

Portland International Jetport FAR Part 150 Update

Part 150 Noise Advisory Committee Meeting
4 February 2004

Harris Miller Miller & Hanson Inc.

In association with:

Vanasse Hangen Brustlin, Inc.

Simat, Helliesen & Eichner, Inc.

- **Updates on previous mitigation concepts**
- **Current recommendations for new Noise Compatibility Program**
- **Final steps in Part 150 process**

→ **New FMS/RNAV Procedures:**

- FAA moratorium continues indefinitely on new GPS-based published instrument procedures; new procedures can only incorporate GPS navigation if they are voluntary

→ **Federal Express:**

- Has indicated that there is insufficient cargo volume to justify changing to a quieter aircraft type

→ **Increased Glide Slope angle:**

- FAA has rejected PWM's request for 3.5 degree glide slope to Runway 29

Revised Noise Abatement Program elements

➔ Operational measures:

- Modify current preferential runway use
- Increase use of the CASCO TWO departure procedure when air traffic control tower is operational
- Adopt voluntary noise abatement departure procedures for Runways 11 and 29
- When moratorium is lifted, upgrade the CASCO TWO to an FMS/RNAV procedure with GPS points
- Increase use of the new CASCO TWO at night, especially by loudest aircraft
- Add new straight-out Standard Instrument Departure for takeoffs from Runway 29

Revised Noise Abatement Program elements, continued

✈ Operational measures, continued

- Restrict engine run-ups to Runway 11 run-up pad; require prior permission from Jetport operations staff; establish preferred run-up headings of 110° or 345° for run-ups
- Propose raising VGSI to 3.5°

📖 Administrative measures:

- Increase emphasis on FedEx compliance with voluntary measures
- Change access to noise-complaint website; increase emphasis on noise issues
- Acquire a Flight Track Monitoring System (FTMS)
- Develop flight corridors and flight track graphics to monitor conformance with operational measures

Revised Noise Abatement Program elements, continued

Administrative measures, continued:

- Compute EXP(posure) metric to assess changes in fleet noise
- Continue meetings with Noise Advisory Committee
- Provide periodic updates of conformance with operational measures using flight track plots and other FTMS data
- Publish an annual review of NCP effectiveness
- Suggest text changes to FAA Tower Order 7110.4 to clarify language regarding noise abatement measures
- Publish Jeppesen inserts for pilots
- Publicize NCP elements to pilot organizations
- Include reference to noise abatement measures in FAA's ATIS announcements

Revised Noise Abatement Program elements, continued



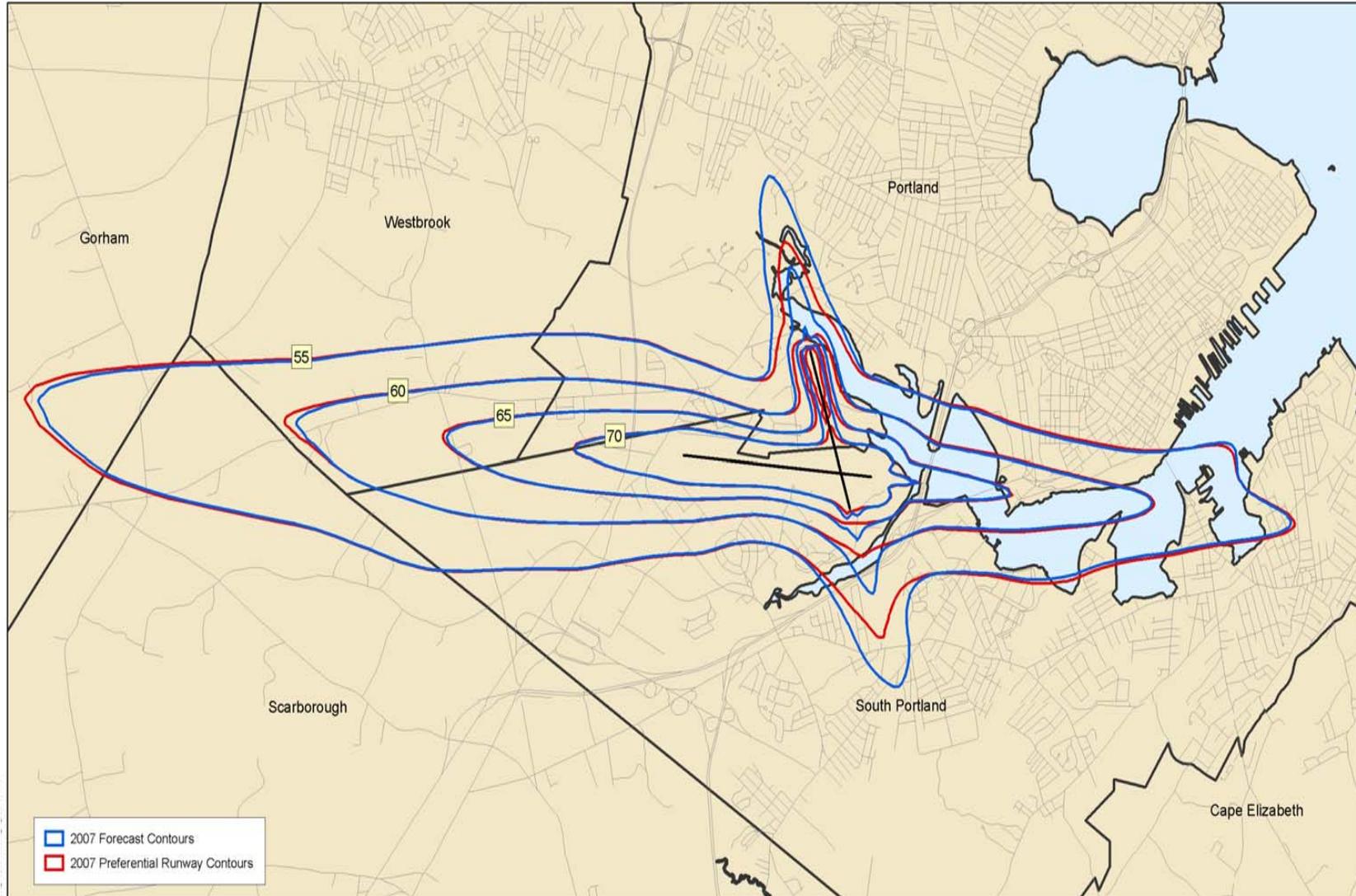
Land use elements:

