



Massachusetts Port Authority
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Telephone (617) 568-5000
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May 16, 2024

Ms. Julie Seltsam-Wilps
Acting Director, Airports Division (ANE-600)
Federal Aviation Administration New England
Region 1200 District Avenue
Burlington, MA 01803

Dear Ms. Seltsam-Wilps:

Re: Boston Logan (BOS) 2022 Noise Exposure Map

On behalf of the Massachusetts Port Authority (Massport), owner and operator of Boston Logan International Airport (Boston Logan), I have attached for your review and approval the 2022 Boston Logan Noise Exposure Map (NEM). As we have discussed with the FAA, Massport's intention is to submit updated NEMs on a regular basis to better reflect the Boston Logan noise environment and any potential changes.

As you are aware, we are currently implementing the Pilot Phase of the Residential Sound Insulation Program based on the approved 2020 NEM and made possible by the FAA's recent grant award. Reflecting the industry recovery, the 2022 NEM 65 DNL contour is larger than the 2020 and 2021 NEMs and it includes all the residences currently being assessed for the Pilot Phase.

With the FAA's approval, Massport will utilize this NEM to inform future phases of the residential sound insulation process. We look forward to continuing to work with you and your staff in implementing the current Pilot Phase and future phases of Boston Logan's RSIP program.

Sincerely,

A handwritten signature in blue ink, appearing to read "FLAVIO LEO".

Flavio Leo
Director of Aviation Planning and Strategy
Massachusetts Port Authority

Cc: Lisa Lesperance, Cheryl Quaine (FAA); Ed Freni, Luciana Burdi, Alaina Coppola, Todd Smith, Steve Sulprizio (Massport)

Attachment



U.S. Department of
Transportation

New England Region
Office of the Regional Administrator

1200 District Avenue
Burlington, MA 01803

**Federal Aviation
Administration**

May 22, 2024

Mr. Flavio Leo
Massachusetts Port Authority
1 Harborside Drive
East Boston MA 02128

Dear Flavio:

The FAA Airports Division, New England Region is in receipt of your Logan Airport 2022 Noise Exposure Map Technical Memorandum, dated 4/15/2024. The Boston-Logan International Airport noise mitigation program predates the FAA Part 150 program. Massport has agreed to follow many Part 150 technical and procedural requirement. These include standard noise modeling using the AEDT model, pre-construction acoustical testing of homes, and public notification at key points in the process. This mirroring of the Part 150 program requirements provides some continuity with the airport noise mitigation program nationwide.

After review of the technical memorandum, we confirmed it was based on standard noise modeling. We have reviewed the “humanized” noise contour and agreed to its location. The FAA New England Region, Airports Division hereby accepts the “Boston Logan Airport 2022 Noise Exposure Map”. This Noise Exposure Map (NEM) is valid for 2022 conditions, and it is anticipated that future submittals will include updated/current conditions.

This acceptance does not commit the FAA to fund sound insulation. Potential funding will generally follow the standard AIP funding requirements. Funding is made possible so long as the FAA funding authorization includes the pre-Part 150 “grandfathering” language. Please inform us when the NEM document is posted on the Massport website.

Sincerely,

JULIE A

SELTSAM-WILPS

Digitally signed by
JULIE A SELTSAM-WILPS
Date: 2024.05.22
11:26:42 -04'00'

Julie Seltsam-Wilps
Acting Director, Airports Division



TECHNICAL MEMORANDUM

To: Flavio Leo
Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128

From: Kate Larson
Bryan Rand
Robert C. Mentzer Jr.

