# WASHINGTON MUNICIPAL AIRPORT
# Washington, Iowa

# AIRPORT LAND USE STUDY

**April 2015, Revised Dec. 2016**

# WASHINGTON MUNICIPAL AIRPORT
# LAND USE STUDY

**Airport Land Use Steering Committee**
Mike Roe, Chair – Vice Chair, Airport Commission
Sandra Johnson – Mayor
Jim Hanshaw – Planning & Zoning Commission
Kathy Salazar – City Council
Kevin Erpelding – Chair, Airport Commission
Bob Bonar – Area Resident

**City of Washington**
Brent Hinson – City Administrator
Steve Donnolly – Zoning Administrator

Snyder & Associates, Inc.

DGR Engineering

JS Consulting

Jerry Searle – Airport Planner

April 2015
Revised September 2016

## TABLE OF CONTENTS

Section


I. Introduction....1
II. Current Planning....1
III. Land Use Zoning – City of Washington....4
IV. Airport Tall Structures Zoning....7
City of Washington/Washington County
V. FAA Airport Design Guidance....8
VI. Analysis....16


List of Exhibits


1. Future Land Use – City of Washington....2
2. Land Use Zoning – City of Washington....5
3. RNAV (GPS) RWY 18....13
4. RNAV (GPS) RWY 36....14
5. VOR/DME RWY 36....15
6. Airport Overlay Zones....20
7. Urban Reserve, Ag, Residential, A-1 Agriculture District....25
8. Washington Municipal Airport Land Use Overlay Zone....26


List of Tables


1. Land Use Compatibility Matrix....3
2. RW 18/36 Design Standards....9
3. RW 13/31 Design Standards....10
4. IAP Standards....11
5. Runway Facilities....12
6. Airport Crop Restrictions....18
7. Iowa Airport Zone Chart: Agricultural Uses....21

# WASHINGTON MUNICIPAL AIRPORT
# LAND USE STUDY

## I. INTRODUCTION

The purpose of this study is to review current and ongoing land use planning within the Washington Municipal Airport environs. The primary objective is to promote compatible land uses within the immediate vicinity of the airport.

## II. CURRENT PLANNING

The City of Washington adopted a Comprehensive Plan in 2012. As noted on page 6, the Comprehensive Plan has two (2) basic purposes.

> "The plan provides the legal basis for land use regulations. Section 414 of the Code of Iowa enables cites to adopt land use regulations such as zoning and subdivision ordinances to promote the health, safety, morals and general welfare of the community."
>
> "A comprehensive development plan defines a shared vision and presents a unified action plan that will implement the city's goals."

During development of the 2012 Comprehensive Plan, the Planning Commission, Mayor and City Council together with a Steering Committee and City staff took into consideration the long range development needs of the Washington Municipal Airport.

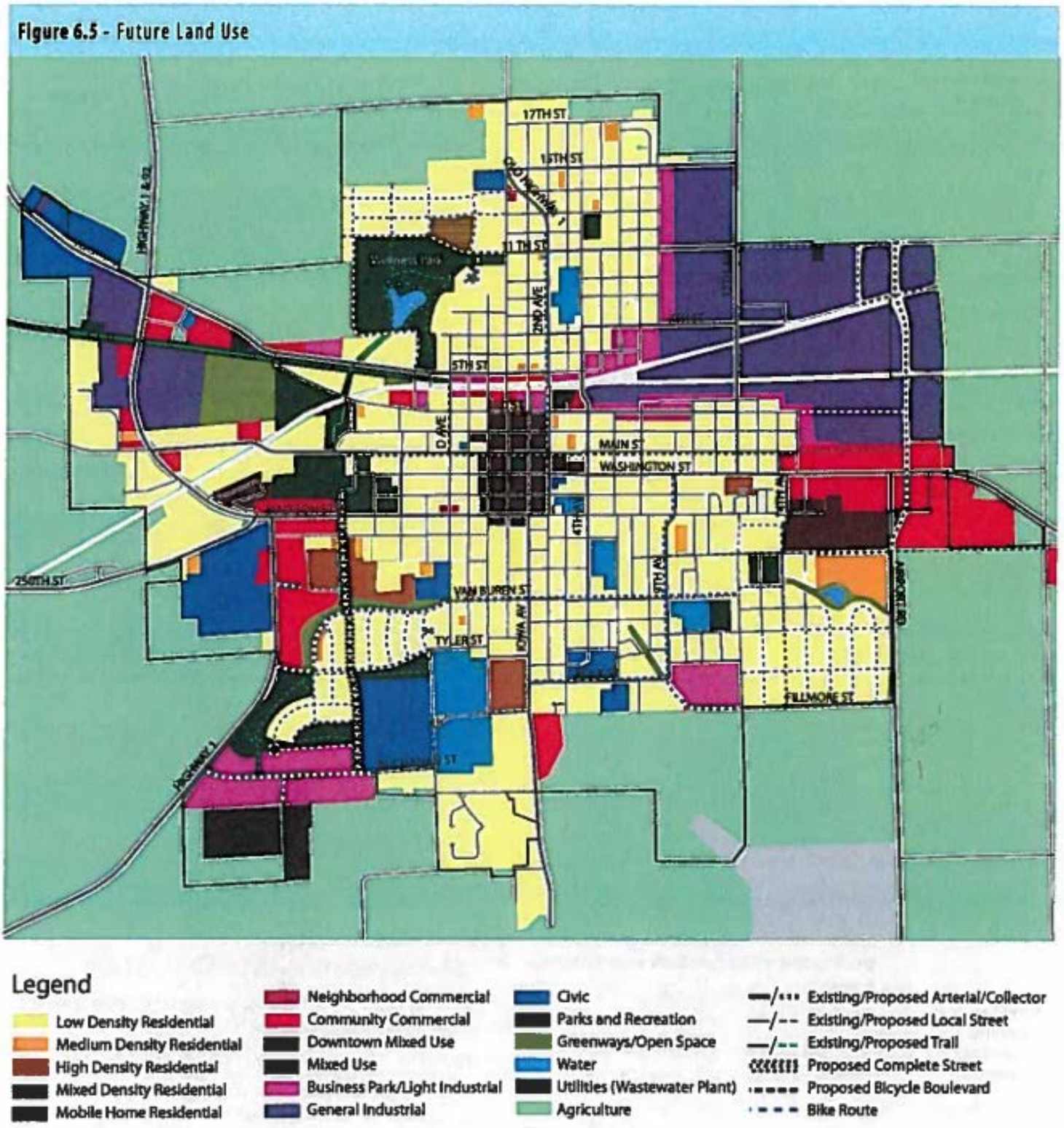
The 2012 planning process established a development vision for the community and directions for future growth, more specifically, the 2012 Comprehensive Plan provided:

- An overall development concept for new growth areas/future land uses.
- Identified areas for infill development as well as additional land needs by Horizon Year 2030.
    - 240 acres – residential development
    - 20-25 acres – commercial development
    - 85-100 acres – industrial development

The Future Land Use Plan adopted by the City of Washington is shown in Exhibit One. The exhibit shows agricultural land uses adjacent to and in the immediate vicinity of the airport. The Future Land Use Plan also shows future residential development north of Fillmore Street between Airport Road and 12th Avenue. Beyond the residential area, the plan envisions continued commercial development extending along Iowa Highway 92 while industrial uses are expected to develop along Airport Road extended north of Iowa Highway 92.

The 2012 Comprehensive Plan provided a discussion on land use compatibility (See Table 1).

## EXHIBIT ONE: FUTURE LAND USE PLAN



The land use compatibility matrix was developed to identify land use combinations that may create significant conflicts. The pairings were noted on a scale of one (1) to five (5) with five (5) rated as completely compatible and one (1) as uses not compatible.

1: **The uses are incompatible.** Any development proposal requires a Planned Unit Development and extensive documentation to prove that external effects are fully mitigated. In general, proposed uses with this level of conflict will not be permitted.
2: **The uses have significant conflict.** Major effects must be strongly mitigated to prevent impact on adjacent uses. A Planned Unit Development is required in all cases to assess project impact and define development design.
3: **The uses may have potential conflicts that may be resolved or minimized through project design.** Traffic and other external effects should be directed away from lower-intensity uses. Landscaping, buffering and screening should be employed to minimize negative effects. A Planned Unit Development may be advisable.
4: **The uses are basically compatible.** Traffic from higher intensity uses should be directed away from lower intensity uses. Building elements and scale should be consistent with surrounding development.
5: **The uses are completely compatible.** Development should be designed consistent with good planning practice.

**TABLE ONE: LAND USE COMPATIBILITY MATRIX**

| | Agriculture | Parks, Greenways, Opens Space | Low Density Residential | Medium Density Residential | High Density Residential | Mobile Home | Neighborhood Commercial | Community Commercial | Downtown Mixed Use | Mixed Use | Business Park/ Light Industrial | General Industry | Civic | Airport [(1)] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agriculture | - | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 5 |
| Parks, Greenways, Open Space | | - | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 2 | 5 | 4 |
| Low Density Residential | | | - | 4 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | 1 | 4 | 3 |
| Medium Density Residential | | | | - | 5 | 4 | 4 | 2 | 4 | 5 | 2 | 1 | 4 | 2 |
| High Density Residential | | | | | - | 5 | 4 | 2 | 5 | 5 | 2 | 1 | 4 | 1 |
| Mobile Home | | | | | | - | 4 | 3 | 3 | 4 | 2 | 2 | 4 | 1 |
| Neighborhood Commercial | | | | | | | - | 5 | 5 | 5 | 4 | 3 | 4 | 1 |
| Community Commercial | | | | | | | | - | 4 | 4 | 4 | 3 | 3 | 3 |
| Downtown Mixed Use | | | | | | | | | - | 5 | 2 | 2 | 4 | 1 |
| Mixed Use | | | | | | | | | | - | 3 | 2 | 4 | 3 |
| Business Park/Light Industrial | | | | | | | | | | | - | 4 | 3 | 3 |
| General Industry | | | | | | | | | | | | - | 1 | 2 |
| Airport | | | | | | | | | | | | | - | - |

Source: 2012 Comprehensive Plan pg. 79 (Footnote [(1)] Table One modified by adding airport)

As noted the Airport was not included specifically in Table One. For purpose of using the existing land use matrix, the airport land use was added to Table One.

