



Runway 4-22 Safety Area Environmental Assessment

May 10, 2011



Auburn-Lewiston Municipal Airport



Runway 4-22

Runway 4-22



Purpose

1. Improve safety by providing, to the extent practicable, runway safety areas that meet FAA standards for the design aircraft.
2. Provide sufficient landing length on the primary runway (04-22) to support the current design aircraft.
3. Improve the all-weather availability and reliability of the airport.
4. Improve safety by meeting, to the extent practicable, FAA obstruction clearance standards.



Need

1. LEW currently has non-standard runway safety areas.
2. The '*Runway 4-22 Safety Area and Extension Study*' January 2010 justifies and recommends a 6,000-foot runway length. Runway 4-22 is currently 5,001-feet.

A copy of the January 2010 Study may be viewed [here.](#)



Projected Based Aircraft Fleet Mix

Type	2007		2012		2017		2027	
	No.	%	No.	%	No.	%	No.	%
Single Engine	85	81.7	85	78.7	86	76.1	88	71.5
Multi Engine	12	11.4	14	13.0	15	13.3	17	13.8
Jet	1	1.0	3	2.8	6	5.3	10	8.1
Helicopter	5	4.8	5	4.6	5	4.4	6	4.9
Glider/Ultra-light/ Other	1	1.0	1	.9	1	.9	2	1.6
Total	104	100	108	100	113	100	123	100



Airport Reference Code (ARC)

- Aircraft approach speed + wingspan for most demanding (critical) aircraft (500 takeoffs and landings/year)
- Determines size of the runway safety area, separation distances between runways and taxiways, runway and taxiway widths, and more



Two Most Demanding Aircraft

Aircraft	Learjet 35	
Approach Speed	130 knots	C
Wingspan	39'6"	I

Aircraft	Gulfstream G100	
Approach Speed	135 knots	C
Wingspan	54'6"	II





Runway Length Analysis

1. List critical design airplane
2. Identify airplanes requiring longest runway lengths
3. Determine method to establish runway length (family grouping of large airplanes)
4. Select runway lengths based on performance curves
5. Apply adjustments



Learjet 35



Cessna Citation



Dassault Falcon 50



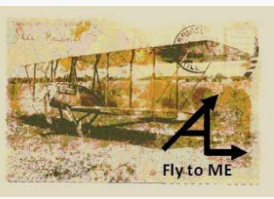
Gulfstream G100



Runway Length Analysis (cont.)