- Coordinate efforts with municipalities to reduce incompatible land development, for example:
 - Encourage noise notifications on subdivision plans
 - Encourage building code revisions

Modify Preferential Runway Use Program

- ➔ **Voluntarily limit use of Runway 18/36 by noise-critical aircraft unless crosswinds exceed 15 knots**
 - “Noise-critical” aircraft are those having Estimated Maximum A-weighted Sound Levels (from FAA Advisory Circular 36-3H) greater than 80 dBA
 - Would limit many jets and loud turboprops, including ATR-42s
- ➔ **Continue preferred use of:**
 - Runway 29 for early morning departures
 - Runway 11 for late night arrivals
- ➔ **Suggest modified wording for PWM 7110.4, Chg 1; allow exceptions for construction on Runway 11/29, emergencies, etc.**

Noise Exposure from Modified Preferential Runway Use



Increase use of CASCO TWO Standard Instrument Departure

- ➔ Procedure already exists as a published noise abatement measure
- ➔ PWM will encourage operators of loud aircraft (e.g. hushkitted aircraft, MD-80s, Stage 2 jets) to request CASCO TWO
- ➔ FAA should assign the CASCO TWO to loud aircraft departing Runway 11 whenever possible
- ➔ Pilots should fly CASCO TWO to 3,000 feet MSL to reduce turns over Portland and S. Portland
- ➔ PWM should conduct initial test of benefits (check complaints, review with FAA); retest benefits when flight track monitoring system is available

CASCO TWO SID

02276 CASCO TWO DEPARTURE 290 SL-329 (FAA) PORTLAND INTL JETPORT (P.W.M) PORTLAND, MAINE

ATIS * 119.05
CLNC DEL 123.975
GND CON 121.9
PORTLAND TOWER * 120.9 (CTAF) 257.8

NORTH DEPARTURE FREQ 125.5 381.2

BANGOR 114.8 BGR
Chan 95
N44°50.51'-W68°52.44'
L-26, H-3

AUGUSTA 111.4 AUG
Chan 51
N44°19.20'-W69°47.79'
L-26

This SID is a noise abatement procedure and applies only to turbojet aircraft and turboprop aircraft capable of 210 knots. All aircraft must be DME equipped.

BURLINGTON 117.5 BTV
Chan 122
N44°23.83'-W73°10.96'
L-26, H-3

LOW ORHAM 394 PW
N43°39.14'-W70°26.46'
L-25-26

LOCALIZER 109.9 I-PWM
Chan 36

SYRACUSE 117.0 SYR
Chan 117
N43°09.63'-W76°12.27'
L-12-25-26, H-3-6

CONCORD 112.9 CON
Chan 76
N43°13.19'-W71°34.53'
L-25-26

BRUNSWICK Chan 99 NHZ
N43°54.14'-W69°56.71'
L-26

MANCHESTER 114.4 MHT
Chan 91
N42°52.11'-W71°22.17'
L-25-26

PEASE 116.5 PSM
Chan 112
N43°05.01'-W70°49.92'
L-25-26

KENNEBUNK 117.1 ENE
L-26

BOSTON 112.7 BOS
Chan 74
N42°21.45'-W70°59.37'
L-25-28, H-3-6

NOTE: Chart not to scale.

DEPARTURE ROUTE DESCRIPTION

TAKE-OFF RUNWAY 11: Fly runway heading to I-PWM 2.6 DME, then turn left heading 060° maintain 3000 feet. Expect vectors to filed route or depicted NAVAID. Expect further clearance to requested altitude/flight level 5 minutes after departure.