Date: 4/15/2024

Subject: Boston Logan International Airport 2022 Noise Exposure Map

Reference: HMMH project number 310830.007

This memo has been prepared for Massport to submit to the Federal Aviation Administration (FAA) in support of Massport's Residential Sound Insulation Program (RSIP) around Boston Logan International Airport (BOS), to maintain a recent Noise Exposure Map (NEM) on file with the FAA. Massport conducted an RSIP around Logan Airport between the years of 1986 and 2014, providing sound insulation treatments to 11,515 housing units in 5,467 residential buildings. Due to issues at homes treated during the early years of the RSIP (prior to 1993), Massport and FAA, decided in 2020 that the best course of action would be to restart the program using the 2020 Day-Night Average Sound Level (DNL) contours as prepared for Massport's annual environmental reporting. The 2020 DNL contours were unusually small because of the sharp drop in air carrier passenger operations that year, due to the global pandemic; the residential areas within the DNL 65 contour for 2020 are exposed to higher levels of aircraft noise under more normal volumes of airport traffic.

The re-started RSIP received its initial FAA grant in 2022, using the 2020 NEM. The majority of homes exposed to aircraft noise of DNL 65 or above in 2020 had already been soundproofed. The re-started soundproofing effort revisited homes that were treated prior to 1993, and also reached out to owners of residences that have never previously participated in the program. In December 2022, Massport submitted a 2021 NEM which, upon FAA acceptance¹, became the guiding map for the RSIP.

The most recent set of DNL contours for Logan Airport represents calendar year 2022, as prepared for the Boston Logan International Airport 2022 Environmental Status and Planning Report (ESPR).

The purposes for which this memorandum is prepared are:

- to provide an updated set of Day-Night Average Sound Level (DNL) contours for the RSIP
- to update the land use assessment based on the 2022 DNL contour
- to provide a "humanized" 2022 DNL 65 contour, including tabulation of population and housing unit counts

¹ The 2021 NEM was accepted by the FAA on April 11, 2023.

Day-Night Average Sound Level Contours for 2022

This section describes the results of noise modeling using the FAA Aviation Environmental Design Tool (AEDT) for the 2022 DNL contours. The DNL contours are presented graphically and the dwelling units and population living within contour intervals are tabulated. DNL 65 dB is the focus of much of the noise analysis, as it is the threshold for noise incompatibility with residential land use,^{2,3} for both FAA and the U.S. Department of Housing and Urban Development. The 2022 DNL contours were prepared using the most recent version of FAA's AEDT model at the time of the start of the modeling process, version 3e. **Figure 1** shows the 2022 DNL 65 to 75 dB contours, in 5-decibel increments, overlaid on the land use base map.

The only residential land uses within the 2022 DNL 65 dB contour are in Winthrop (Winthrop proper, Point Shirley, and Court Road), Revere, and East Boston (East Boston proper, Orient Heights, and Eagle Hill). All of the residential areas within the 2022 DNL 65 dB contour are in areas previously included under Massport's RSIP. Historically, Massport has reached out to property owners that are still eligible but have not participated in the program.

In the annual EDR/ESPR documentation, Massport reports population counts within selected 5 dB increments of airport noise exposure each year. The 2020 U.S. Census data⁴ forms the basis of the population counts for the 2022 DNL contours. In recent years, the method of calculating population impact has been adapted to GIS software. The DNL contours and U.S. Census block centroids and population data are imported into GIS. Then, for each census block, the process determines the fraction of the area of the block that is residential land use and that is within the contour. That fraction is then applied to the census block population and dwelling units counts. **Table 3** shows the total number of dwelling units and people estimated from 2020 U.S. Census data as residing within the 2022 DNL 65 dB contour, listed by community and by 5-decibel increments.

2 14 Code of Federal Regulations Part 150, Appendix A to Part 150 Noise Exposure Maps, Sec. A150.101(d)).

3 24 Code of Federal Regulations Part 51, Subpart B Noise Abatement and Control, Sec. 51.103(c)).

