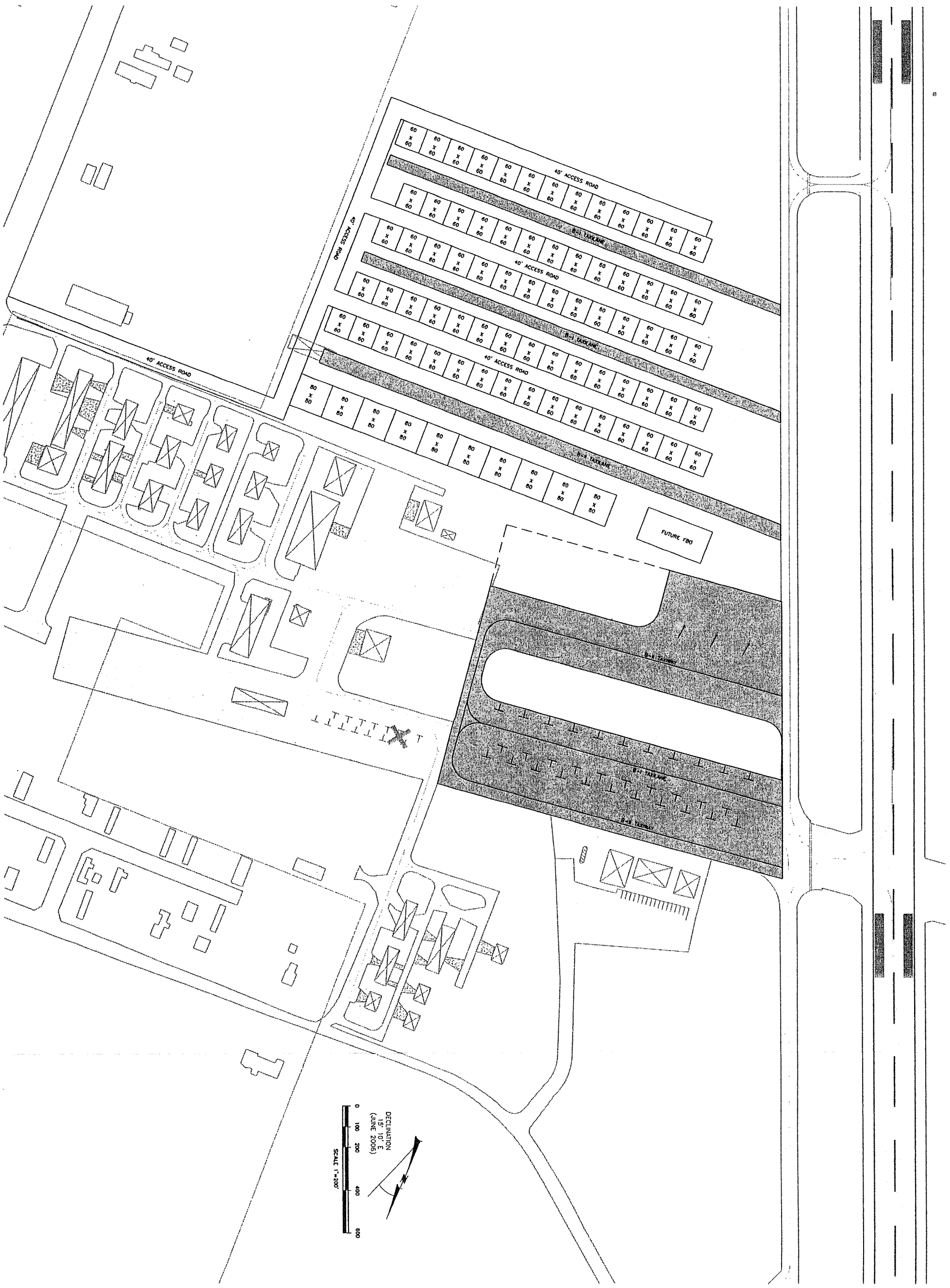

SHEET 5 OF 8	ONTARIO MUNICIPAL AIRPORT CITY OF ONTARIO, OREGON OPTION 1 (PREFERRED OPTION) FUTURE APRON PLAN	TOOTHMAN-ORTON ENGINEERING COMPANY CONSULTING ENGINEERS, SURVEYORS AND PLANNERS 9777 CHINDEN BOULEVARD BOISE, IDAHO 83714-2008 PHONE: (208) 323-2288 FAX: (208) 323-2399 OFFICE IN: CALDWELL, IDAHO COEUR d'ALENE, IDAHO	REVISIONS NO. / ITEM / DATE C-FILE NAME: SHEET 2-MP.dwg DESIGNED: TJE DRAWN: TJE CHECKED: KRB APPROVED: TWL