LOST COMMUNICATIONS: If radio contact not established within 2 minutes after departure, proceed on course and climb to requested altitude or 10,000 feet, whichever is lower.

This SID is a noise abatement procedure and applies only to turbojet aircraft and turboprop aircraft capable of 210 knots. All aircraft must be DME equipped.

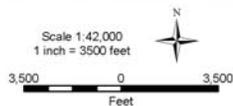
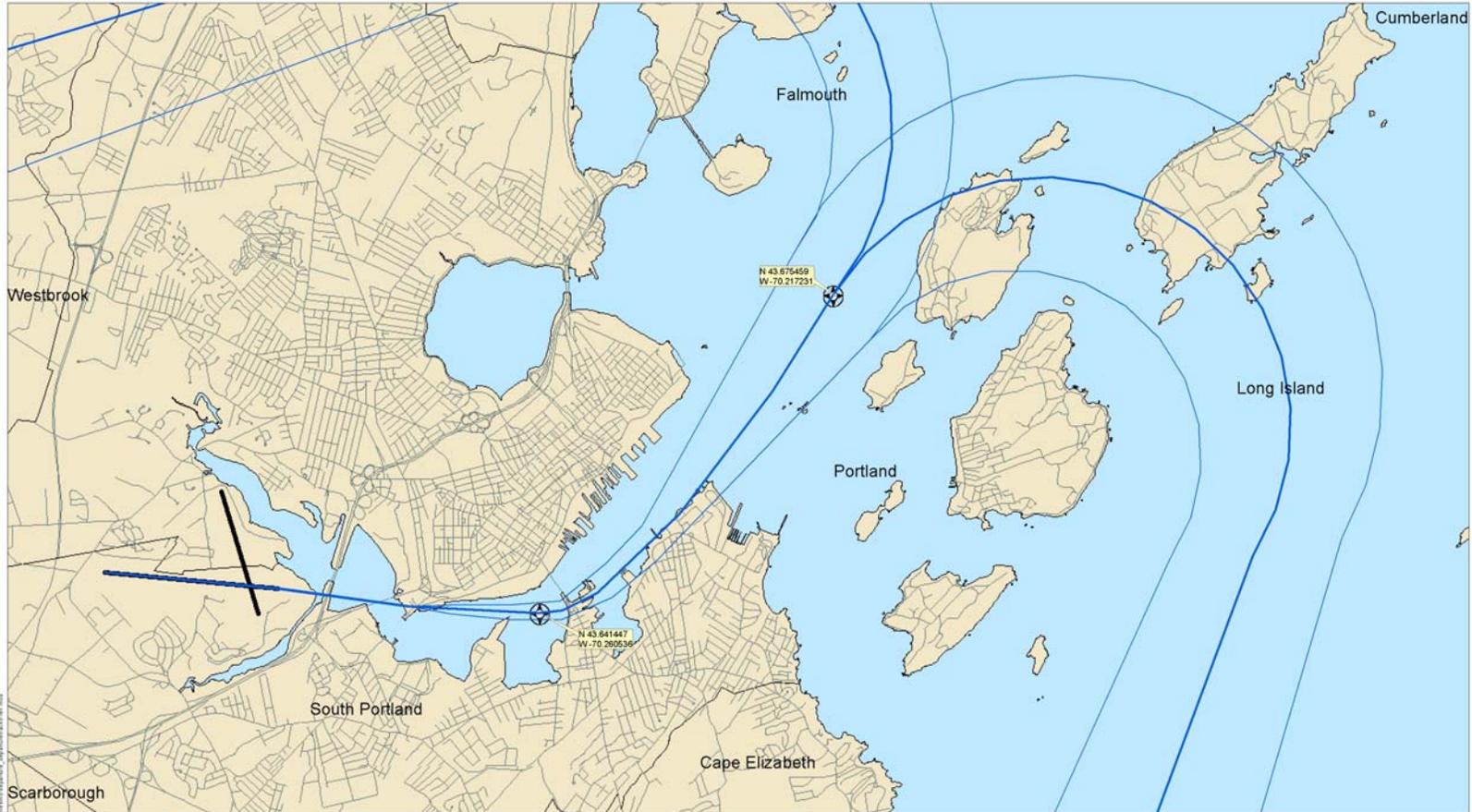
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Adopt Voluntary Noise Abatement Departure Procedure for Runway 11

- Reasonable alternative to a published FMS/RNAV procedure as long as moratorium exists
- Change first GPS waypoint to a “flyover” point rather than a “flyby” point
 - Aircraft will maintain runway heading longer, reducing early turns toward Western Prom
- Second GPS waypoint keeps aircraft over Fore River until reaching 3,000 feet MSL
 - Will reduce early turns over Western Prom *and* South Portland