4 accessed 10/6/2021 from

https://services.arcgis.com/P3ePLMys2RVChkXj/arcgis/rest/services/USA_Census_2020_Redistricting_Blocks/FeatureServer

Table 1. Noise-Exposed Dwelling Units and Population within the 2022 DNL 65 dB Contour

Dwelling Units	> 75 DNL	70-75 DNL	65¹-70 DNL	Total (65+)¹ DNL
Boston ²	0	0	1,415	1,415
Revere	0	0	1,360	1,360
Winthrop ³	0	11	426	437
Total (All communities)	0	11	3,201	3,212
Population	> 75 DNL	70-75 DNL	65¹-70 DNL	Total (65+)¹ DNL
Boston ²	0	0	3,862	3,862
Revere	0	0	3,416	3,416
Winthrop ³	0	27	880	907
Total (All communities)	0	27	8,158	8,185

Source: HMMH, 2024.

Notes: Population counts use the 2020 U.S. Census block data, merged with 2016 Residential Land Use. 2022 noise analysis uses AEDT version 3e.

- 1 Day-Night Average Sound Level (DNL) 65 decibel (dB) is the federally-defined noise criterion used as a guideline to identify where residential land use is considered noncompatible with aircraft noise.
- 2 The Boston area within the contours only includes areas of Orient Heights and Eagle Hill, in East Boston, and small parts of East Boston proper.
- 3 The Winthrop area within the contours includes areas of Point Shirley and Court Road, in Winthrop, and small parts of Winthrop proper.



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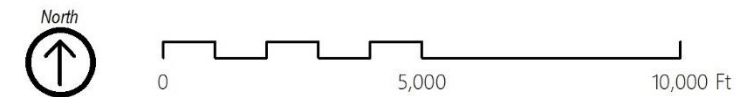
Boston Logan International Airport

Figure 1
2022 RSIP DNL Contours

Author: Michael Hamilton Document Path: G:\Projects\310XXXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure1_2022_DNL_Contour.mxd



- 2022 DNL 65 Contour
 - 2022 DNL 70 Contour
 - 2022 DNL 75 Contour
 - BOS Airport Boundary
 - Runways
 - Permanent Noise Monitor
- | | |
|-----------------------------|--------------|
| Residential - Single Family | Right-of-way |
| Residential - Multi-Family | Agriculture |
| Residential - Other | Open Space |
| Commercial | Forest |
| Industrial | Bare Land |
| Mixed Use | Wetland |
| Other Impervious | Water |



Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS

Land Use within 2022 DNL Contours

The 2022 DNL 65 dB contour encompasses much of the airport property and an additional 3.1 square miles of area, over 79 percent of which is water, shore, or wetlands off airport property. **Table 2** lists the off-airport area within the contours by land use classification, broken down by contour intervals.

Table 2. Land Use Area Off Airport Property Contained within the 2022 DNL 65 dB Contour

Land Use (Off Airport Property)	65-70 dB DNL	70-75 dB DNL	>75 dB DNL
	Area (SqMi)	Area (SqMi)	Area (SqMi)
Residential - Multi-Family	0.082	0.001	0
Residential - Single Family	0.050	0	0
Mixed Use - Primarily Residential	0.003	0	0
Commercial/Industrial	0.054	0.002	0
Transportation	0.294	0.018	0.002
Water/Wetlands	2.414	0.407	0.011
Undeveloped/Open Space	0.227	0.015	0
TOTAL	3.124	0.443	0.013
Source: HMMH, 2024			

Humanized Day-Night Average Sound Level Contour for 2022

Where the computer-generated noise contours cut through residential land use areas, Massport applies a “humanization” process⁵ in the implementation of its soundproofing program, drawing the eligibility line beyond the contour extents slightly where the contour passes through property boundaries. The goal is to encompass, where practicable, connected neighborhood blocks, rather than dividing a block. **Figure 2** shows the 2022 DNL 65 dB contour with the humanization adjustments. **Figure 3** presents the individual areas where the contour intersects residential land use. **Figures 3a – 3g** present enlargements of each of these individual areas.