PROJECT: C5184
DATE: DEC 2007

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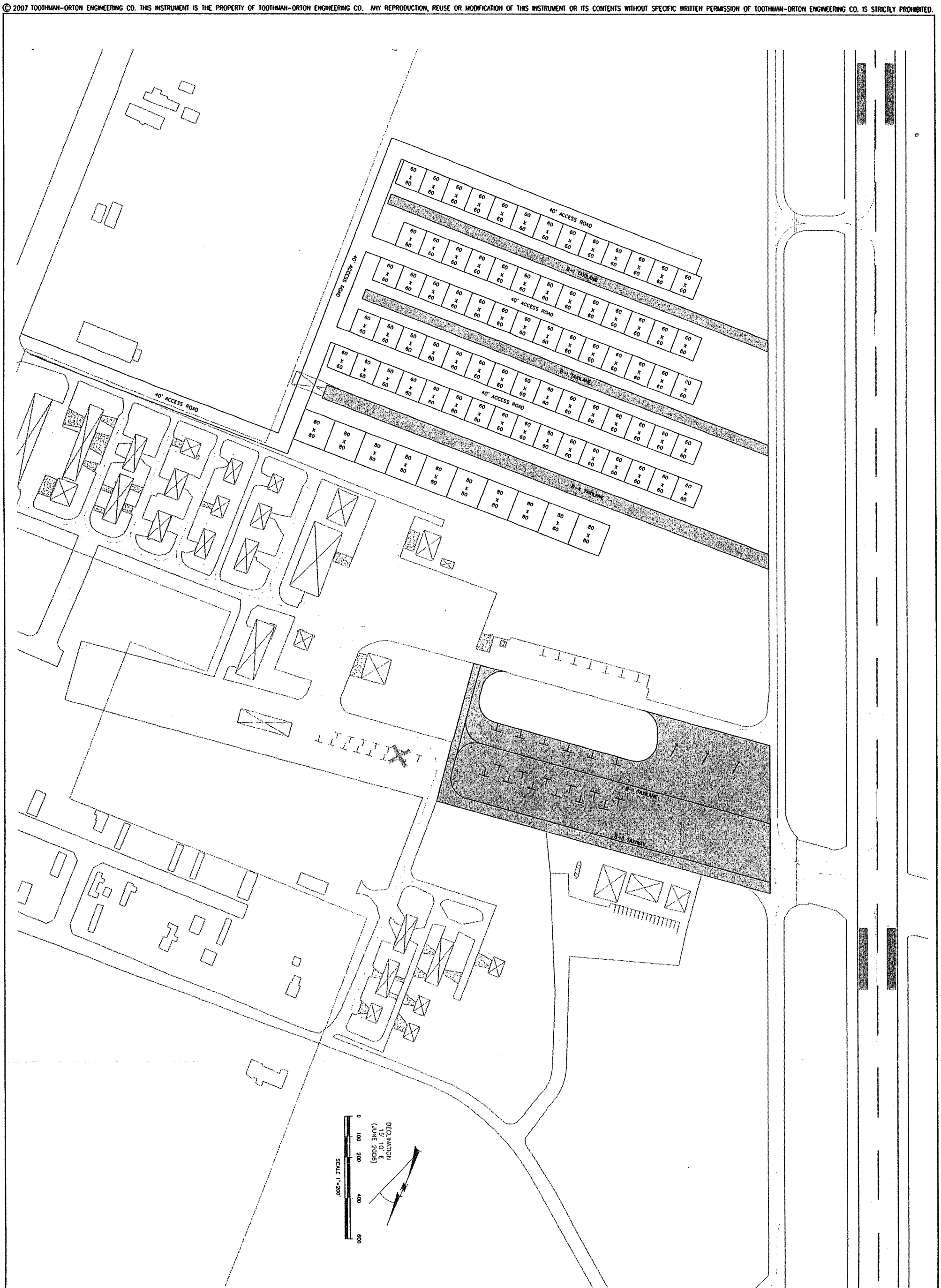