Voluntary Noise Abatement Procedure for Runway 11

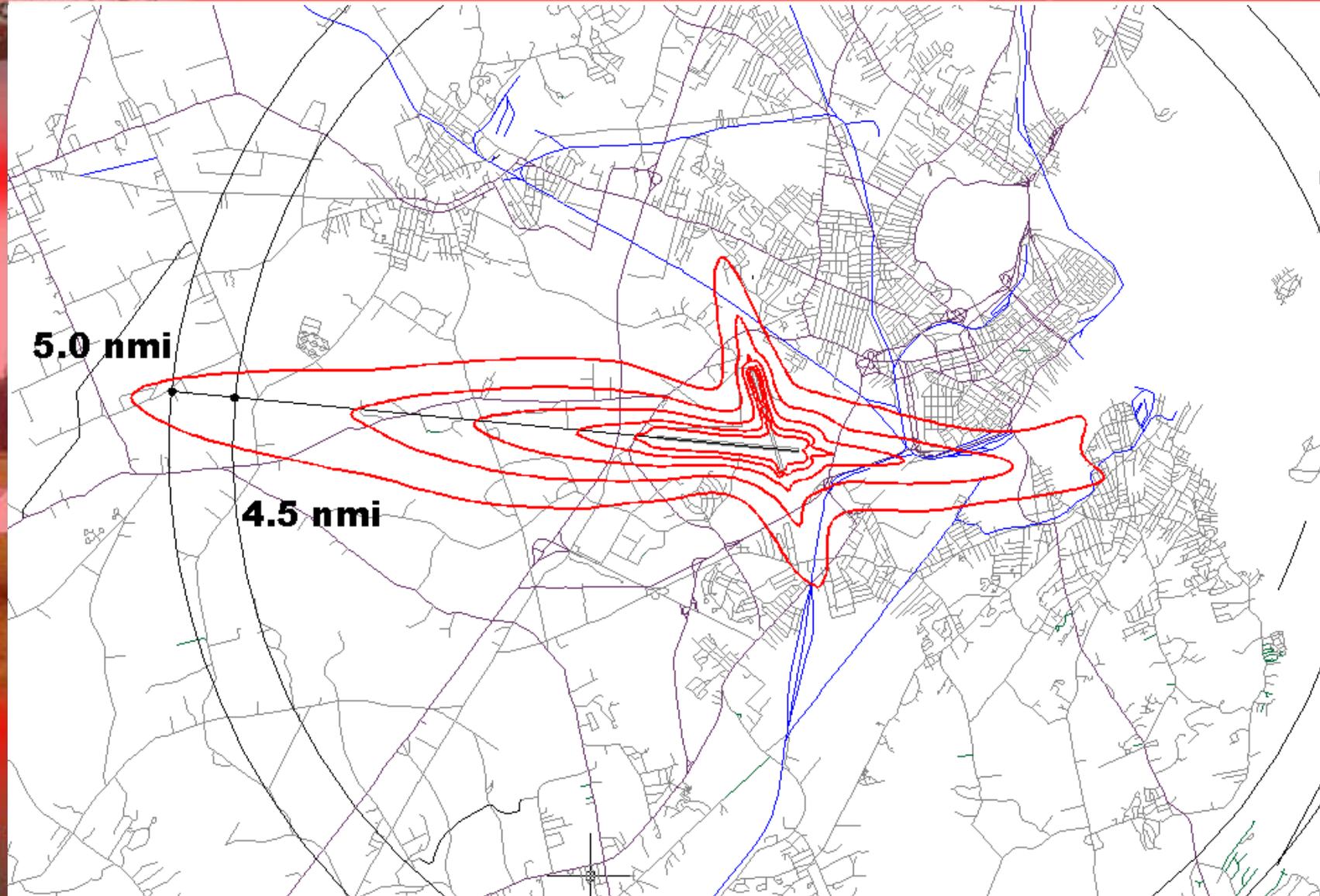


Representative FMS/RNAV Departure Procedure
and Modeled Flight Tracks with Normal Dispersion
(39%, 24%, 6.5%)