In addition to the land use compatibility matrix set forth in the 2012 Comprehensive Plan, there are several documents referenced that provide additional guidance in developing specific land use recommendations for the areas on and in the immediate vicinity of the Washington Municipal Airport.

- Airport Cooperative Research Program (ACRP)
  Report 27 Enhancing Airport Land Use Compatibility Vol. 1: Land Use Fundamentals and Implementation Resource
- Iowa DOT – Office of Aviation
  Iowa Airport Land Use Guidebook

Other guidance referenced included Federal Aviation Administration Advisory Circulars (AC's) and Federal Aviation Regulations (FAR's).

## III. LAND USE ZONING – CITY OF WASHINGTON

The City of Washington has adopted land use zoning regulations (Chapter 165 – Zoning Regulations) and an airport height restriction ordinance (Chapter 167 – Airport Zoning Regulations).

Chapter 165 established 14 Land Use Zoning Districts that set forth land uses (principal and accessory) that are permitted. Additional uses are all permitted when authorized by the Board of Adjustment. Bulk regulations are also set forth for each district.

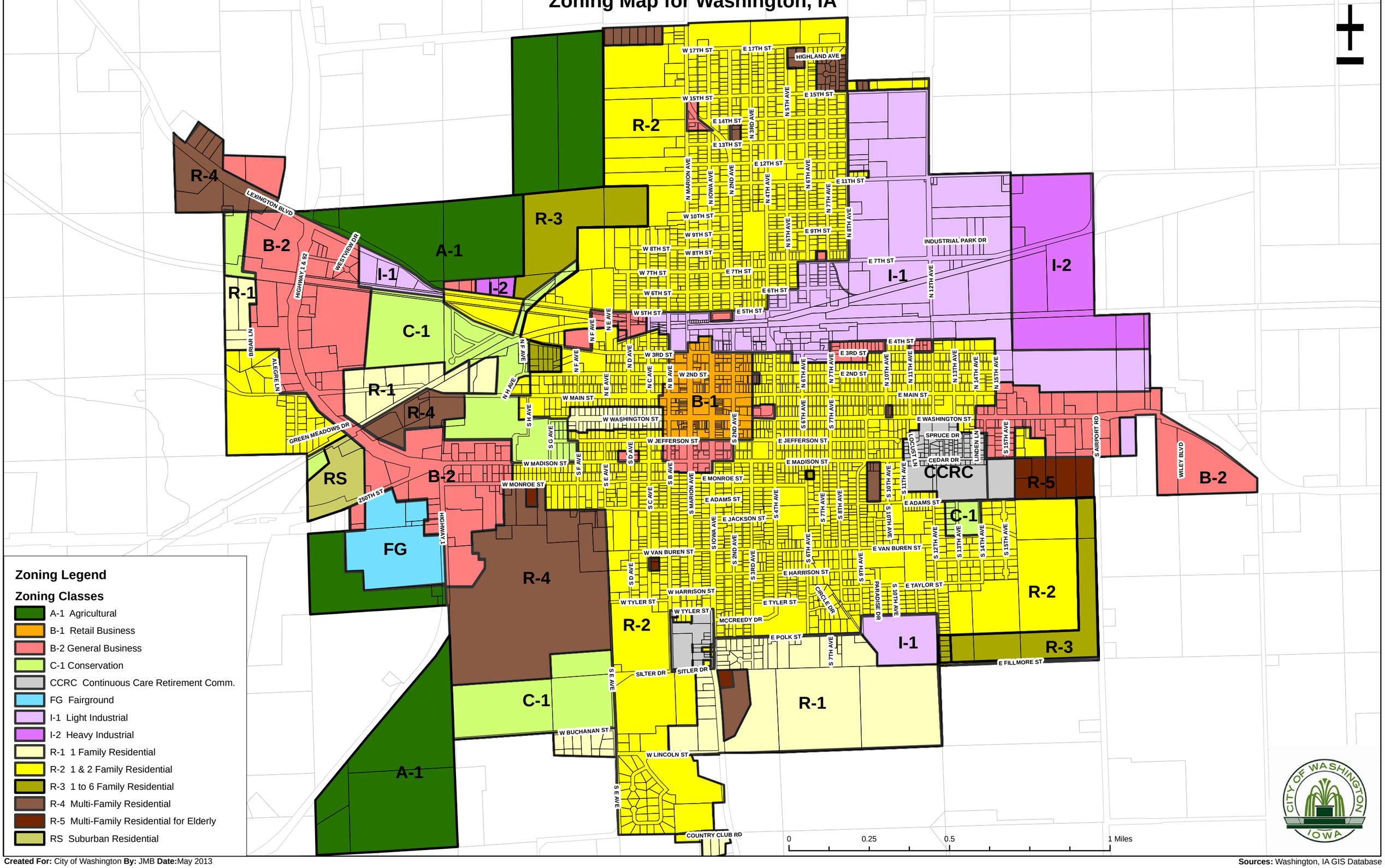
- Height Regulation (Controls the height of objects)
- Minimum Lot Area (Defines density)
- Minimum lot width, front, side and rear yard depth

The 14 districts provide the City of Washington with regulatory tools that may be used to promote health, safety and welfare within the community and ensure compatible land uses adjacent to the airport. The 14 Districts are:

| | |
|---|---|
| "FG" | Fairgrounds District |
| "C-1" | Conservation District |
| "CCRC" | Continuing Care Retirement Community District |
| "A-1" | Agricultural District |
| "R-A" | Residential Agricultural Districts |
| "R-1" | One-Family Residence Districts |
| "R-S" | Suburban Residence Districts |
| "R-2" | One-and Two-Family Residence Districts |
| "R-3" | One- to Six-Family Residence Districts |
| "R-4" | Multifamily Residence Districts |
| "B-1" | Retail Business Districts |
| "B-2" | General Business Districts |
| "I-1" | Industrial Districts |
| "I-2" | General Industrial Districts |

The City of Washington has adopted a zoning map that shows the boundaries of the 14 districts referenced above. The "official" zoning map is kept on file in the City Clerk's office. (See Exhibit Two).

# Zoning Map for Washington, IA




## Zoning Legend

### Zoning Classes

- A-1 Agricultural
- B-1 Retail Business
- B-2 General Business
- C-1 Conservation
- CCRC Continuous Care Retirement Comm.
- FG Fairground
- I-1 Light Industrial
- I-2 Heavy Industrial
- R-1 1 Family Residential
- R-2 1 & 2 Family Residential
- R-3 1 to 6 Family Residential
- R-4 Multi-Family Residential
- R-5 Multi-Family Residential for Elderly
- RS Suburban Residential

**Created For:** City of Washington **By:** JMB **Date:** May 2013

**Sources:** Washington, IA GIS Database

Since Washington County has not adopted a land use zoning ordinance, the City of Washington may (Iowa Code 414.23) extend its zoning regulations two (2) miles beyond the corporate boundary. The Washington Municipal Airport is located within unincorporated Washington County and within the two mile area. The airport may be described as being located primarily in the NW ¼ and SW ¼ of Section 28 T-75 N R-7 W and extending into Sections 20, 21 and 29. The initial land for the airport was acquired in 1946. Beyond the property acquired in fee title and/or easement (obligated land) for airport facilities (runways, terminal area, runway protection zones), there are other imaginary surfaces that extend beyond the runway ends.

On February 20, 1989, Ordinance 681 created the 2 - mile Extra – Territorial Zoning District. After several meetings and public hearings on February 18, 1991, the City's Planning and Zoning Commission recommended the City Council to approve the zoning map presented by Stanley Consultants. After three (3) Public Hearings and revisions of the proposed zoning in the 2 – mile Extra – Territorial Zoning District in the fall of 1991, Ordinance 702 was passed creating specific zoning areas in the 2 - mile Extra Territorial Zone District.

The City of Washington through the Extra-Territorial Authority provided in Chapter 165 – Zoning Regulations has the ability to establish land uses that are generally compatible with airport operations. More specifically, the Extra-Territorial Authority extends over the following areas located in unincorporated Washington County.