SHEET 5 OF 8	DATE: DEC 2007	ONTARIO MUNICIPAL AIRPORT	TOOTHMAN-ORTON ENGINEERING COMPANY
	PROJECT: 03184	CITY OF ONTARIO, OREGON	CONSULTING ENGINEERS, SURVEYORS AND PLANNERS
		OPTION 2 FUTURE APRON PLAN	9777 CHINDEN BOULEVARD BOISE, IDAHO 83714-2008 PHONE: (208) 323-2288 FAX: (208) 323-2399 OFFICE IN: CALDWELL, IDAHO COEUR d'ALENE, IDAHO

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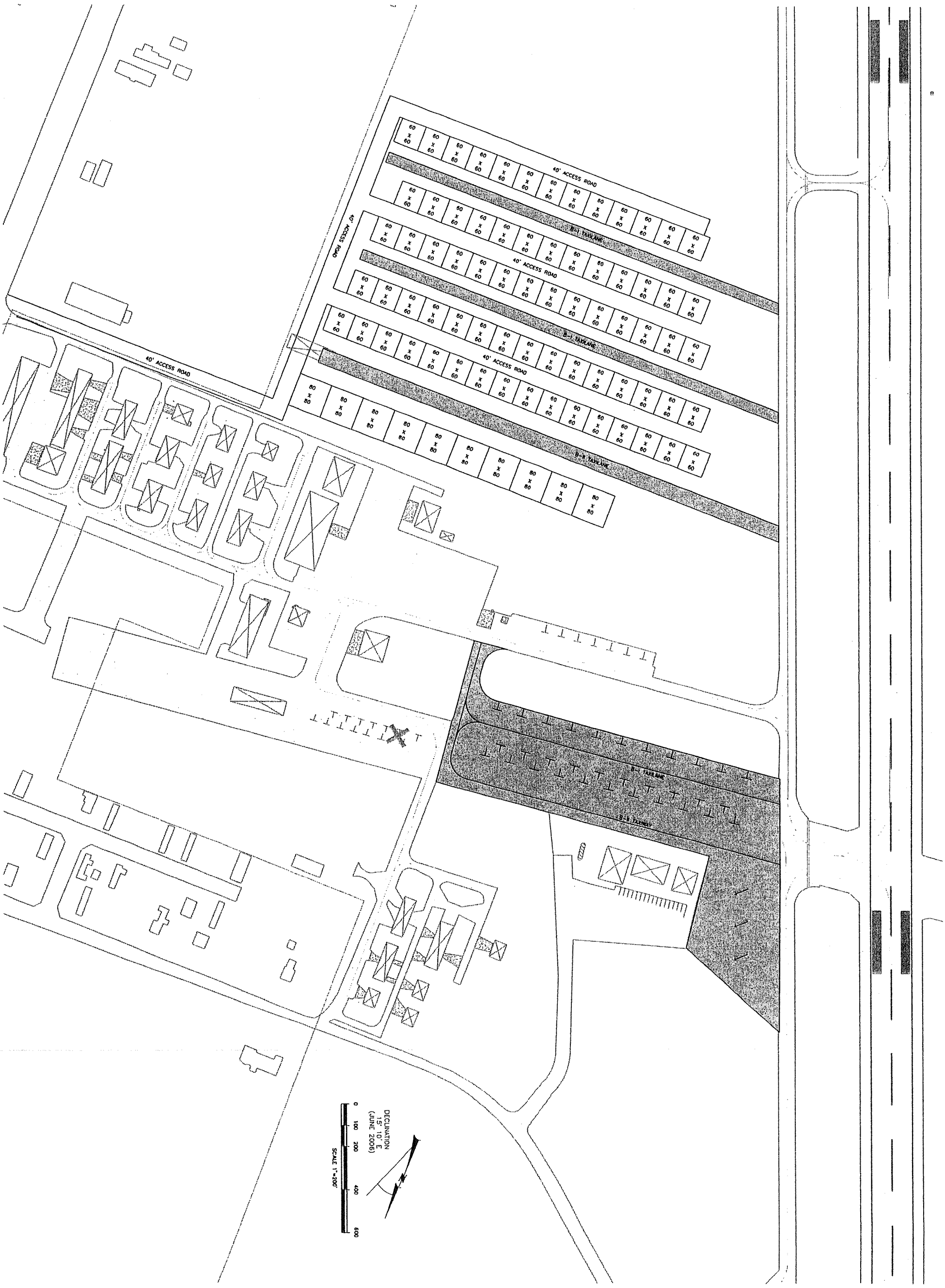