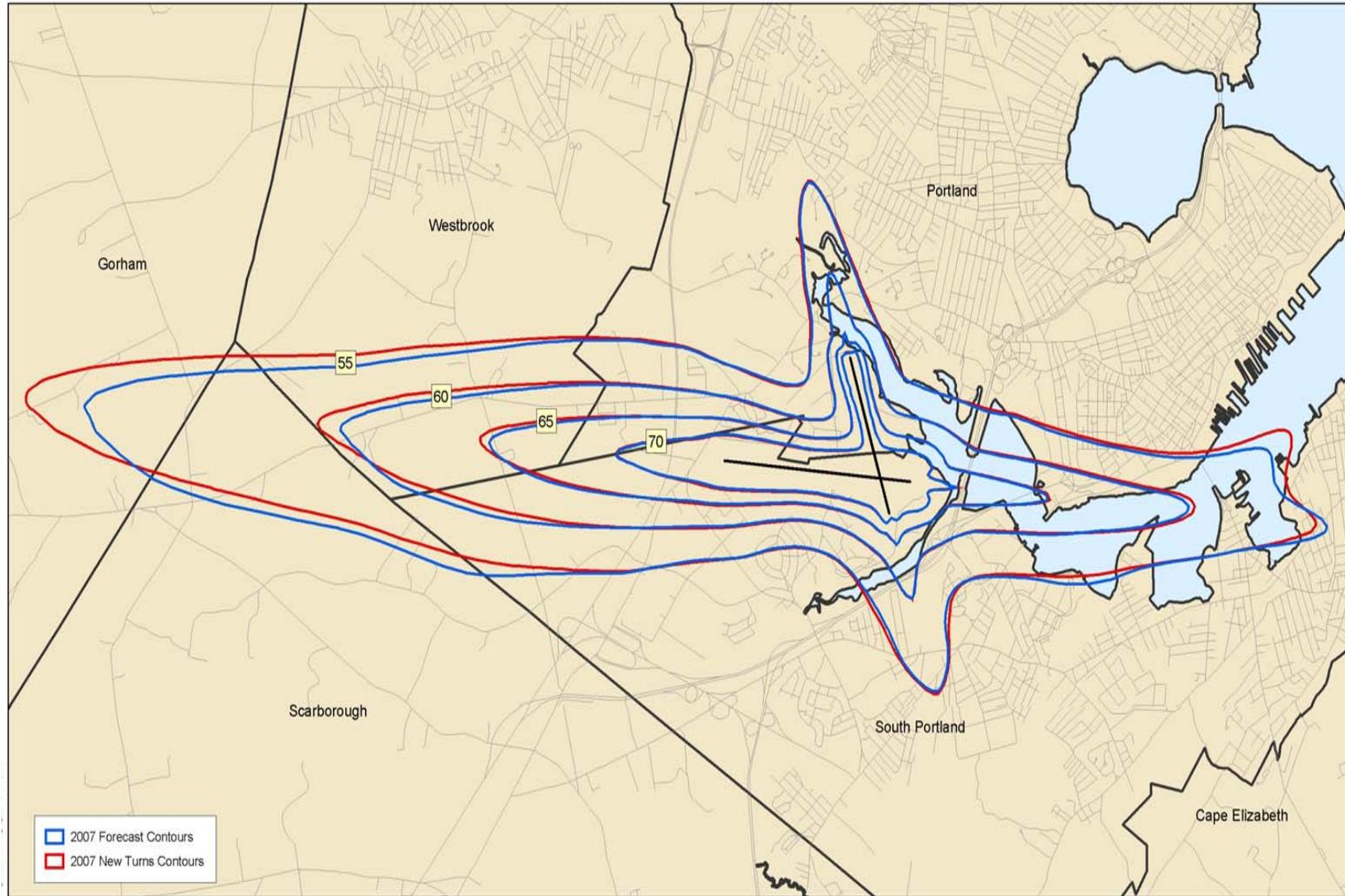
Adopt Voluntary Noise Abatement Departure Procedure for Runway 29

- Reasonable alternative to a published FMS/RNAV procedure as long as moratorium exists
- Reduces overflights of Saco Street residents in Westbrook
 - Fly runway heading to 3,000 feet MSL or 5.0 nautical miles from takeoff ($N43^{\circ} 39' 6.1452''$, $W70^{\circ} 24' 49.7628''$), whichever comes first