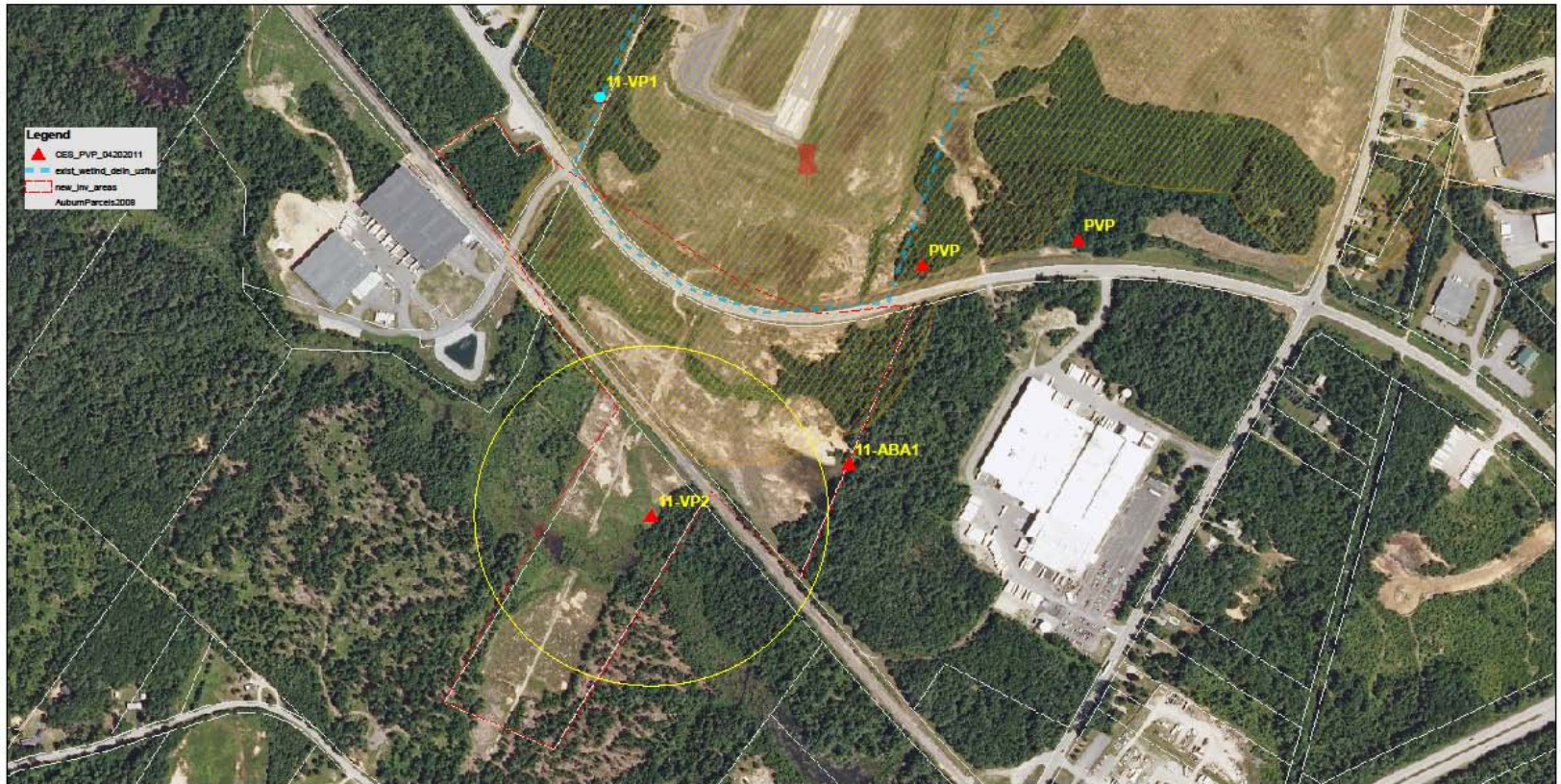
Useful Load	75% of Fleet	100% of Fleet
60%	5,593	6,168
90%	7,226	8,985

- Recommended runway length = 6,000'
- Supported by 2006 Master Plan
- Satisfies operational requirements of > 75% of fleet @ 60% useful load





Prelim. ABA survey



Legend
▲ CES_PVP_04202011
--- exist_wetnd_delin_usftw
--- new_inv_areas
--- AuburnParcels2008



1:4,800
0 250 500 1,000 1,500 Feet

Fig. 1. Auburn Lewiston Airport
Runway 4-22 Safety Area
EA Phase 1 Project Area
Auburn, Maine

JN:4638.4
Date: 4.20.2011
Created: RCT

Source: MEOGIS, USGS 7.5" Topographical quad







Use of Exceptions

- Runway Safety Area (RSA)
 - Reduce RSA width from 500' to 400'
- Declared Distances
 - Airport constraints make it impractical to apply standard RSA lengths and widths(1000 ft & 500 ft)
 - Analyze each runway end independently to satisfy airplane takeoff and landing requirements
- Apply Engineered Material Arresting System (EMAS) to shorten RSA length