Sections 3, 4, 5, 6, 7, 8, 9 and 10;
The W ½ of Section 11;
The W ¾ of Section 14;
Sections 15, 16, 19, 20, 21 and 22;
The W ¾ of Section 23;
The W ½ of Section 26;
Sections 27, 28, 29 and 30;
The N ½ of Section 31;

The N ¾ of Section 32;
The N ½ of Section 33;
and the N ½ of Section 34;
all in Washington Township,
T 75 N, R 7 W of the 5th P.M.; and also

The S ½ of Section 31;
the S ½ of Section 32; and the
S ½ of Section 33; all in Jackson Township,
T 76 N, R 7 W of the 5th P.M.; and also

Section 1;
The SE ¼; the SE ¼ of the NE ¼ and
The SE ¼ of the SW ¼ of Section 2;
Sections 11, 12, 13 and 14;
The E ½ of Section 23;
Sections 24 and 25;
The NE ¼ of Section 26;

and the NE ¼ of Section 36;
all in Franklin Township, T 75 N,
R 8 W of the 5th P.M.;

## IV. AIRPORT TALL STRUCTURES ZONING: CITY OF WASHINGTON/WASHINGTON COUNTY

The City of Washington and the Washington Airport Commission have been advocates of ensuring that objects extending into the airspace beyond the airport do not become hazards to air navigation or result in approach minimums being raised or approach procedures terminated

The City of Washington has adopted airport zoning regulations (Chapter 167 – Airport Zoning). Washington County (Ordinances Number 01-2) has also adopted (October 31, 2001) an airport zoning ordinance. Each ordinance gives the governing body the authority to regulate the height of objects within the area underlying the airport imaginary surfaces. It should be noted that the two (2) ordinances provide authority to regulate the height of objects extending into the airport airspace and not land use.

The recommendation herein is that the airport zoning ordinance adopted by the City (Chapter 167) and the ordinance adopted by Washington County (Ordinance 01-2 dated 10-31-01) be reviewed and updated as may be necessary to reflect references to runway end elevations and approach surfaces.

It should be noted that enforcement of the airport height restriction ordinance is to be provided by the Washington Airport Zoning Commission.

> SECTION IX ENFORCEMENT
> It shall be the duty of the Washington Airport Zoning Commission to administer and enforce the regulations prescribed herein. Applications for permits shall be made to the Washington City Zoning Administrator. Applications for actions by the Board of Adjustment shall be made to the Washington City Zoning Administrator.
>
> Source: Washington County – Ordinances 01-2

Each ordinance refers to the Washington Airport Zoning Commission. For purpose of clarity, the Washington Airport Zoning Commission means the City of Washington Planning and Zoning Commissions. Also, reference to the Board of Adjustment means the Board of Adjustment created by the City of Washington.

The airport overlay zoning map is the airport imaginary surface as shown on the most current Airport Layout Plan (ALP) and defined by Federal Aviation Regulations – FAR Part77. (See Exhibit 3).

The Washington Municipal Airport is obligated to carry out Federal assurances as set forth in various Federal (FAA) grant agreements.

Federal Grant Assurance 21: Compatible Land Use

> Grant Assurance 21 relates to the obligation of the City of Washington to take appropriate actions to zone and control existing and planned land uses to make them compatible with aircraft operations as the airport. More specifically: ".....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, including landing and takeoff of aircraft."

## V. FAA AIRPORT DESIGN GUIDANCE

For purposes here, FAA AC 150/5300-13A – Airport Design and FAR Part 77 – Objects Affecting Navigable Airspace are the primary source reference documents. FAA AC 150/5300-13A – Airport Design is used to establish airport design requirements. These requirements are based on aeronautical demand forecasts. FAR Part 77 is used to establish imaginary surfaces around the airport. An object that penetrates one (1) of five (5) surfaces is considered a potential hazard unless determined otherwise by an aeronautical study.

Existing and proposed airport improvements are shown on the Airport Layout Plan (ALP). Major facility improvements envisioned by the Airport Commission and City include:

- Development of the Primary Runway (RW 18/36) to an ultimate length of 5,500 feet.
- Protection of instrument approach procedures to Runways 18 and 36.
- Continued development of aircraft storage facilities and parking within the terminal area.
- Development of instrument approach procedures to Runways 13 and 31.

The airport supports two (2) runways. RW 18/36 is 4,000 feet in length and 75 feet in width. The Airport Layout Plan shows RW 36 being extended 1,500 feet; providing an ultimate length of 5,500 feet. RW 13/31 was recently reconstructed. The runway thresholds were relocated to provide the required runway safety area, obstacle free zone and runway object free area beyond each runway end. The RW 31 threshold was located to provide a 15 foot vertical separation between the 20:1 approach slope and Airport Road.

Table Two sets forth runway design standards for RW 18/36. Based on cost/benefit criteria, it is not likely an approach light system will be installed on Runways 18 or 36 in the foreseeable future. As noted in Table Four, an approach light system is recommended.

| | **RW 18** | **RW 36** |
|---|---|---|
| Airplane Approach Category | C | C |
| Airplane Design Group | II | II |
| Visibility Minimum | ¾ - Statute Mile | ¾ Statute Mile |
| Large Airplane | > 12,500 lbs. | > 12,500 lbs. |

| | RW 13 | RW 31 |
|---|---|---|
| Airplane Approach Category | A & B | A & B |
| Airplane Design Group | II | II |
| Visibility Minimum | ≥ 1 Statute Mile | ≥ 1 Statute Mile |
| Small Airplanes | < 12,500 lbs. | < 12,500 lbs. |

Table Four sets forth the standards associated with instrument approach procedures.

## TABLE TWO: RW 18/36 DESIGN STANDARDS

**Runway design standards matrix, C/D/E - II**

| *Aircraft Approach Category (AAC) and Airplane Design Group (ADG):* | | C/D/E - II | | | |
|---|---|---|---|---|---|
| ITEM | DIM [1] | VISIBILITY MINIMUMS | | | |
| | | Visual | Not Lower than 1 mile | Not Lower than 3/4 mile | Lower than 3/4 mile |
| **RUNWAY DESIGN** | | | | | |
| Runway Length | A | *Refer to paragraphs 302 and 304* | | | |
| Runway Width | B | 100 ft | 100 ft | 100 ft | 100 ft |
| Shoulder Width | | 10 ft | 10 ft | 10 ft | 10 ft |
| Blast Pad Width | | 120 ft | 120 ft | 120 ft | 120 ft |
| Blast Pad Length | | 150 ft | 150 ft | 150 ft | 150 ft |
| Crosswind Component | | 16 knots | 16 knots | 16 knots | 16 knots |
| **RUNWAY PROTECTION** | | | | | |
| Runway Safety Area (RSA) | | | | | |
| Length beyond departure end [9,10] | R | 1,000 ft | 1,000 ft | 1,000 ft | 1,000 ft |
| Length prior to threshold [11] | P | 600 ft | 600 ft | 600 ft | 600 ft |
| Width [13] | C | 500 ft | 500 ft | 500 ft | 500 ft |
| Runway Object Free Area (ROFA) | | | | | |
| Length beyond runway end | R | 1,000 ft | 1,000 ft | 1,000 ft | 1,000 ft |
| Length prior to threshold [11] | P | 600 ft | 600 ft | 600 ft | 600 ft |
| Width | Q | 800 ft | 800 ft | 800 ft | 800 ft |
| Runway Obstacle Free Zone (ROFZ) | | | | | |
| Length | | *Refer to paragraph 308* | | | |
| Width | | *Refer to paragraph 308* | | | |
| Precision Obstacle Free Zone (POFZ) | | | | | |
| Length | | N/A | N/A | N/A | 200 ft |
| Width | | N/A | N/A | N/A | 800 ft |
| Approach Runway Protection Zone (RPZ) | | | | | |
| Length | L | 1,700 ft | 1,700 ft | 1,700 ft | 2,500 ft |
| Inner Width | U | 500 ft | 500 ft | 1,000 ft | 1,000 ft |
| Outer Width | V | 1,010 ft | 1,010 ft | 1,510 ft | 1,750 ft |
| Acres | | 29.465 | 29.465 | 48.978 | 78.914 |
| Departure Runway Protection Zone (RPZ) | | | | | |
| Length | L | 1,700 ft | 1,700 ft | 1,700 ft | 1,700 ft |
| Inner Width | U | 500 ft | 500 ft | 500 ft | 500 ft |
| Outer Width | V | 1,010 ft | 1,010 ft | 1,010 ft | 1,010 ft |
| Acres | | 29.465 | 29.465 | 29.465 | 29.465 |
| **RUNWAY SEPARATION** | | | | | |
| *Runway centerline to:* | | | | | |
| Parallel runway centerline | H | *Refer to paragraph 316* | | | |
| Holding Position | | 250 ft | 250 ft | 250 ft | 250 ft |
| Parallel taxiway/taxilane centerline [2] | D | 300 ft | 300 ft | 300 ft | 400 ft |
| Aircraft parking area | G | 400 ft | 400 ft | 400 ft | 500 ft |
| Helicopter touchdown pad | | *Refer to AC 150/5390-2* | | | |

Note:

- Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.