SHEET 5 OF 8

DATE: DEC 2007
PROJECT: 05180

ONTARIO MUNICIPAL AIRPORT

CITY OF ONTARIO, OREGON

OPTION 3
FUTURE APRON PLAN

TOOTHMAN-ORTON ENGINEERING COMPANY

CONSULTING ENGINEERS, SURVEYORS AND PLANNERS

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COEUR d'ALENE, IDAHO

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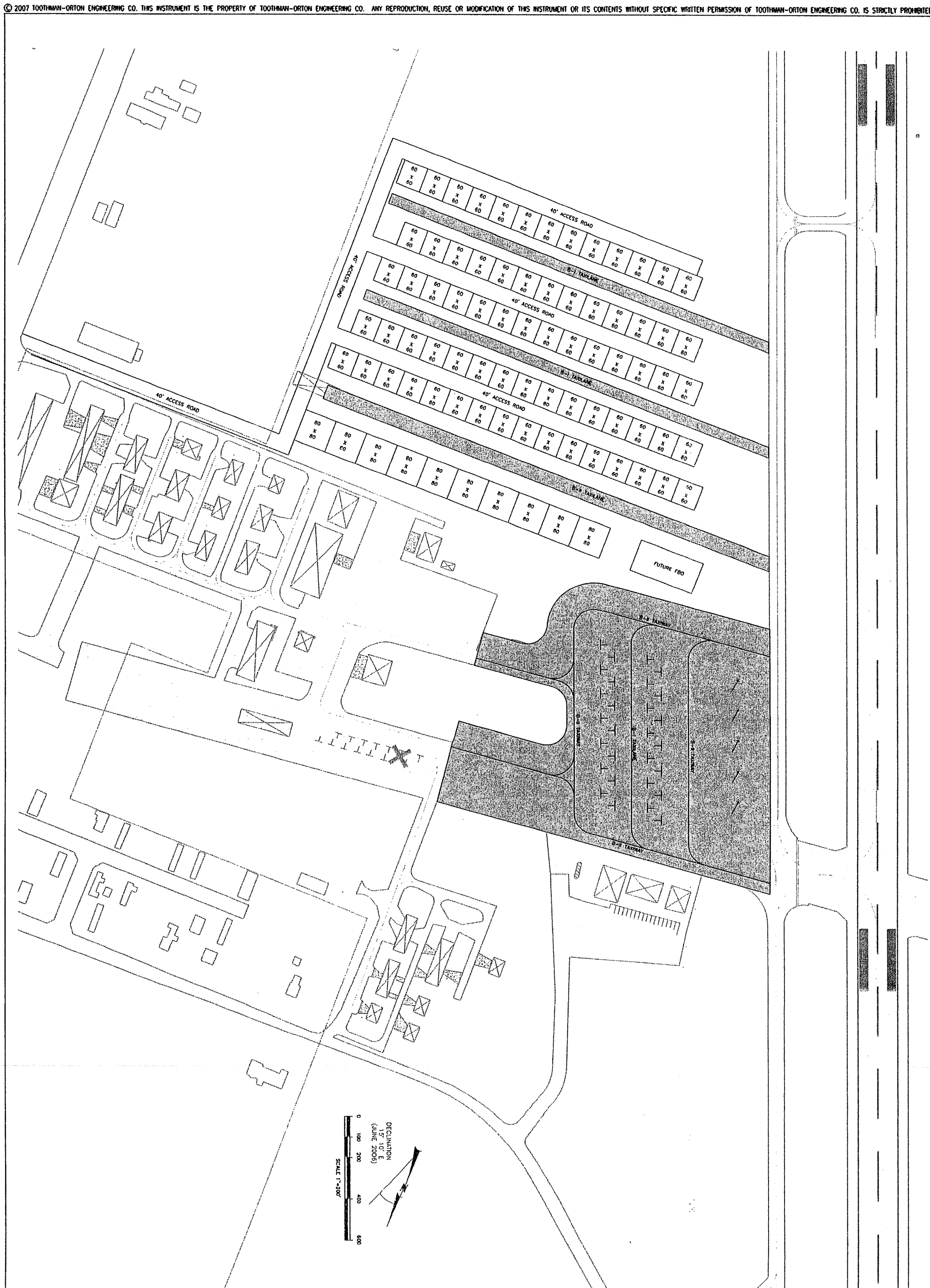