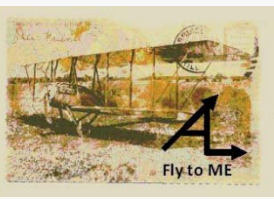


Alternative Matrix

Alternatives Matrix.xlsx

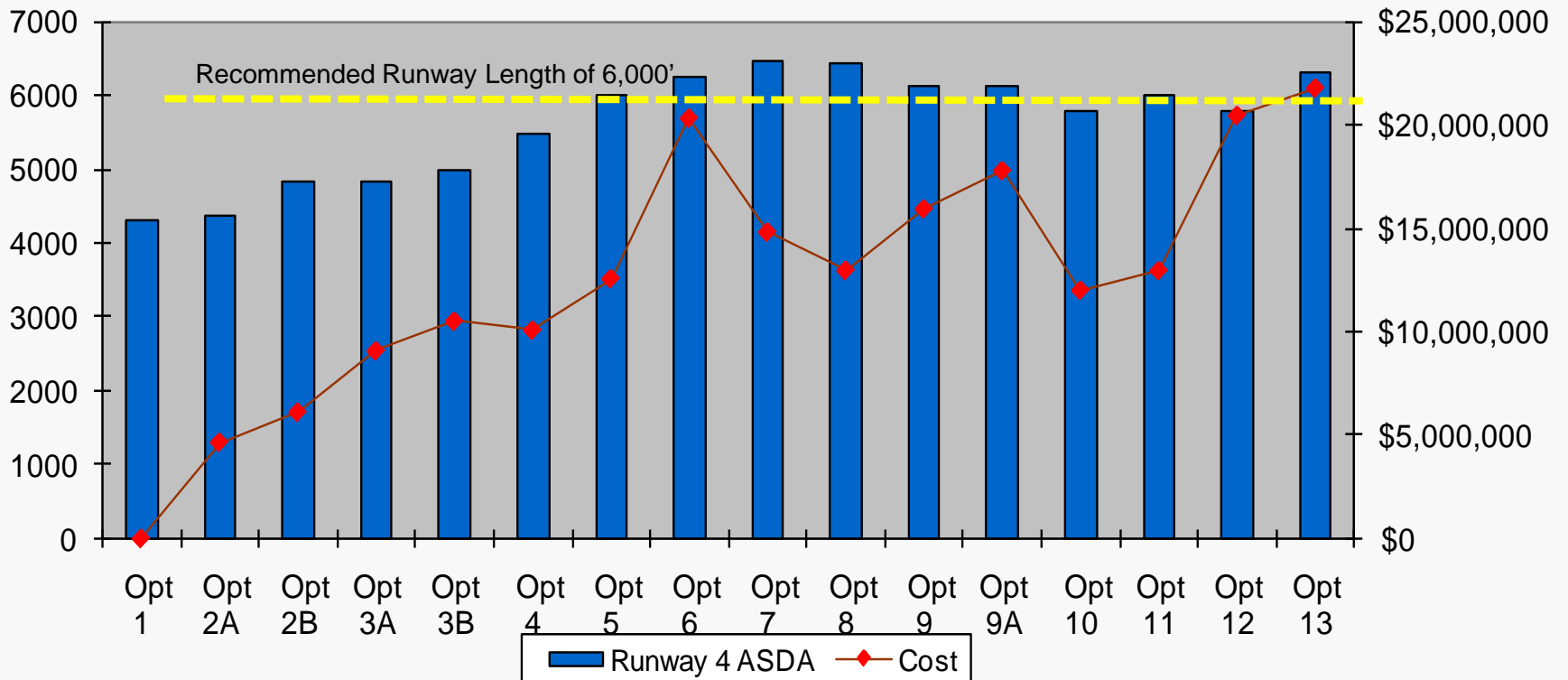
Auburn-Lewiston Municipal Airport

Alternative	Construction Requirements	Preliminary Environmental Impacts	Does Alternative Provide Minimum 6,000 ASDA Runway Length?	Preliminary Estimated Complete Project Costs	Accepted or Rejected as EA Alternative and Why		
1	Apply C-II standard w/ 400-foot wide safety areas to existing airfield configuration, apply declared distances	None	Rwy 4 - No Rwy 22 - No		EA Phase II - Alternative 1	EAW30_EXH-2010_EA1.pdf	
2A	Apply C-II standard, extend RSA's to max w/in airport property, apply declared distances	None	Rwy 4 - No Rwy 22 - No	\$4,650,000	Rejected - Inadequate runway length	EAWoption2A.pdf	
2B	Apply C-II standard, extend RSA's to max w/in airport property, apply EMAS and declared distances	None	Upland Sandpiper habitat	Rwy 4 - No Rwy 22 - No	\$6,105,000	Rejected - Inadequate runway length	EAWoption2B.pdf
3A	Apply C-II standard, move Lewiston Junction Rd, extend RSA's to max w/in airport property, apply declared distances	Realign Lewiston Junction Rd	Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - No Rwy 22 - No	\$9,070,000	Rejected - Inadequate runway length	EAWoption3A.pdf
3B	Apply C-II standard, move Lewiston Junction Rd, extend RSA's to max w/in airport property, apply EMAS	Realign Lewiston Junction Rd	Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - No Rwy 22 - No	\$10,500,000	Rejected - Inadequate runway length	EAWoption3B.pdf
4	Apply C-II standard, move Lewiston Junction Rd, pave Rwy 4 end RSA, move Rwy 4 end threshold, apply declared distances	Realign Lewiston Junction Rd	Rwy 4: 42,500 SF of wetlands Upland Sandpiper habitat Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - No Rwy 22 - No	\$10,070,000	Rejected - Inadequate runway length	EAWoption4.pdf
5	Apply C-II standard, move Lewiston Junction Rd, extend Rwy 22 end and apply EMAS, pave Rwy 4 end RSA, 400-foot wide RSA, apply declared distances	Realign Lewiston Junction Rd	Rwy 4: 42,500 SF of wetlands Upland Sandpiper habitat Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$12,560,000	Rejected - FAA concern over paving of RSA on 4 end	EAWoption5.pdf
6	Apply C-II standard, move Lewiston Junction Rd and Kitty Hawk Ave, extend Rwy 4 and 22 ends, apply EMAS to Rwy 22, 400-foot wide RSA, apply declared distances	Realign Lewiston Junction Rd and Kitty Hawk Ave, required acquisition of abutting land parcel	Rwy 4: 42,500 SF of wetlands Moose Brook tributary Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$20,320,000	Rejected - RSA on 4 end only 600 ft	EAWoption6.pdf