RW 18/36 (Without Approach Light System)

Source: AC 150/5300-13A – Appendix 7

## TABLE THREE: RW 13/31 DESIGN STANDARDS

**Runway design standards matrix, A/B – II**

| *Aircraft Approach Category (AAC) and Airplane Design Group (ADG):* | | A/B - II | | | |
|---|---|---|---|---|---|
| ITEM | DIM [1] | VISIBILITY MINIMUMS | | | |
| | | Visual | Not Lower than 1 mile | Not Lower than 3/4 mile | Lower than 3/4 mile |
| **RUNWAY DESIGN** | | | | | |
| Runway Length | A | *Refer to paragraphs 302 and 304* | | | |
| Runway Width | B | 75 ft | 75 ft | 75 ft | 100 ft |
| Shoulder Width | | 10 ft | 10 ft | 10 ft | 10 ft |
| Blast Pad Width | | 95 ft | 95 ft | 95 ft | 120 ft |
| Blast Pad Length | | 150 ft | 150 ft | 150 ft | 150 ft |
| Crosswind Component | | 13 knots | 13 knots | 13 knots | 13 knots |
| **RUNWAY PROTECTION** | | | | | |
| Runway Safety Area (RSA) | | | | | |
| Length beyond departure end [9,10] | R | 300 ft | 300 ft | 300 ft | 600 ft |
| Length prior to threshold | P | 300 ft | 300 ft | 300 ft | 600 ft |
| Width | C | 150 ft | 150 ft | 150 ft | 300 ft |
| Runway Object Free Area (ROFA) | | | | | |
| Length beyond runway end | R | 300 ft | 300 ft | 300 ft | 600 ft |
| Length prior to threshold | P | 300 ft | 300 ft | 300 ft | 600 ft |
| Width | Q | 500 ft | 500 ft | 500 ft | 800 ft |
| Runway Obstacle Free Zone (ROFZ) | | | | | |
| Length | | *Refer to paragraph 308* | | | |
| Width | | *Refer to paragraph 308* | | | |
| Precision Obstacle Free Zone (POFZ) | | | | | |
| Length | | N/A | N/A | N/A | 200 ft |
| Width | | N/A | N/A | N/A | 800 ft |
| Approach Runway Protection Zone (RPZ) | | | | | |
| Length | L | 1,000 ft | 1,000 ft | 1,700 ft | 2,500 ft |
| Inner Width | U | 500 ft | 500 ft | 1,000 ft | 1,000 ft |
| Outer Width | V | 700 ft | 700 ft | 1,510 ft | 1,750 ft |
| Acres | | 13.770 | 13.770 | 48.978 | 78.914 |
| Departure Runway Protection Zone (RPZ) | | | | | |
| Length | L | 1,000 ft | 1,000 ft | 1,000 ft | 1,000 ft |
| Inner Width | U | 500 ft | 500 ft | 500 ft | 500 ft |
| Outer Width | V | 700 ft | 700 ft | 700 ft | 700 ft |
| Acres | | 13.770 | 13.770 | 13.770 | 13.770 |
| **RUNWAY SEPARATION** | | | | | |
| *Runway centerline to:* | | | | | |
| Parallel runway centerline | H | *Refer to paragraph 316* | | | |
| Holding Position | | 200 ft | 200 ft | 200 ft | 250 ft |
| Parallel taxiway/taxilane centerline [2,4] | D | 240 ft | 240 ft | 240 ft | 300 ft |
| Aircraft parking area | G | 250 ft | 250 ft | 250 ft | 400 ft |
| Helicopter touchdown pad | | *Refer to AC 150/5390-2* | | | |

Note:

- Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.

RW 13/31

Source: AC 150/5300-13A – Appendix 7

## TABLE FOUR: IAP STANDARDS

**Standards for Instrument Approach Procedures**

| Visibility Minimums [1] | < 3/4 statute mile | 3/4 to < 1 statute mile | ≥ 1 statute mile straight-in | Circling [2] |
|---|---|---|---|---|
| HATh [3] | < 250 ft | ≥ 250 ft | ≥ 250 ft | ≥ 350 ft |
| TERPS GQS [4] | Clear | Clear | Clear | Not applicable |
| PA final approach surfaces [5] | Clear | Not Required | Not Required | Not applicable |
| POFZ (PA & APV only) | Required | Not Required | Not Required | Not applicable |
| TERPS Chapter 3, Section 3 | 34:1 clear | 20:1 clear | 20:1 clear [6] | 20:1 clear [6] |
| ALP [7] | Required | Required | Required | Recommended |
| Minimum Runway Length | 4,200 ft (paved) | 3,200 ft [8, 9] | 3,200 ft [8, 9] | 3,200 ft [8, 9] |
| Runway Markings (See AC 150/5340-1) | Precision | Non-precision [9] | Non-precision [9] | Visual (Basic) [9] |
| Holding Position Signs & Markings (See AC 150/5340-1, AC 150/5340-18) | Precision | Non-precision [9] | Non-precision [9] | Visual (Basic) [9] |
| Runway Edge Lights [10] | HIRL / MIRL | HIRL / MIRL | MIRL / LIRL | MIRL / LIRL (Required only for night minimums) |
| Parallel Taxiway [11] | Required | Required | Recommended | Recommended |
| Approach Lights [12] | MALSR, SSALR, or ALSF | Recommended [13] | Recommended [13] | Not Required |
| Applicable Runway Design Standards, e.g. OFZ | < 3/4-statute mile approach visibility minimums | ≥ 3/4-statute mile approach visibility minimums | ≥ 3/4-statute mile approach visibility minimums | Not Required |
| Threshold Siting Criteria To Be Met (Reference paragraph 303) | Table 3-2, row 7 | Table 3-2, row 6 | Table 3-2, rows 1-5 | Table 3-2, rows 1-4 |
| Survey Required [14] | VGS | VGS (PA & APV)<br>NVGS | NVGS [15] | NVGS [16] |

Notes:

1. Visibility minimums are subject to the application of Order 8260.3 ("TERPS"), and associated orders or this table, whichever is higher. To qualify for each visibility (or circling), all requirements within the same column must be met or exceeded.
2. All runways authorized for circling must meet threshold siting (reference paragraph 303), OFZ (reference paragraph 308), and TERPS Chapter 3, Section 3 criteria.
3. Height Above Airport (HAA) for circling. The HATh/HAA indicated is for planning purposes; actual obtainable HATh/HAA is determined by TERPS and may be higher due to obstacles or other requirements. HATh less than 250 ft must comply with requirements in < 3/4 statute mile column regardless of published visibility.
4. GQS is applicable to PA and APV only. See Table 3-2, row 8.
5. Applicable to PA only, as defined by paragraph 102. If not clear, HATh must be increased to 250 ft or greater (as required by TERPS).
6. If not clear, obstacles must be lighted (see AC 70/7460-1) or procedure/circling runway restricted to day only. In certain circumstance, a VGSI may be used in lieu of obstruction lighting as defined in TERPS.
7. An ALP is only required for obligated airports in the NPIAS; it is recommended for all others.
8. Runways less than 3,200 ft are protected by Part 77 to a lesser extent. However, runways as short as 2,400 ft could support an instrument approach provided the lowest HATh is based on clearing any 200-ft (61 m) obstacle within the final approach segment.
9. Unpaved runways require case-by-case evaluation by the RAPT.
10. Runway edge lighting is required for night approach minimums. High intensity lights are required for RVR-based minimums.
11. A full-length parallel taxiway must lead to the threshold.
12. To achieve lower visibility minimums based on credit for lighting, a full approach light system (ALSF-1, ALSF-2, SSALR, or MALSR) is required for visibility < 3/4 statute mile. Intermediate (MALSF, MALS, SSALF, SSALS, SALS/SALSF) or Basic (ODALs) systems will result in higher visibility minimums. An ALSF-1 or ALSF-2 is required for CAT II/III ILS.
13. ODALS, MALS, SSALS, and SALS are acceptable.
14. See AC 150/5300-18 for Vertically Guided Survey (VGS) and non-Vertically Guided Survey (NVGS) requirements.
15. For PA and APV only, the NVGS must be supplemented with the first 10,200 ft of the Vertically Guided Approach Surface.
16. Absence of the indicated survey does not preclude authorization to establish circling to a runway but may result in increased HATh and visibility.