SHEET 5 OF 8

DATE: DEC 2007

PROJECT: 05184

ONTARIO MUNICIPAL AIRPORT

CITY OF ONTARIO, OREGON

OPTION 4
FUTURE APRON PLAN

TOOTHMAN-ORTON ENGINEERING COMPANY

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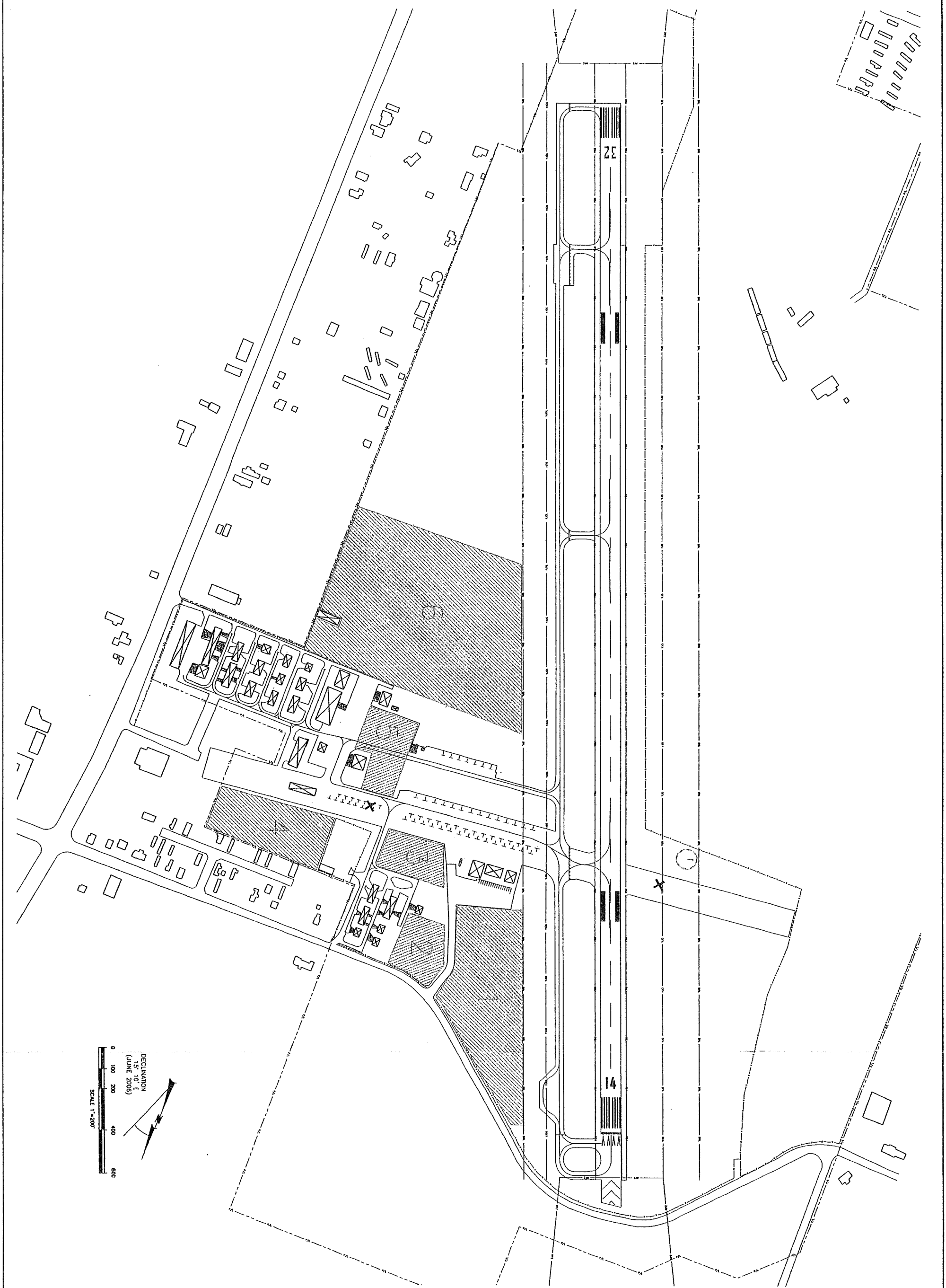