Voluntary Noise Abatement Departure Procedure for Runway 29



Noise Exposure from Increased Use of Noise Abatement Flight Procedures



Upgrade CASCO TWO to New FMS/RNAV Procedure for Runway 11



<http://www.hmmh.com/>

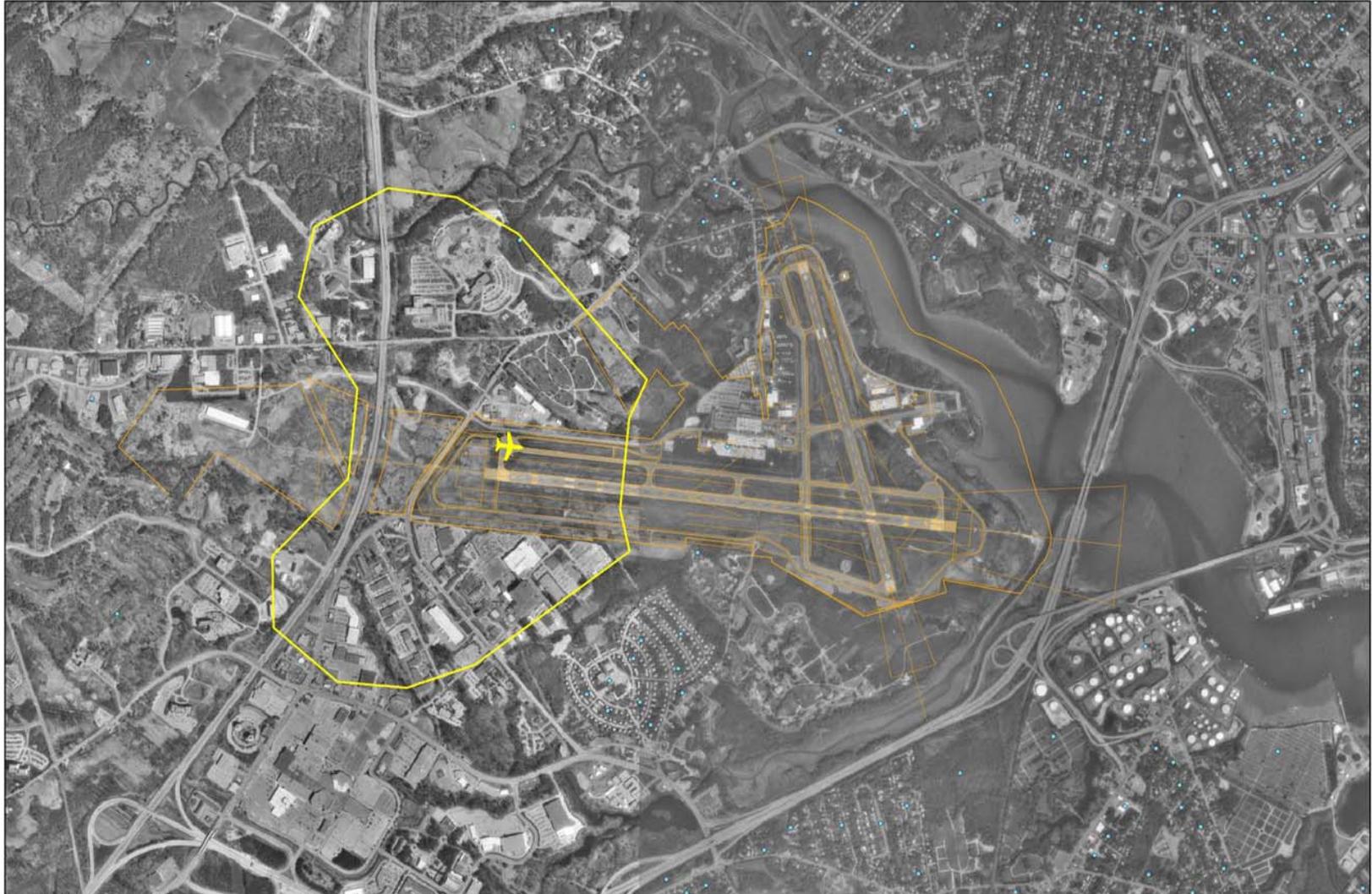
- ➔ **Objective is to permit use by Boston Center when tower is closed at night**
- ➔ **GPS waypoints would be same as or similar to voluntary departure procedure for Runway 11**
- ➔ **PWM to propose FAA review only if voluntary measure proves beneficial**
 - ➔ PWM to evaluate radar traces using Flight Track Monitoring System
 - ➔ Review results with Noise Advisory Committee
 - ➔ Tweak GPS waypoints if needed
- ➔ **Retain voluntary procedure and CASCO TWO SID for older technology aircraft**

Limit Engine Run-ups to Runway 11 Maintenance Run-up Area

- **Operator required to notify PWM operations staff prior to run-up; operator must report:**
 - Aircraft type
 - Requested time and estimated duration
 - Expected maximum power setting
 - Reason

- **PWM will report winds and specify preferred headings:**
 - For winds from east, 080° to 125°, 110° preferred
 - For winds from west, 345° preferred