RW 18/36 (Without Approach Light System)
RW 13/31

Source: AC 150/5300-13A – Appendix 7

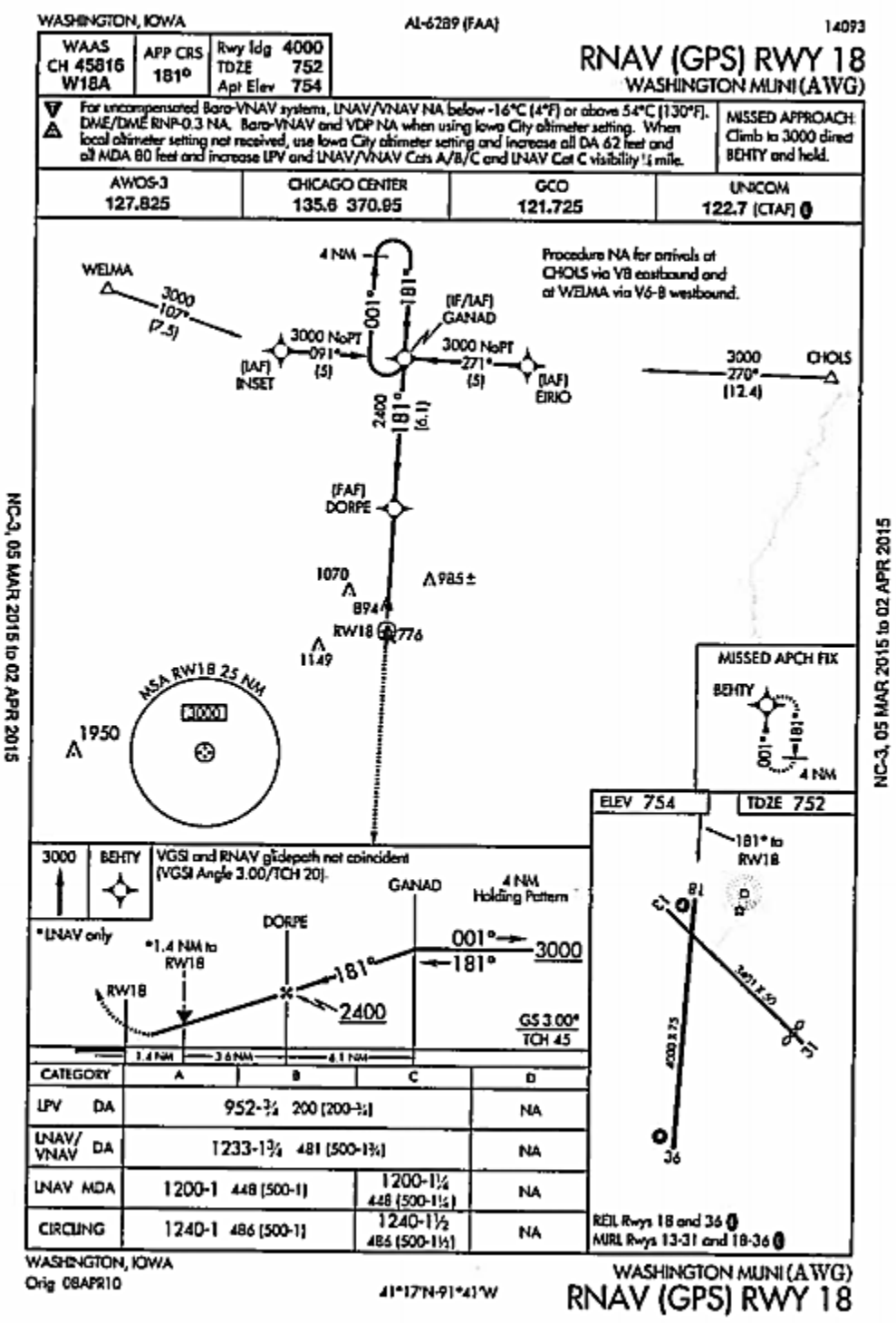
**TABLE FIVE: RUNWAY FACILITIES**

| Runway | Length | Width | Threshold | Latitude | Longitude |
|---|---|---|---|---|---|
| RW 18 | 4000 | 75 | 751.0 | 41-16.77429N | 91-40.57606W |
| RW 36 | 4000 | 75 | 751.00 | 41-16.116552W | 91-40.622792N |
| RW 13 | 3400 | 60 | 752.16 | 41-16.510276 N | 91-40.471822W |
| RW31 | 3400 | 60 | 754.27 | 41-16.273792 N | 91-40.155388W |

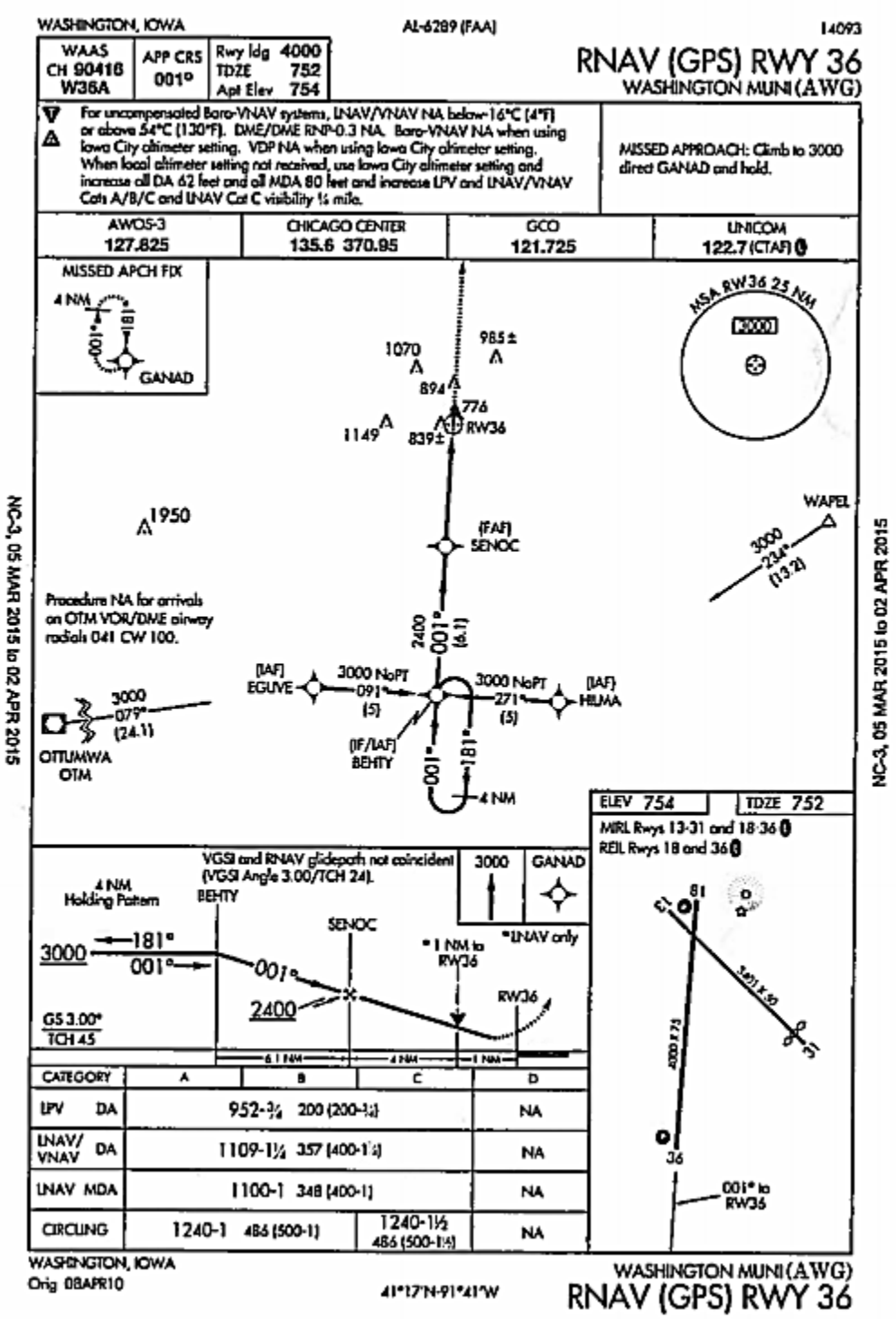
Source: AIRNAV; S & A Inc. – RW 13/31 under construction

The established airport elevation is 753.5 feet AMSL. The Airport Commission may revise FAA Form 5010 to reflect “as built” conditions. New instrument approach procedure have not (as of March 2015) been development for RW 13/31. There are three (3) published instrument approaches available to RW 18/36. LPV (Localizer Performance with Vertical Guidance) approaches have been published to Runways 18 and 36 (See Exhibits Three and Four). The forward visibility (Approach Category A, B and C airplanes) is ¾ statue mile without an approach light system. There is also a VOR/DME approach available (See Exhibit Five).

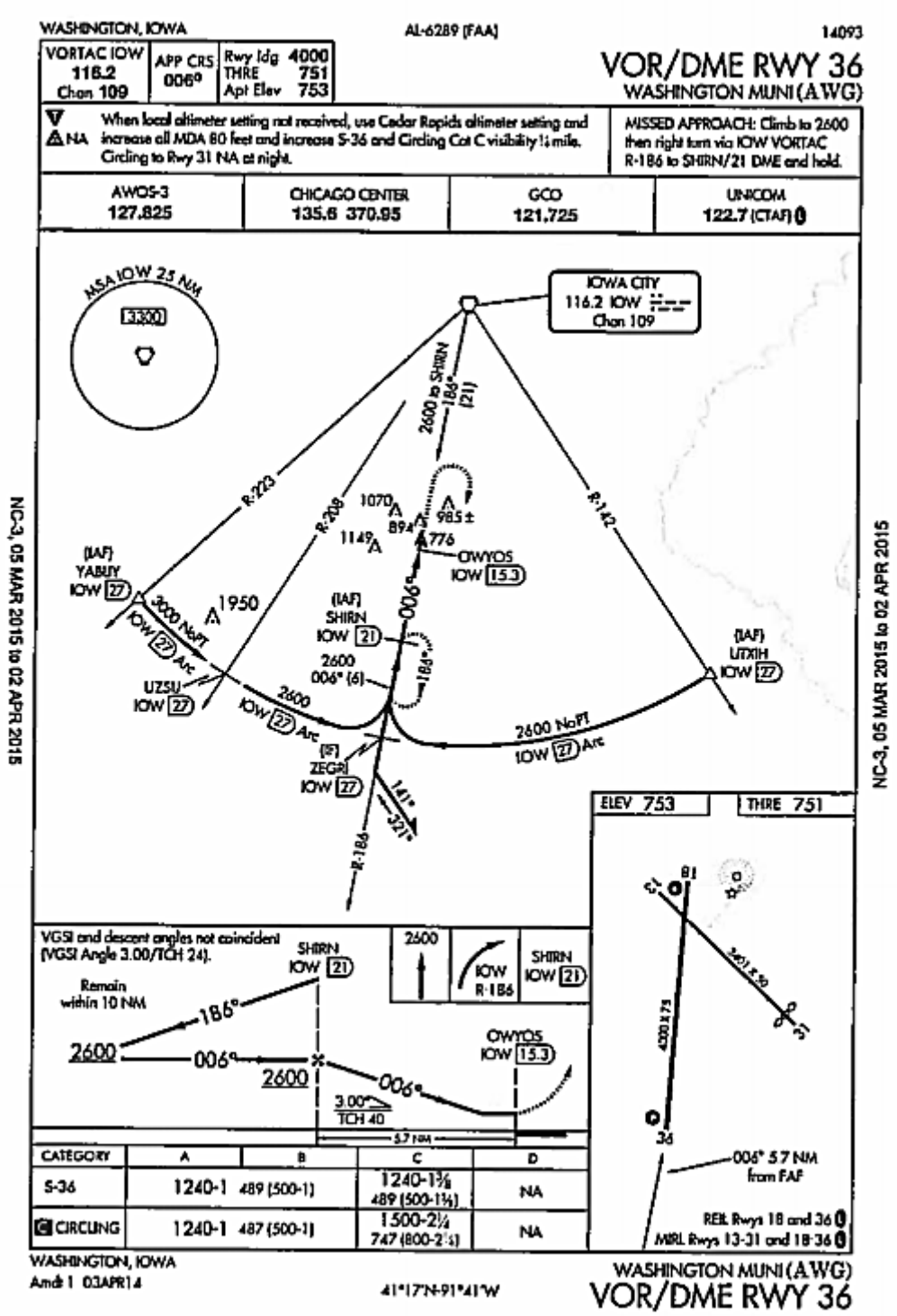
## EXHIBIT THREE: RNAV (GPS) RWY 18



## EXHIBIT FOUR: RNAV (GPS) RWY 36



## EXHIBIT FIVE: VOR/DME RWY 36



## VI. ANALYSIS

Given the anticipated aircraft usage, aircraft noise is not expected to present significant concerns since the City's Future Land Use Plan envisions agricultural land uses within the immediate vicinity of the airport. A noise analysis may be required for a major runway extension or strengthening project; should the Washington Municipal Airport exceed the following thresholds:

- Airplane Design Groups I & II
    - 90,000 annual piston-powered aircraft operations
    - 700 annual jet-powered operations

FAA has developed guidance regarding land use compatibility based on noise contours generated from the Integrated Noise Model.