7	Apply C-II standard, move Lewiston Junction Rd to opposite side of railroad tracks, extend Rwy 22 end and apply EMAS, pave Rwy 4 end RSA, 400-foot wide RSA, apply declared distances	Realign Lewiston Junction Rd	Rwy 4: 42,500 SF of wetlands Upland Sandpiper habitat Rwy 22: 89,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$14,810,000	Rejected - FAA concern over paving of RSA on 4 end, & Wetland impacts	EAWoption7.pdf
8	Apply C-II standard, detour Lewiston Junction Rd, extend Rwy 22 end and apply EMAS, pave Rwy 4 end RSA, 400-foot wide RSA, apply declared distances	Detour Lewiston Junction Rd	Rwy 4: 42,500 SF of wetlands Upland Sandpiper habitat Rwy 22: 89,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$12,960,000	Rejected - FAA concern over paving of RSA on 4 end, & Wetland impacts	EAWoption8.pdf
9	Apply C-II standard, detour Lewiston Junction Rd, extend Rwy 22 end and apply EMAS, pave Rwy 4 end RSA and apply EMAS, 400-foot wide RSA	Detour Lewiston Junction Rd	Rwy 4: 42,500 SF of wetlands Upland Sandpiper habitat Rwy 22: 89,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$15,930,000	Rejected - FAA concern over paving of RSA on 4 end, & Wetland impacts	EAWoption9.pdf
10	Apply C-II standard, move the Auburn Lewiston rail spur, detour Lewiston Junction Rd, pave Rwy 4 end RSA, extend Rwy 22 end, 400-foot wide RSA, apply declared distances	Detour Lewiston Junction Rd	Rwy 22: 89,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - No Rwy 22 - No	\$12,000,000	Rejected - FAA concern over paving of RSA on 4 end	EAWoption10.pdf
11	Apply C-II standard, move the Auburn Lewiston rail spur, move Lewiston Junction Rd, pave Rwy 4 end RSA, extend Rwy 22 end, 400-foot wide RSA, apply declared distances	Realign Lewiston Junction Rd and Auburn Lewiston rail spur	Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$12,950,000	Rejected - FAA concern over paving of RSA on 4 end	EAWoption11.pdf
12	Apply C-II standard, shift Lewiston Jct Rd, relocate Kitty Hawk Ave and localizer antenna. Fill, loam and seed 400 ft wide by 1,000 ft long RSA on rwy ends 4 and 22. Extend and pave 783 ft on Rwy 4 and apply EMAS. Extend and pave 520 ft on Rwy 22.	Realign Lewiston Junction Rd and Kitty Hawk Ave. Relocate localizer antenna.	Rwy 4: 42,500 SF of wetlands Moose Brook tributary Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$20,450,000	EA Phase II - Alternative 2	EAW30_EXH-2010_EA2.pdf
13	Apply C-II standard, detour Lewiston Junction Rd, relocate Kitty Hawk Ave and localizer antenna. Fill 400 ft wide by 1,000 ft long RSA's on rwy ends 4 and 22. Extend and pave 1,100 ft on Rwy 4 and apply EMAS. Extend and pave 520 ft on Rwy 22.	Detour Lewiston Junction Rd, relocate Kitty Hawk Ave. Relocate localizer antenna.	Rwy 4: 42,500 SF of wetlands Moose Brook tributary Rwy 22: 15,000 SF of wetlands Upland Sandpiper habitat	Rwy 4 - Yes Rwy 22 - No	\$21,770,000	EA Phase II - Alternative 3	EAW30_EXH-2010_EA3.pdf