ONTARIO MUNICIPAL AIRPORT

CITY OF ONTARIO, OREGON

PROPOSED FUTURE HANGAR SITES

TOOTHMAN-ORTON ENGINEERING COMPANY

CONSULTING ENGINEERS, SURVEYORS AND PLANNERS

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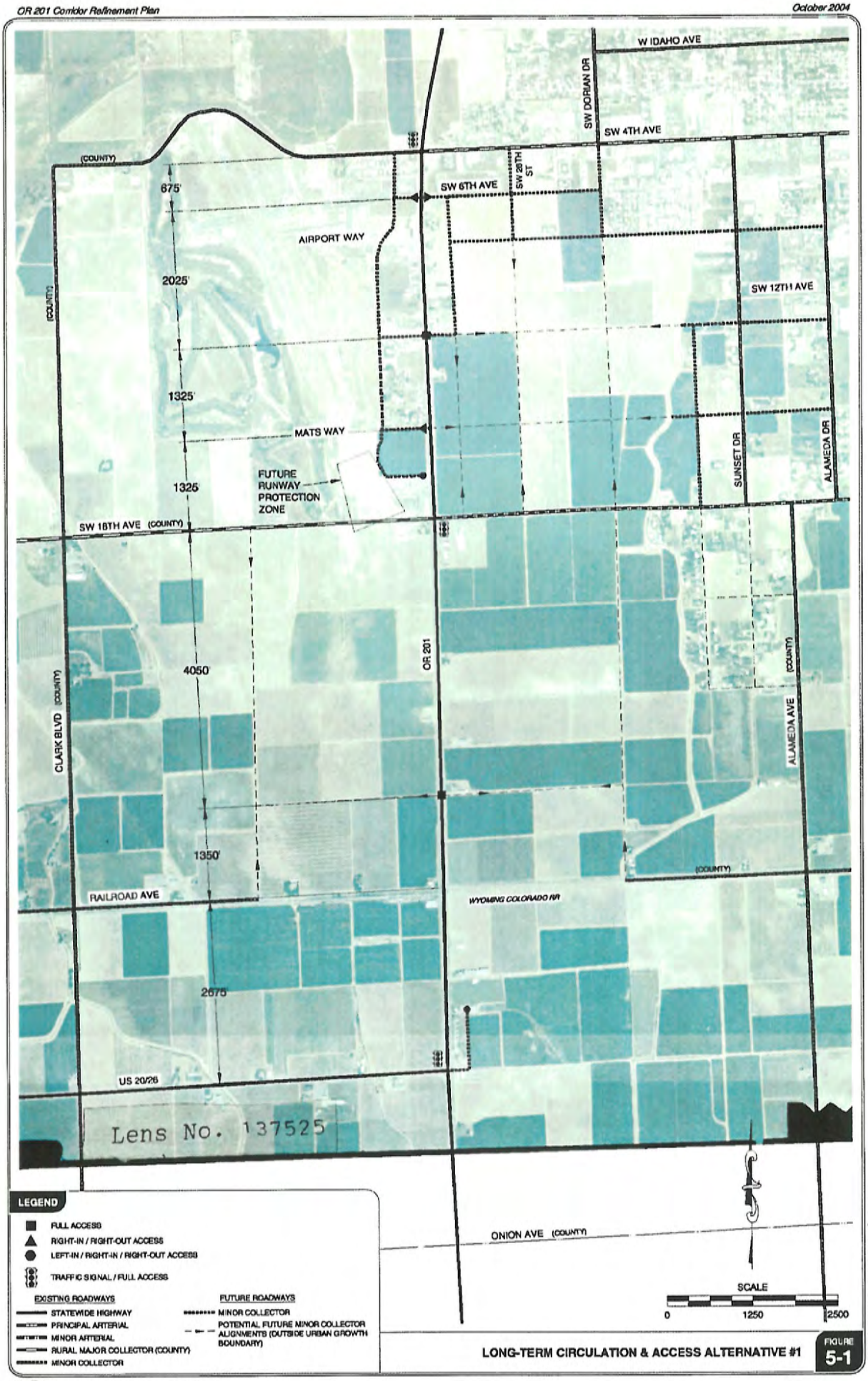
SHEET 1 OF 8