Wildlife hazards potentially exist at most airports in Iowa. Should the airport experiences incidents involving wildlife, the City should contact the Iowa DOT Office of Aviation. The Office of Aviation has entered into an agreement with the United States Department of Agriculture (USDA-APHIS-WS) to prepare a wildlife hazard assessment and control plan. To minimize the possibility of wildlife incidents, the land use plan should discourage creating habitats that become wildlife attractants.

- Storm water retention ponds near the airport
- Tree and brush cover near the airport

At the present time, there is minimal tree and brush cover near the airport. Land uses adjacent to the airport and in the immediate vicinity are under cultivation. While row and grain crops provide a food source, there is minimal ground cover that is not altered each crop year. In general, current agricultural practices are compatible with the airport.

The FAA recommends that the Runway Protection Zone (RPZ) be acquired and owned in fee title. Interim guidance (dated 9-27-2012) identified several land uses that should be excluded from the RPZ. These are:

- Buildings and structures
- Recreational land
- Transportation facilities (roads, railroads, trails)
- Fuel storage, Hazardous material storage
- Waste water treatment facilities
- Above-ground utility infrastructure

Reference to the current Airport Layout Plan (ALP) identifies existing and future runway protection zones. The ALP should be kept current and updated to depict existing and future facility needs.

The City of Washington will need to consult with the FAA Central Region staff should the City not be able to acquire the RPZ in fee. A surface and overhead avigation may be considered.

The City of Washington as noted in Section III may extend its zoning powers two miles beyond the corporate boundary. The areas if annexed are typically brought in as A-1 (Agricultural) District and rezoned based in part on the Future Land Use Plan.

Where agricultural land uses are generally compatible with airport operations, the A-1 Agricultural District does permit uses that are not necessarily compatible with airport operations. Permitted principal uses allowed in the A-1 Agricultural District include the following uses that may not be compatible with in close proximity of the airport.

- Livestock confinement (housed or fed) within two hundred (200) feet of an "R" district,
- Public parks, playgrounds and recreation areas,
- Churches, chapels or parish houses located not less than twenty (20) feet from any side lot line in any "R" district,
- Any building or structure occupied or used for nursery, elementary, junior high or high schools, public libraries and similar public cultural uses located not less than 20 feet from any side lot line.

Agricultural activities shall be limited to areas beyond the crop restriction lines as defined in Federal Aviation Administration (FAA) Central Region Airport Certification Bulletin 2010-10 dated August 31, 2010 and the Iowa Department of Transportation publication entitled Iowa Airport Land Use Guidebook dated January 2008, - Chapter 3 page 49.

Where agricultural uses are permitted, the following activities should be discouraged: Orchards, tree farms, and vineyards. The presence of these vegetation types may provide wildlife (not only) with a food source, but shelter as well. In addition, trees not harvested may ultimately grow to a height where they become an obstruction.

Table Six summarizes current airport crop restriction. Crop restriction lines should be shown on the Airport Land Use Plan and included in the Airport Layout Plan set.

## TABLE SIX: AIRPORT CROP RESTRICTIONS

| Aircraft Approach Category and Design Group[1] | Distance in Feet From Runway Centerline to Crop | | Distance in Feet From Runway End to Crop | | Distance in Feet From Centerline of Taxiway to Crop | Distance in Feet from Edge of Apron to Crop |
|---|---|---|---|---|---|---|
| | Visual & ≥ ¾ Mile | < ¾ Mile | Visual & ≥ ¾ Mile | < ¾ Mile | | |
| **Category A & B Aircraft** | | | | | | |
| Group I | 200[2] | 400 | 300[3] | 600 | 45 | 40 |
| Group II | 250 | 400 | 400[3] | 600 | 66 | 58 |
| Group III | 400 | 400 | 600 | 800 | 93 | 81 |
| Group IV | 400 | 400 | 1,000 | 1,000 | 130 | 113 |
| **Category C, D & E Aircraft** | | | | | | |
| Group I | 530[3] | 575[3] | 1,000 | 1,000 | 45 | 40 |
| Group II | 530[3] | 575[3] | 1,000 | 1,000 | 66 | 58 |
| Group III | 530[3] | 575[3] | 1,000 | 1,000 | 93 | 81 |
| Group IV | 530[3] | 575[3] | 1,000 | 1,000 | 130 | 113 |
| Group V | 530[3] | 575[3] | 1,000 | 1,000 | 160 | 138 |
| Group VI | 530[3] | 575[3] | 1,000 | 1,000 | 193 | 167 |

1. Design Groups are based on wing span or tail height and category depends on approach speed of the aircraft, as shown below:

| Design Group | Category |
|---|---|
| Group I: Wing span up to 49 ft. | Category A: Speed less than 91 knots |
| Group II: Wing span 49 ft. up to 79 ft. | Category B: Speed 91 knots up to 121 knots |
| Group III: Wing span 79 ft. up to 118 ft. | Category C: Speed 121 knots up to 141 knots |
| Group IV: Wing span 118 ft. up to 171 ft. | Category D: Speed 141 knots up to 166 knots |
| Group V: Wing span 171 ft. up to 214 ft. | Category E: Speed 166 knots or more |
| Group VI: Wing span 214 ft. up to 262 ft. | |

2. If the runway will only serve small airplanes (12,500 lb. and under) in Design Group 1, this dimension may be reduced to 125 feet; however, this dimension should be increased where necessary to accommodate visual navigational aids that may be installed. For example, farming operations should not be allowed within 25 feet of a Precision Approach Path Indicator (PAPI) light box.

3. These dimension reflect the Threshold Siting Surface (TSS) as defined in AC 150/5300-13, Appendix 2. The TSS cannot be penetrated by any object. Under these conditions, the TSS is more restrictive than the OFA. The dimensions shown here are to prevent penetration of the TSS by crops and farm machinery.

Source: FAA Central Region Airport Certification Bulletin 2010-10 August 2010

The Iowa Airport Land Use Guidebook provides guidance related agricultural and open space area on or within close proximity of an airport. The publication set forth five (5) zones (see Exhibit 6 and Table 7) within which agricultural and open space uses were classified as:

- Compatible (C)
- Additional Review Required (AR)
- Not Compatible (NC)

The five (5) zones coincide with the airport imaginary surfaces as defined by Federal Aviation Regulation (FAR) Part 77 surfaces (see Exhibit 8) and FAA AC 150-5300-13A Airport Design. Reference may be made to Exhibit Six.

| Zone | Description | Source |
|---|---|---|
| A | Runway protection zone (RPZ) | AC 150-5300-13A Airport Design |
| B | Approach surface | FAR Part 77 |
| C | Transitional surface | FAR Part 77 |
| D | Horizontal surface | FAR Part 77 |
| E | Conical surface | FAR Part 77 |