Representative Noise from High-Power Run-up

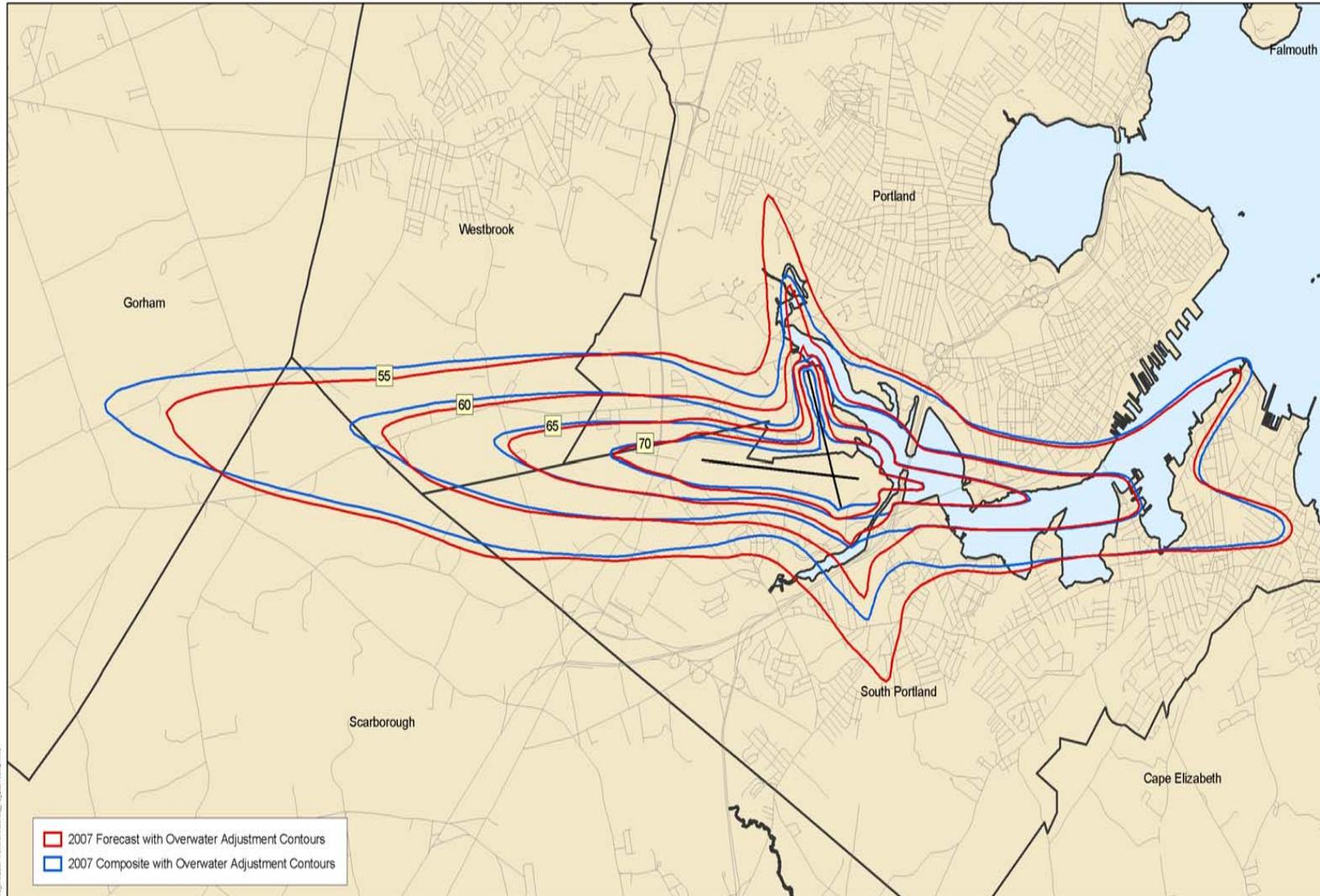


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Raise VGSI to 3.5 Degrees

- ➔ **VGSI – Visual Glide Slope Indicator**
 - ➔ Used primarily by smaller VFR aircraft
 - ➔ Currently set at 3° for Runway 36 approaches
- ➔ **If increased to 3.5°, aircraft will be ~9 feet higher in altitude for every 1,000 feet of horizontal distance (~45 feet per mile)**
- ➔ **Noise benefit is small, <1 dB at one mile**

Noise Exposure from Combined Operational Measures



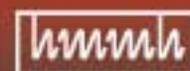
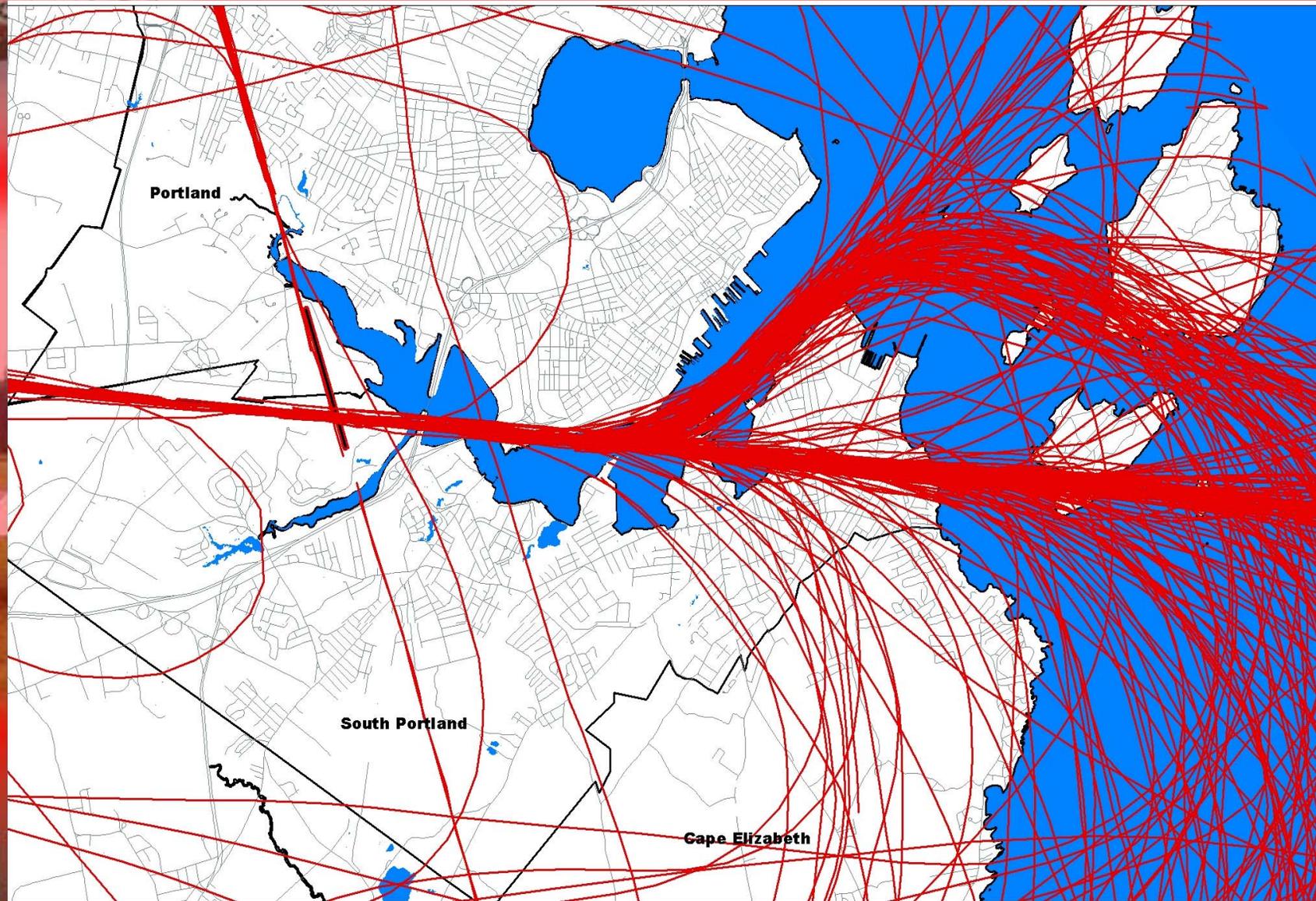
Acquire Flight Track Monitoring System