⁵ Following guidance in FAA Airport Improvement Program Appendix R Section R-9 Block Rounding

Figure 2
**2022 RSIP DNL 65
 Humanized Contour**

-  2022 RSIP Humanized Contour Line
 -  2022 RSIP Forecast Contour Line
 -  BOS Airport Boundary
 -  Runways
 -  Permanent Noise Monitor
- | | |
|--|---|
|  Residential - Single Family |  Right-of-way |
|  Residential - Multi-Family |  Agriculture |
|  Residential - Other |  Open Space |
|  Commercial |  Forest |
|  Industrial |  Bare Land |
|  Mixed Use |  Wetland |
|  Other Impervious |  Water |

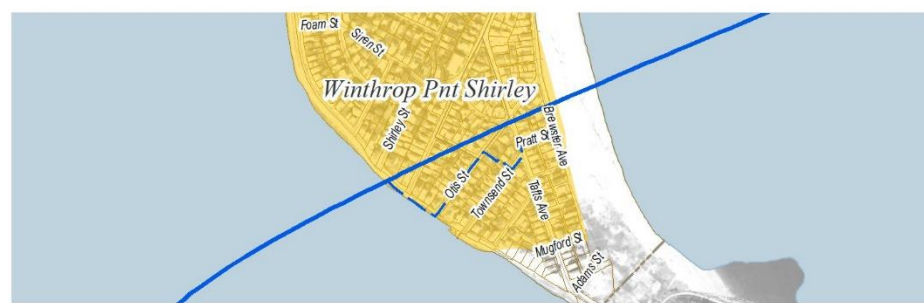
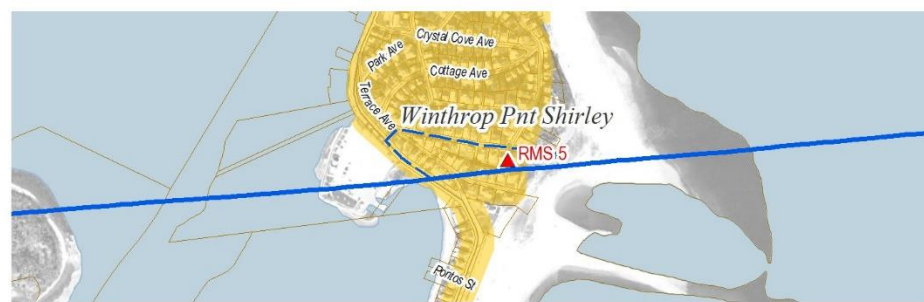
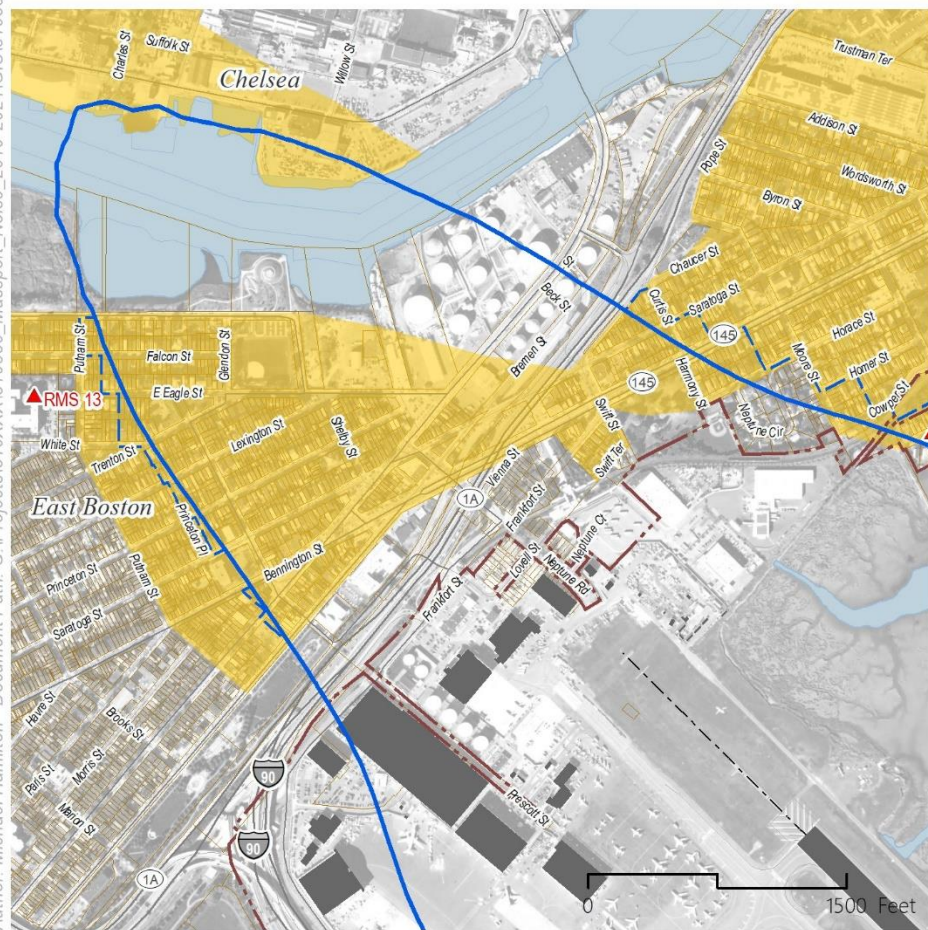
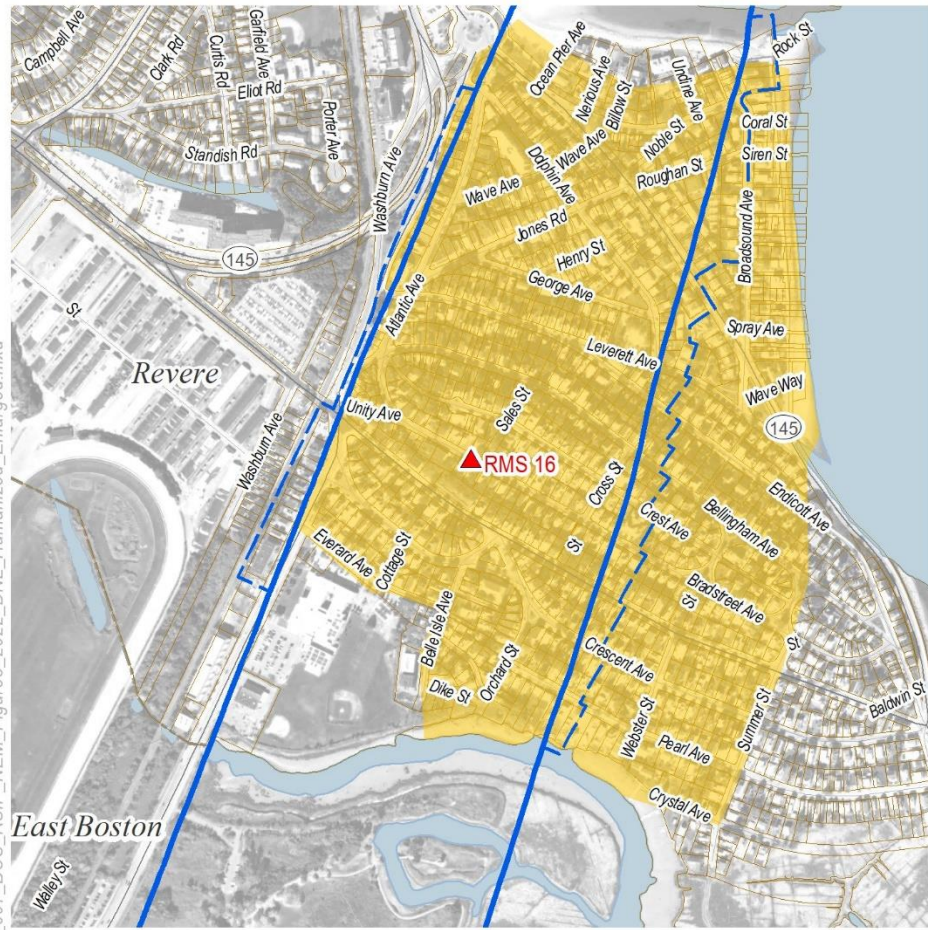