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Runway Length

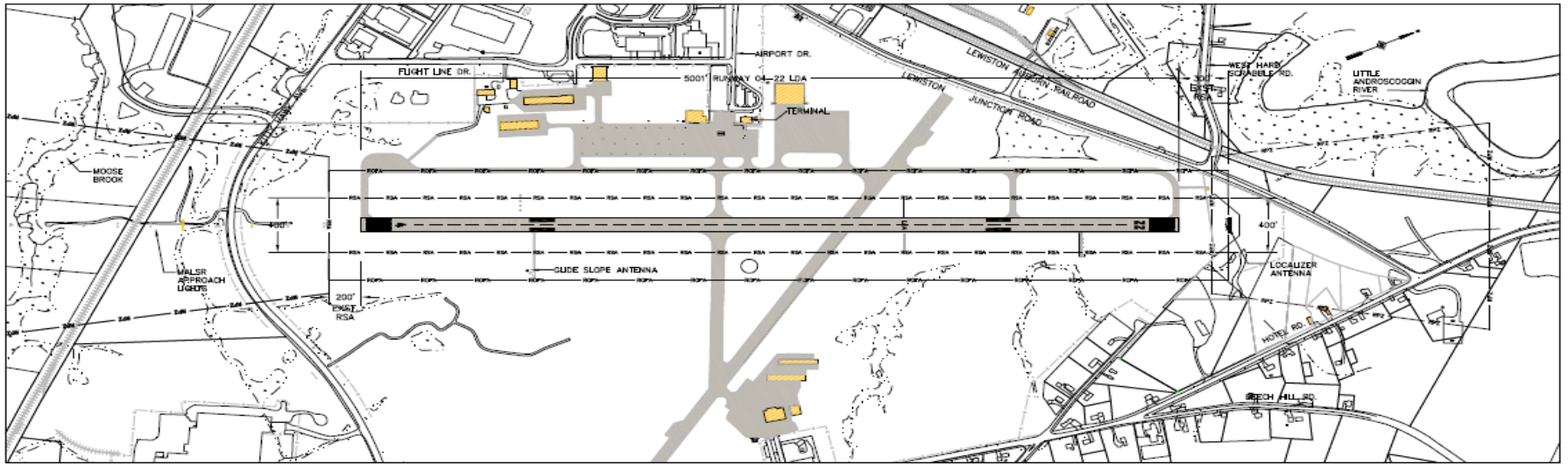




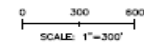
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RUNWAY 4-22 EA OPTION 1

Current conditions / no build



AUBURN-LEWISTON MUNICIPAL AIRPORT (LEW)
AUBURN, MAINE
RUNWAY 4-22 EA OPTION 1



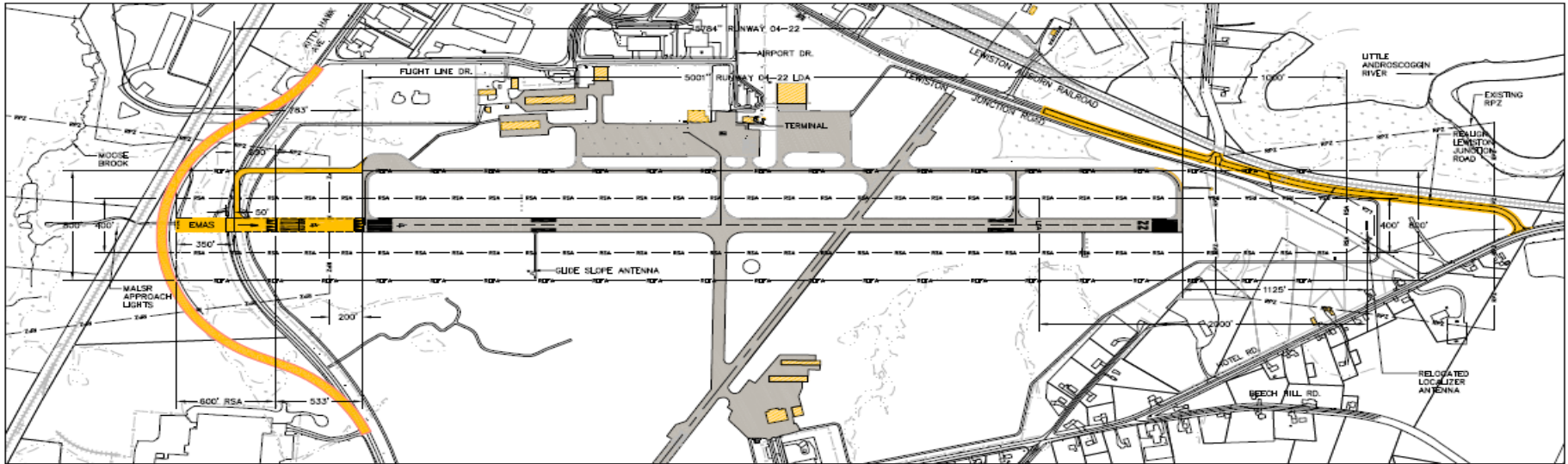
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Web Page: www.hoyletanner.com
Consulting Engineers