<http://www.hmmh.com/>

- **Allows monitoring of flight paths by individual aircraft, as analyzed in Part 150 study**
- **Data may be delayed up to 72 hours, depending on the source**
- **Incorporates corridors and gates to check deviations from desired procedures**
- **May be usable for tracking landing fees**
- **Can produce graphics and summary reports for presentations and analyses**
- **Cost likely to range from \$75,000 to \$175,000**

Typical FTMS Outputs



Compute EXP(posure) Metric

- **Spreadsheet calculation of change in fleet noise**
- **Helps anticipate significance of operations by new carriers, new tenants, nighttime flights, etc.**
- **Generally proportional to DNL but without consideration of runway use and flight track changes**
- **Easily computed automatically by FTMS**
- **Tracks long term trend in noise exposure**

Example of Fleet Noise Changes

Cumulative Noise Index*

	1999	2000	2001	2002	Change from 2001
Full CNI (Entire Commercial Jet	154.9	154.7	154.1	153.2	(0.9)
Total Passenger Jets	153.9	153.6	152.9	151.8	(1.1)
Total Cargo jets	148.0	148.2	147.8	147.4	(0.4)
Total Daytime	150.4	149.5	149.0	148.5	(0.5)
Total Nighttime	153.1	153.1	152.4	151.3	(1.1)
Total Stage 2 Jets	147.1	124.7	121.5	114.3	(7.2)
Total Stage 3 Jets	154.2	154.7	154.1	153.2	(0.9)
Daytime Stage 2	144.1	122.6	119.3	111.2	(8.1)
Nighttime Stage 2	144.0	120.5	117.3	111.4	(5.9)
Daytime Stage 3	149.2	149.5	149.0	148.5	(0.5)
Nighttime Stage 3	152.5	153.1	152.4	151.3	(1.1)
Passenger Jet Stage 2	146.8	124.2	116.3	--	--
Passenger Jet Stage 3	153.0	153.6	152.9	151.8	(1.1)
Cargo Jet Stage 2	134.5	114.8	119.9	114.3	(5.6)
Cargo Jet Stage 3	147.9	148.2	147.8	147.4	(0.4)
Daytime Passenger	150.1	149.3	148.7	148.2	(0.5)
Nighttime Passenger	151.6	151.6	150.8	149.4	(1.4)
Daytime Cargo	138.2	137.5	137.1	137.0	(0.1)
Nighttime Cargo	147.6	147.8	147.4	147.0	(0.4)

Continued Public Involvement (Highlights)

- **Publicize Noise Compatibility Plan to carriers and pilot organizations**
- **Streamline access to noise complaint website: (www.portlandjetport.org/noise-complaint.asp); publicize current noise issues**
- **Use FTMS to help address complaints**
- **Publish annual review of program effectiveness**
- **Continue periodic meetings with Noise Advisory Committee**
- **Participate in more homeowner association meetings**

Continued Public Involvement (Highlights)

- **Coordinate with Portland, South Portland, Westbrook and other jurisdictions to:**
 - Publicize noise contours, flight track maps, etc.
 - Continue efforts to meet with planning departments and other municipal employees to reduce development by noise-sensitive land uses
- **Plan to Update Part 150 Study in 5 years**

- **Hold final Public Hearing (~15 March)**
- **Integrate final comments from Noise Advisory Committee**
- **Complete documentation and submit to FAA for findings (~31 March)**