LEGEND

- FULL ACCESS
- RIGHT-IN / RIGHT-OUT ACCESS
- LEFT-IN / RIGHT-IN / RIGHT-OUT ACCESS
- TRAFFIC SIGNAL / FULL ACCESS

EXISTING ROADWAYS
- STATEWIDE HIGHWAY
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- RURAL MAJOR COLLECTOR (COUNTY)
- MINOR COLLECTOR

FUTURE ROADWAYS
- MINOR COLLECTOR
- POTENTIAL FUTURE MINOR COLLECTOR ALIGNMENTS (OUTSIDE URBAN GROWTH BOUNDARY)

LONG-TERM CIRCULATION & ACCESS ALTERNATIVE #1

FIGURE 5-1

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

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LEGEND

- FULL ACCESS
- RIGHT-IN / RIGHT-OUT ACCESS
- LEFT-IN / RIGHT-IN / RIGHT-OUT ACCESS
- TRAFFIC SIGNAL / FULL ACCESS

EXISTING ROADWAYS
- STATEWIDE HIGHWAY
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- RURAL MAJOR COLLECTOR (COUNTY)
- MINOR COLLECTOR

FUTURE ROADWAYS
- MINOR COLLECTOR
- POTENTIAL FUTURE MINOR COLLECTOR ALIGNMENTS (OUTSIDE URBAN GROWTH BOUNDARY)

LONG-TERM CIRCULATION & ACCESS ALTERNATIVE #2

FIGURE 5-2

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KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

LEGEND

- FULL ACCESS
- RIGHT-IN / RIGHT-OUT ACCESS
- LEFT-IN / RIGHT-IN / RIGHT-OUT ACCESS
- TRAFFIC SIGNAL / FULL ACCESS

EXISTING ROADWAYS
- STATEWIDE HIGHWAY
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- RURAL MAJOR COLLECTOR (COUNTY)
- MINOR COLLECTOR

FUTURE ROADWAYS
- MINOR COLLECTOR
- POTENTIAL FUTURE MINOR COLLECTOR ALIGNMENTS (OUTSIDE URBAN GROWTH BOUNDARY)