Author: Michael Hamilton Document Path: G:\Projects\310XXXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure2_2022_DNL_Humanized_Colour.mxd

Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS



Author: Michael Hamilton Document Path: G:\Projects\310XXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure3_2022_DNL_Humanized_Enlarged.mxd



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Figure 3
2022 RSIP DNL 65 Humanized Contour Over Residential Areas

- 2022 RSIP Humanized Contour Line
- 2022 RSIP Forecast Contour Line
- BOS Airport Boundary
- Runways
- Permanent Noise Monitor
- Sound Insulation Areas
- Parcel Boundary

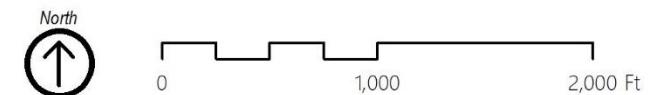



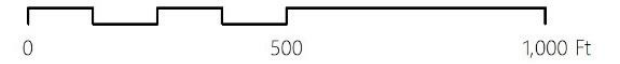


Figure 3a

2022 RSIP DNL 65 Humanized Contour Over Residential Areas

-  2022 RSIP Humanized Contour Line
-  2022 RSIP Forecast Contour Line
-  BOS Airport Boundary
-  Runways
-  Permanent Noise Monitor
-  Sound Insulation Areas
-  Parcel Boundary



Author: Michael Hamilton Document Path: G:\Projects\310XXXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure3a_2022_DNL_Humanized_Enlarged.mxd



Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS

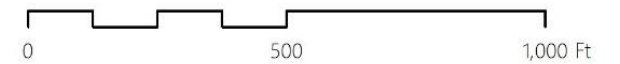


Boston Logan International Airport

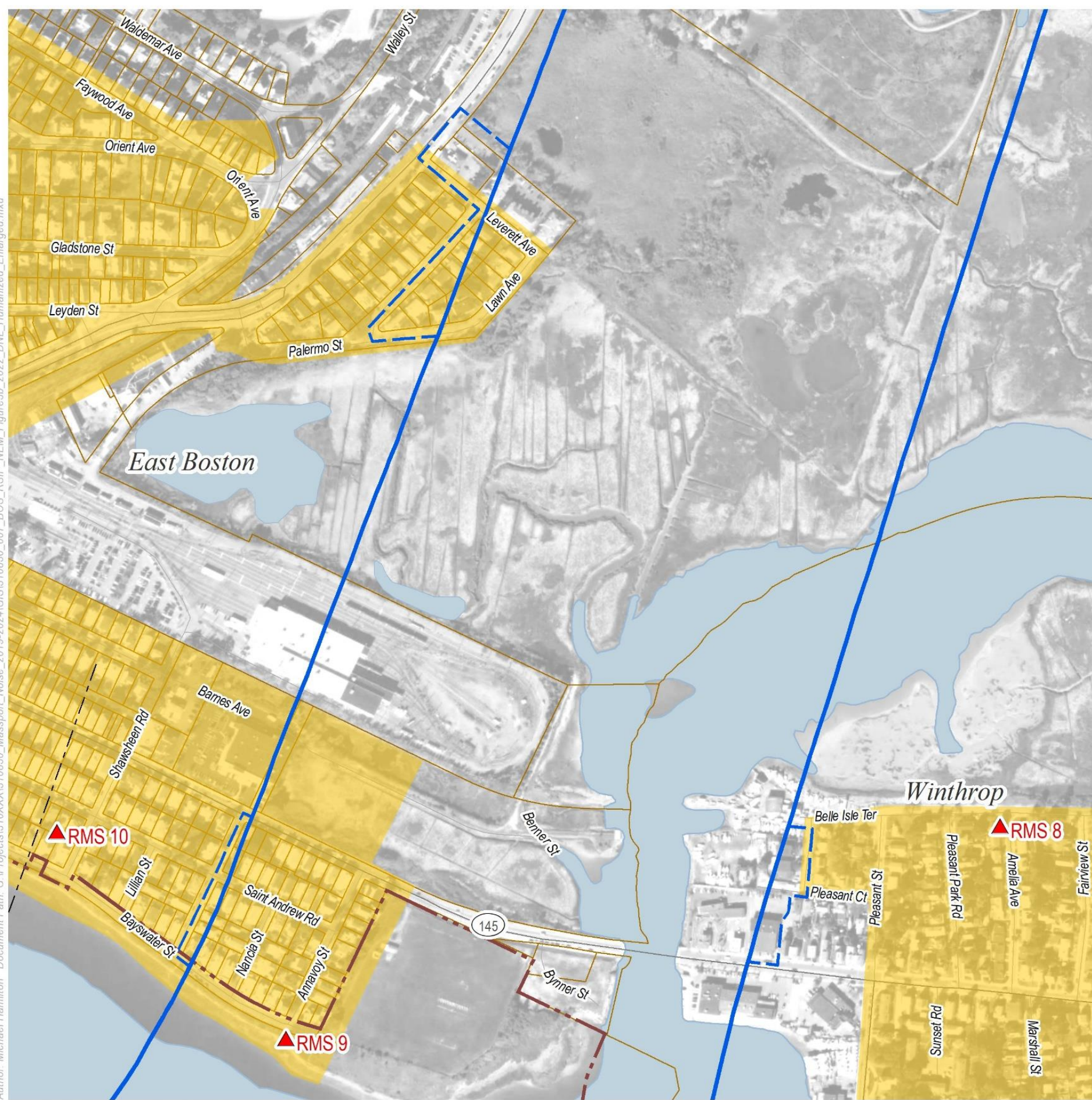
Figure 3b

2022 RSIP DNL 65 Humanized Contour Over Residential Areas

- 2022 RSIP Humanized Contour Line
- 2022 RSIP Forecast Contour Line
- BOS Airport Boundary
- Runways
- Permanent Noise Monitor
- Sound Insulation Areas
- Parcel Boundary



Author: Michael Hamilton Document Path: G:\Projects\310XXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure3b_2022_DNL_Humanized_Enlarged.mxd



Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS

Author: Michael Hamilton Document Path: G:\Projects\310XXXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure3c_2022_DNL_Humanized_Enlarged.mxd










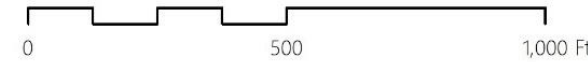
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Boston Logan International Airport

Figure 3c

2022 RSIP DNL 65 Humanized Contour Over Residential Areas

-  2022 RSIP Humanized Contour Line
-  2022 RSIP Forecast Contour Line
-  BOS Airport Boundary
-  Runways
-  Permanent Noise Monitor
-  Sound Insulation Areas
-  Parcel Boundary



Author: Michael Hamilton Document Path: G:\Projects\310XXX\310830_Massport_Noise_2019-2024\GIS\310830_2022_DNL_Humanized_Enlarged.mxd










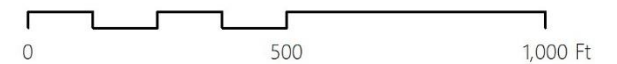
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Boston Logan International Airport