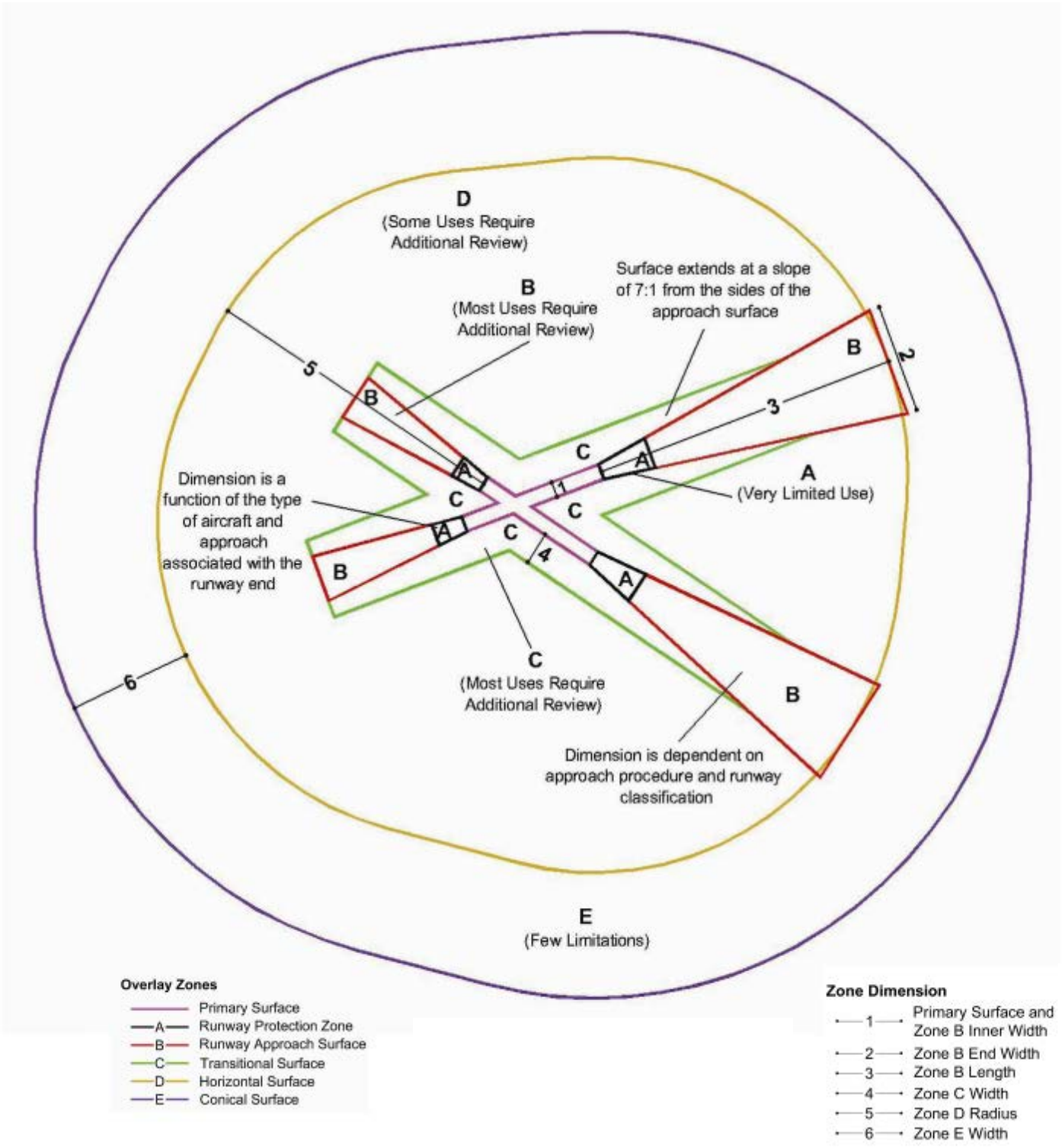
Provided the crop restriction lines as established by FAA, row cropping, grain and forage crops do not grow to a height that would penetrate the FAR Part 77 surfaces. To the extent that tree farm, vineyards and orchards are prohibited in an Agricultural District, row crops, grain and forage cropping are permitted uses.

Animal related activities to include confinement facilities are acceptable provided that structures associated with such facilities do not penetrate the FAR Part 77 surfaces. Given the close proximity of the Washington Municipal Airport to urban land uses, the recommendation herein is that animal confinement facilities are allowed only after review by the Board of Adjustment as follows:

> "Lots for confinement and feeding of livestock subject to controls of surface runoff and located at least one thousand three hundred twenty (1,320) feet from the Washington Municipal Airport and any "R" (Residential) or "B" (Business) District."

The above language is the same as set forth in the current A-1 Agricultural District except that reference to the Washington Municipal Airport should be included as well.

## EXHIBIT SIX: AIRPORT OVERLAY ZONES




Source: Iowa DOT – Office of Aviation, Iowa Airport Land Use Guidebook

**TABLE SEVEN: IOWA AIRPORT ZONE CHART: AGRICULTURAL USES**

| **Iowa Airport Zone Chart** | | | | | |
|---|---|---|---|---|---|
| C = Compatible AR = Additional Review Required NC = Not Compatible | | | | | |
| Land Uses | Zone A RPZ | Zone B Approach | Zone C Transitional | Zone D Horizontal | Zone E Conical |
| **Infrastructure Activities** | | | | | |
| **Agricultural Uses** (i.e. commercial cultivation of plants, livestock production) | | | | | |
| Plant-related (i.e. crop farming, vegetable, fruit, and tree, wholesale plant nurseries) | **AR** | **AR** | **AR** | **C** | **C** |
| Animal-related (i.e. livestock operations, dairy farms, horse farms) | **AR** | **AR** | **AR** | **C** | **C** |
| Resident-related (i.e. single-family home, mobile home if converted to real property and taxed) | **NC** | **AR** | **NC** | **AR** | **C** |
| Facility-related (i.e. fuel bulk storage/pumping facility, grain elevator, livestock/seed/grain sales) | **NC** | **NC** | **NC** | **AR** | **AR** |
| **Floodplains** | **AR** | **AR** | **AR** | **C** | **C** |
| **Water Bodies** (i.e. open bodies containing water) | | | | | |
| Man-made resources (i.e. mining and extraction, water detention ponds, wetlands) | **NC** | **AR** | **AR** | **AR** | **AR** |
| Naturally occurring (i.e. lakes, ponds, prairie pot holes, rivers, streams, wetlands) | **NC** | **AR** | **AR** | **C** | **C** |
| Wildlife Preservation Areas (i.e. petting zoos, wildlife rehabilitation centers, zoos) | **NC** | **NC** | **NC** | **AR** | **C** |

Source: Iowa DOT Office of Aviation Iowa Airport Land Use Guidebook Jan. 2008

The Future Land Use Plan as set forth in the 2012 Comprehensive Plan identifies land uses that are generally compatible with operational activity and future development envisioned for the Washington Municipal Airport. The one exception is the future residential land use located north of Fillmore Street between 12th Avenue and Airport Road. It is recommended that as this area develops, additional review be given to the housing density. A planned low density residential development may be acceptable. The proposed development plan would in this case be subject to review by the Planning and Zoning Commission as well as the Board of Adjustment, (See Section 165.19 – Chapter 165 – Zoning Regulations).

The Airport Land Use Steering Committee and City staff has expressed the desire to use the framework established by the 2012 Comprehensive Plan and existing ordinances to guide and regulate land use in and around the airport.

The governing authority as such is set forth in current ordinances adopted by the City of Washington.

- Airport Commission
- Planning and Zoning Commission
- Board of Adjustment
- Mayor and City Council

The City has on staff a zoning administrator who will work with the Airport Commission as well as other Boards and Commissions responsible for implementing the 2012 Comprehensive Plan.

The Steering Committee requested that consideration be given to several revisions to the current A-1 Agricultural District that may be appropriate for that area immediately adjacent to the airport.

The Committee recommended that Chapter 167 – Airport Zoning (Note: Height Restriction Only) be retained and amended as necessary to reflect construction of the new runway (RW 13/31) and proposed improvements on the most recent FAA approved Airport Layout Plan (ALP).

Chapter 165 will be used to regulate land uses in the immediate vicinity of the airport.

Proposed Revisions to the current Section 165-07 A1 Agricultural District Regulation set forth Chapter 165 - Zoning Regulations are as follows:

- Move the following uses currently listed under “Permitted Principal Uses” to “When Authorized by Board of Adjustment.”

## A-1 AGRICULTURAL DISTRICT

165.07 “A-1” AGRICULTURAL DISTRICT. (Revised)

1. Permitted Principal Uses.
    a. Agriculture and agricultural buildings except as provided by subsection (2)(D) of this section and provided that livestock shall not be housed or fed within two hundred (200) feet of any lot in an “R” district.

    b. Essential services as defined in Section 165.01 and municipal administrative or public service building or properties, except such uses as storage yards, warehouses, garages, or other uses customarily conducted as gainful business, provided any building is located not less than twenty (20) feet from any lot in any “R” district.

    c. Railroad rights-of-way and tracks, not including switching, storage, terminal facilities or freight yards.

    d. Single-Family detached dwellings on lots of twenty (20) acres or more.

    e. Transformer stations and booster or pressure regulation stations, without service yard or storage.

2. When Authorized by Board of Adjustment.
    a. Sanitary landfills, in accordance with County and State regulations except that no sanitary landfill shall be operated within one thousand three hundred twenty (1,320) feet of any “R” district

    b. Privately operated country clubs, golf-courses, swimming clubs, riding stables, and similar recreation uses provided that any accessory building in connection therewith shall be located not less than two hundred (200) feet from any lot in an “R” district.

    c. Airports and landing fields.

    d. Lots for confinement and feeding of livestock subject to controls of surface run-off and located at least one thousand three hundred twenty (1,320) feet from any “R” or “B” district.

    e. Mining, removal and loading of sand or gravel, including equipment, building or structures for screening, crushing, mixing, washing, or storage located not less than five hundred (500) feet from any “R” district.

    f. Public parks, playgrounds, and recreational areas.

    g. Cemeteries of ten (10) acres or more in size.

h. Churches, chapels, or parish houses located not less than twenty (20) feet from any side lot line in any "R" district.

i. Any building or structure occupied or used for nursery, elementary, junior high or high schools, public libraries, and similar public cultural uses located not less than twenty (20) feet from any side lot line.

j. A single family detached dwelling located on a lot or parcel which is less than twenty (20) acres as long as the lot of parcel upon which said single family detached dwelling will be constructed was:

   i. Part of an original lot or parcel that totals more than forty (40) acres; and

   ii. The original lot or parcel was occupied by, and owned or beneficially controlled, by a lineal descendant of ancestor of the beneficial owner of the original lot or parcel as defined in Section 450.9 of the Code of Iowa

k. Sale of nursery and greenhouse products.

3. Permitted Accessory Uses.
   a. Buildings, structures, and uses accessory to agricultural uses including roadside stands, selling produce grown on the premise, provided such roadside stands are located not less than twenty (20) feet from a street or highway right-of-way line.

   b. Private garages or parking areas.

   c. Living quarters of persons employed on the premises.