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RUNWAY 4-22 EA OPTION 2

Shift Lewiston Junction road as close to the existing rail row as possible and relocate Kitty Hawk Ave. Relocate localizer antenna to ultimate location. Fill, loam and seed 400 ft wide by 1000 ft long rsa's on both runway ends. Pave approximately 783 ft on the 4 end, extend the parallel taxiway displaced the threshold and apply emas



AUBURN-LEWISTON MUNICIPAL AIRPORT (LEW)
AUBURN, MAINE
RUNWAY 4-22 EA OPTION 2

0 300 600
SCALE: 1"=300'

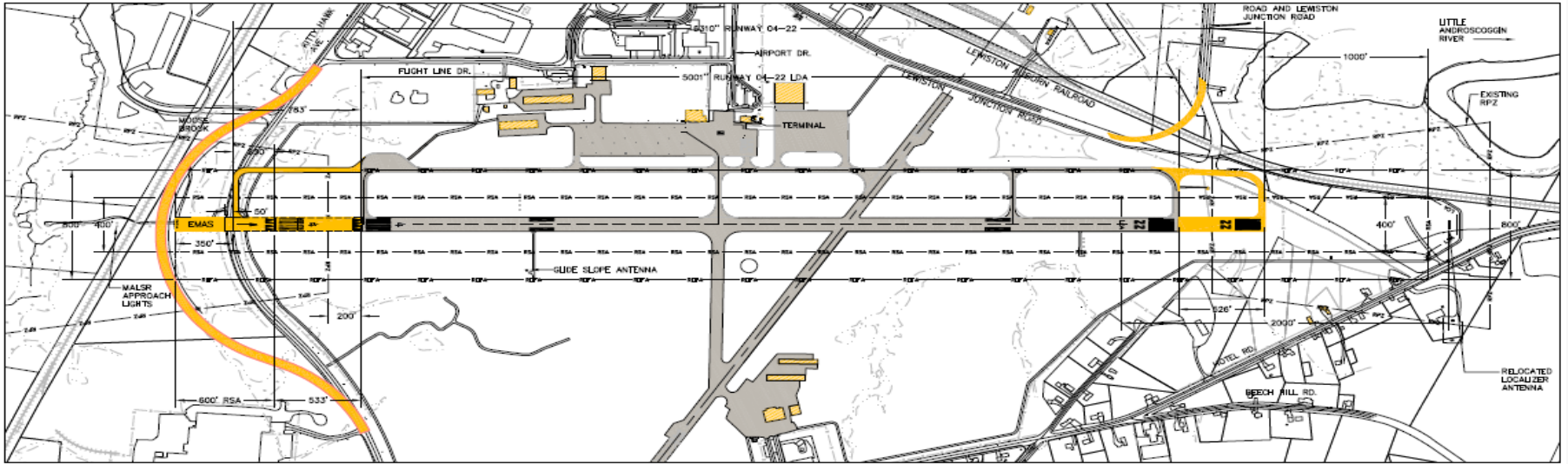
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Consulting Engineers



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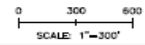
RUNWAY 4-22 EA OPTION 3

Close and detour Lewiston Junction road to West Hard Scrabble Rd and relocate Kilty Hawk Ave. Fill 400 ft wide by 1000 ft long rsa's on both runway ends. Pave approximately 1100 ft on the 4 end, extend the parallel taxiway, displace the threshold and apply emas. Pave approximately 526 ft on the 22 end and extend the parallel taxiway. Relocate localizer antenna to ultimate location.



AUBURN-LEWISTON MUNICIPAL AIRPORT (LEW)
 AUBURN, MAINE
 RUNWAY 4-22 EA OPTION 3

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Next Steps

- Resource Agency Coordination
- Public Meeting Coordination



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Questions?

[Graphic EW](#)

[Graphic NS](#)