LONG-TERM CIRCULATION & ACCESS ALTERNATIVE #3

FIGURE 5-3

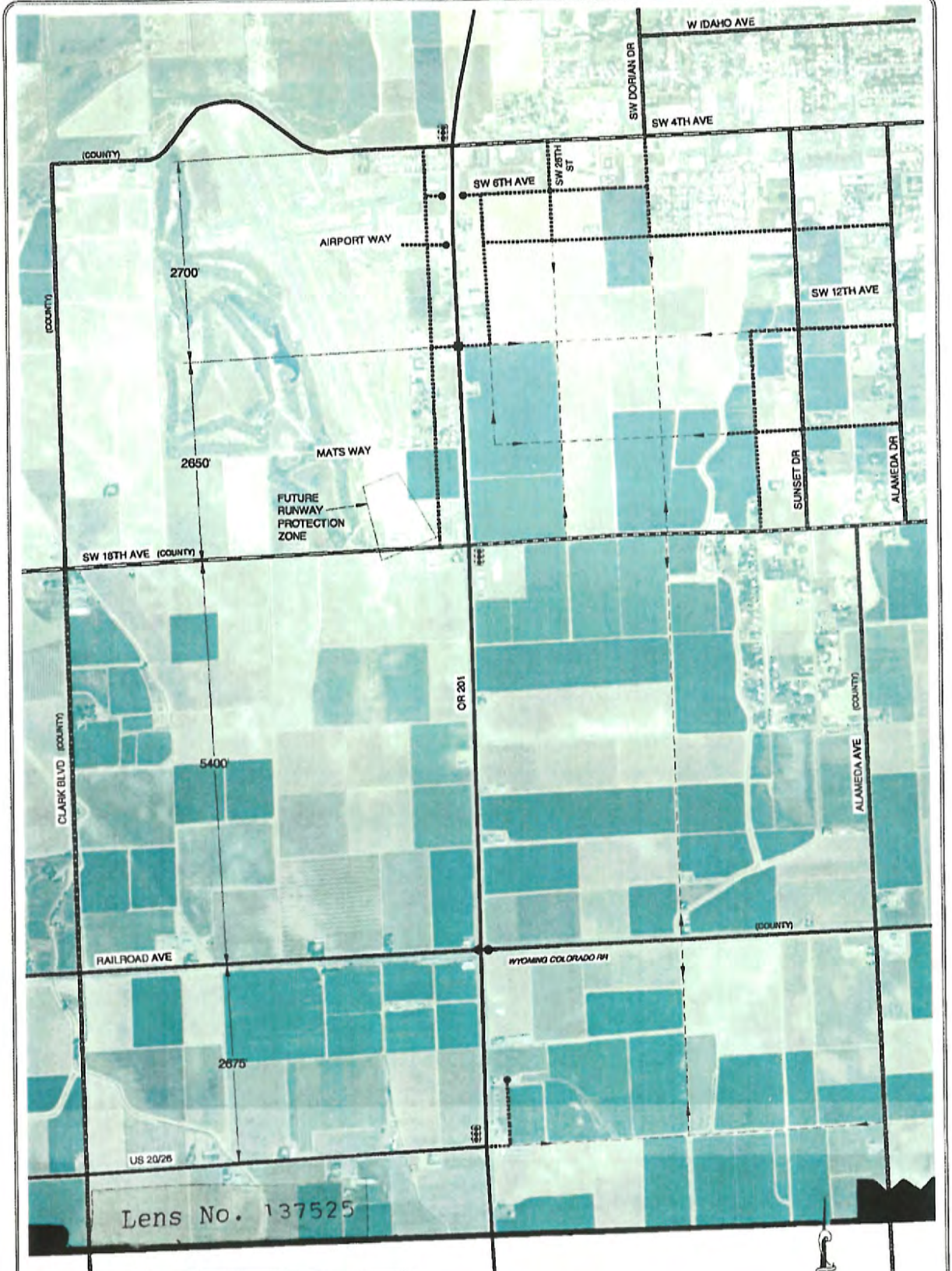
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

8402 DWGS FINAL PLAN 6402classification.dwg

LONG-TERM CIRCULATION & ACCESS ALTERNATIVE #4

FIGURE 5-4

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING



LEGEND

- FULL ACCESS
- RIGHT-IN / RIGHT-OUT ACCESS
- LEFT-IN / RIGHT-IN / RIGHT-OUT ACCESS
- TRAFFIC SIGNAL / FULL ACCESS

EXISTING ROADWAYS
- STATEWIDE HIGHWAY
- PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- RURAL MAJOR COLLECTOR (COUNTY)
- MINOR COLLECTOR

FUTURE ROADWAYS
- MINOR COLLECTOR
- POTENTIAL FUTURE MINOR COLLECTOR ALIGNMENTS (OUTSIDE URBAN GROWTH BOUNDARY)

ONION AVE (COUNTY)

SCALE
0 1250 2500

LONG-TERM CIRCULATION & ACCESS ALTERNATIVE #5

FIGURE 5-5

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING / TRAFFIC ENGINEERING

6482 DWGS/FINAL_PLAN/6482classification.dwg

Lens No. 137525

RECOMMENDED LONG-TERM CIRCULATION & ACCESS ALTERNATIVE

FIGURE 5-6

BOISE, ID

9777 Chinden Blvd.
Boise, ID 83714
208-323-2288

CALDWELL, ID

Cornerstone Bldg.
524 Cleveland Blvd.
Ste. 227
Caldwell, ID 83605
208-795-5058

COEUR D'ALENE, ID

West 280 Prairie Ave.
Coeur d'Alene, ID 83815
208-762-3644

Toothman-Orton
Engineering Company