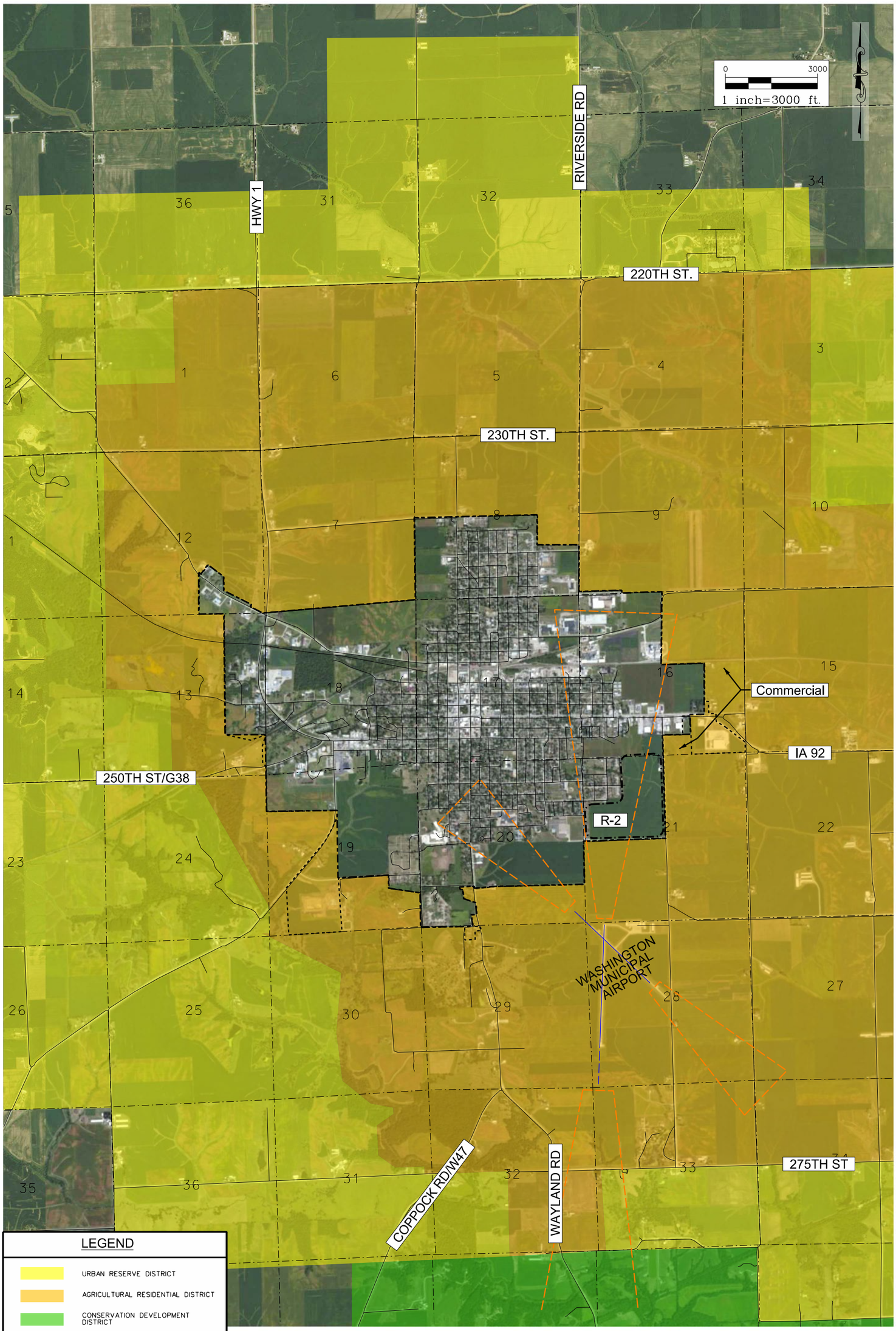
   d. Home occupation as defined and regulated by Section 165.22.

   e. Signs as regulated by Section 165.20

4. Height Regulations. No principal structure shall exceed two and one-half (2½) stories of thirty (30) feet in height, and no accessory structure shall exceed fifteen (15) feet in height, except as provided in section 165.23.

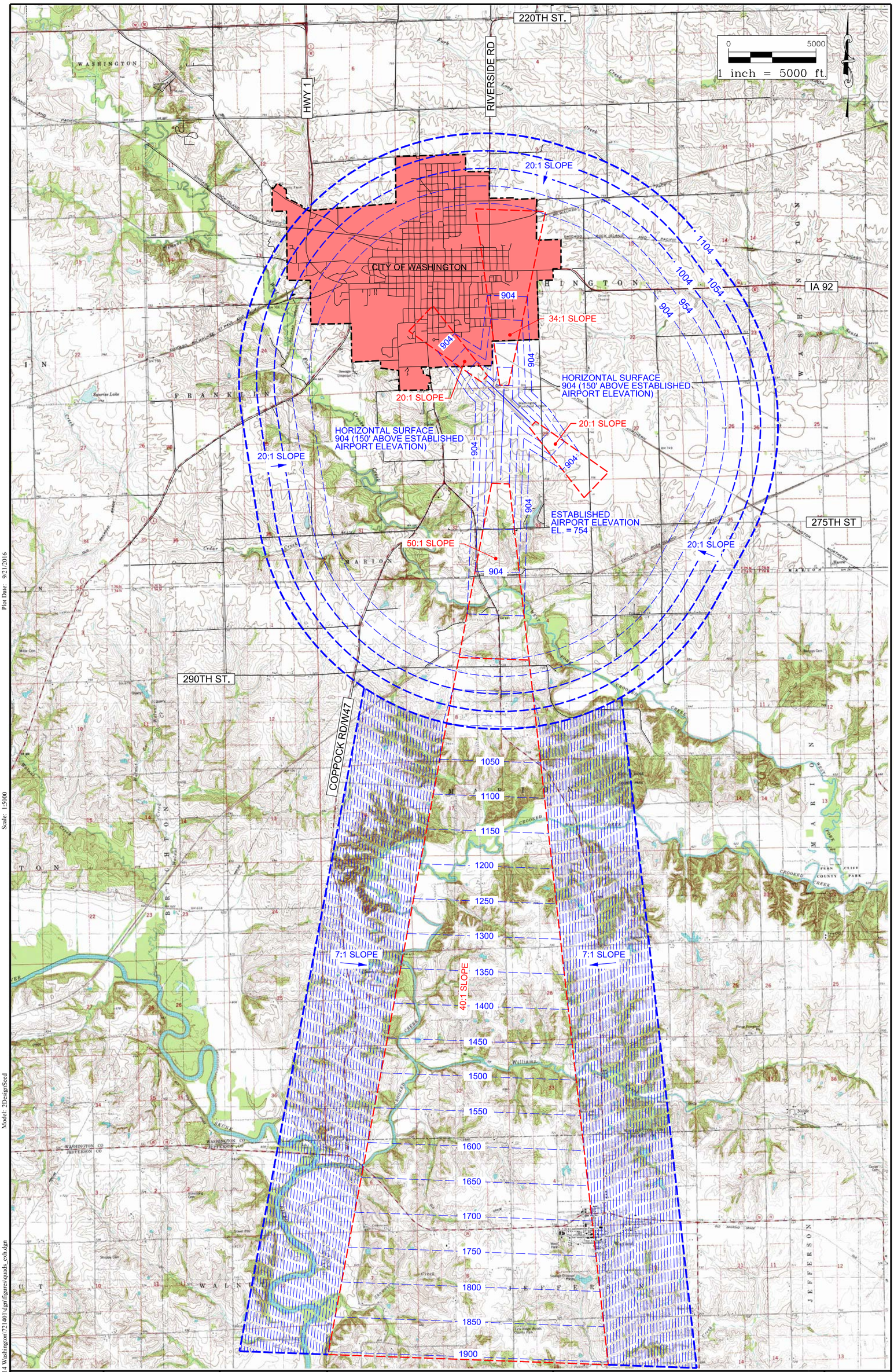
5. Lot Area, Frontage and Yard Requirements. The following minimum requirements shall be observed subject to the additional requirements, exceptions, and modifications in Section 165.23. Each lot shall contain a minimum area of ten (10) acres.

| MINIMUM LOT WIDTH | MINIMUM FRONT YARD DEPTH | MINIMUM SIDE YARD WIDTH | MINIMUM REAR YARD DEPTH |
|---|---|---|---|
| 300 feet | Along State and Federal roads; 80'; Other public roads, 60' | 30 feet | 100 feet |




Plot Date: 9/21/2016
Scale: 1:3000
Model: 2DesignSeed
File: C:\Projects\214 Washington\721401\dgn\figures\721401_districts.dgn

| | | | | |
|---|---|---|---|---|
| DGR ENGINEERING / SNYDER & ASSOCIATES Engineers and Planners | JS Consulting LLC | WASHINGTON MUNICIPAL AIRPORT LAND USE STUDY WASHINGTON, IOWA | URBAN RESERVE, AGRICULTURAL & RESIDENTIAL AREAS | EXHIBIT 7 |




Plot Date: 9/21/2016
Scale: 1:5000
Model: 2DesignSeed
File: C:\Projects\214 Washington\721401\dgn\figures\quads_exh.dgn

| | | | | |
|---|---|---|---|---|
| DGR ENGINEERING | SNYDER & ASSOCIATES Engineers and Planners | JS Consulting LLC | WASHINGTON MUNICIPAL AIRPORT LAND USE STUDY WASHINGTON, IOWA | PROPOSED AIRPORT IMAGINARY SURFACES |

EXHIBIT 8