Figure 3d






2022 RSIP DNL 65 Humanized Contour Over Residential Areas

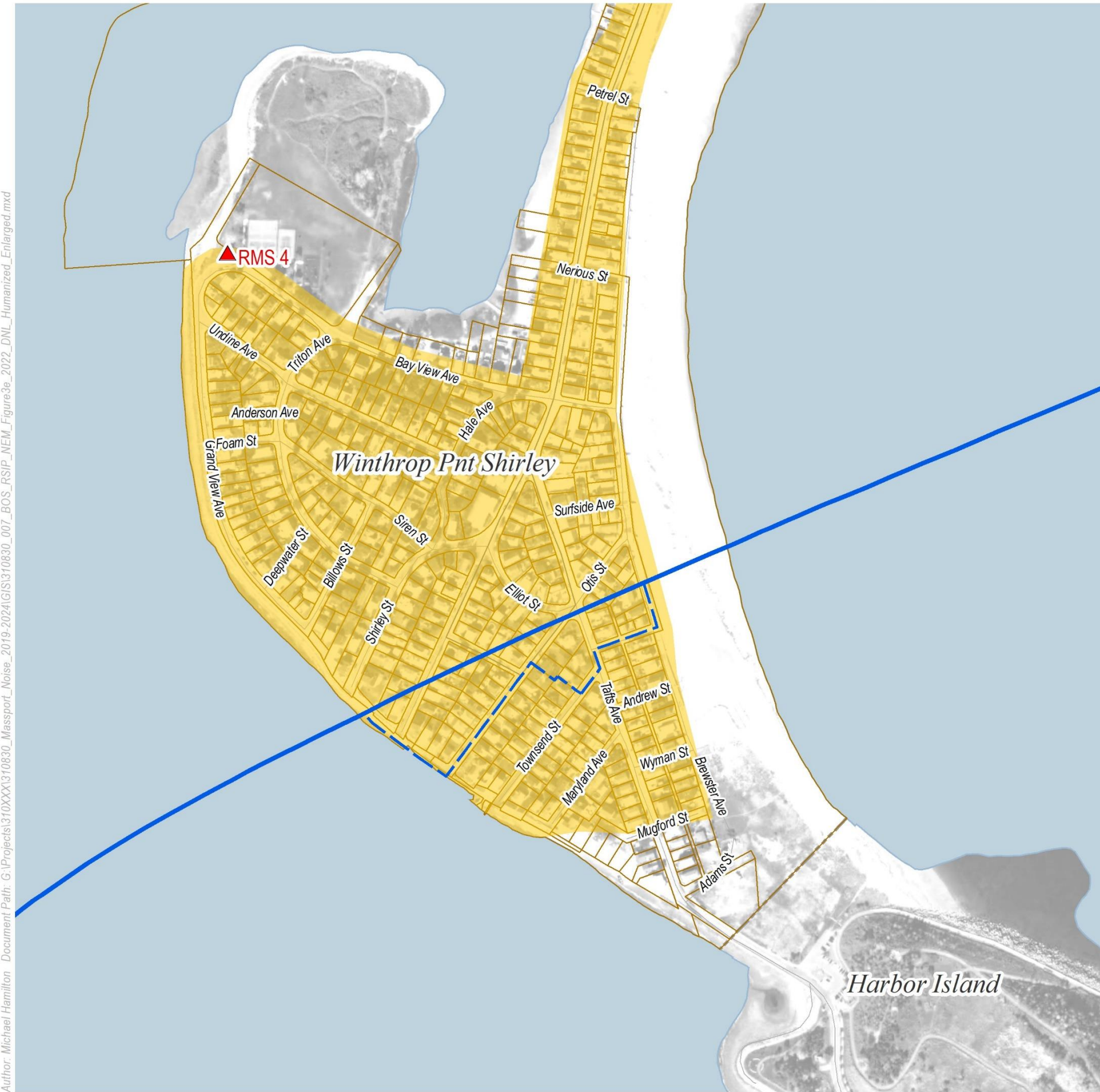
-  2022 RSIP Humanized Contour Line
-  2022 RSIP Forecast Contour Line
-  BOS Airport Boundary
-  Runways
-  Permanent Noise Monitor
-  Sound Insulation Areas
-  Parcel Boundary



Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS




Figure 3e
2022 RSIP DNL 65 Humanized Contour Over Residential Areas

-  2022 RSIP Humanized Contour Line
-  2022 RSIP Forecast Contour Line
-  BOS Airport Boundary
-  Runways
-  Permanent Noise Monitor
-  Sound Insulation Areas
-  Parcel Boundary



Author: Michael Hamilton Document Path: G:\Projects\310XXXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEM_Figure3e_2022_DNL_Humanized_Enlarged.mxd

Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS

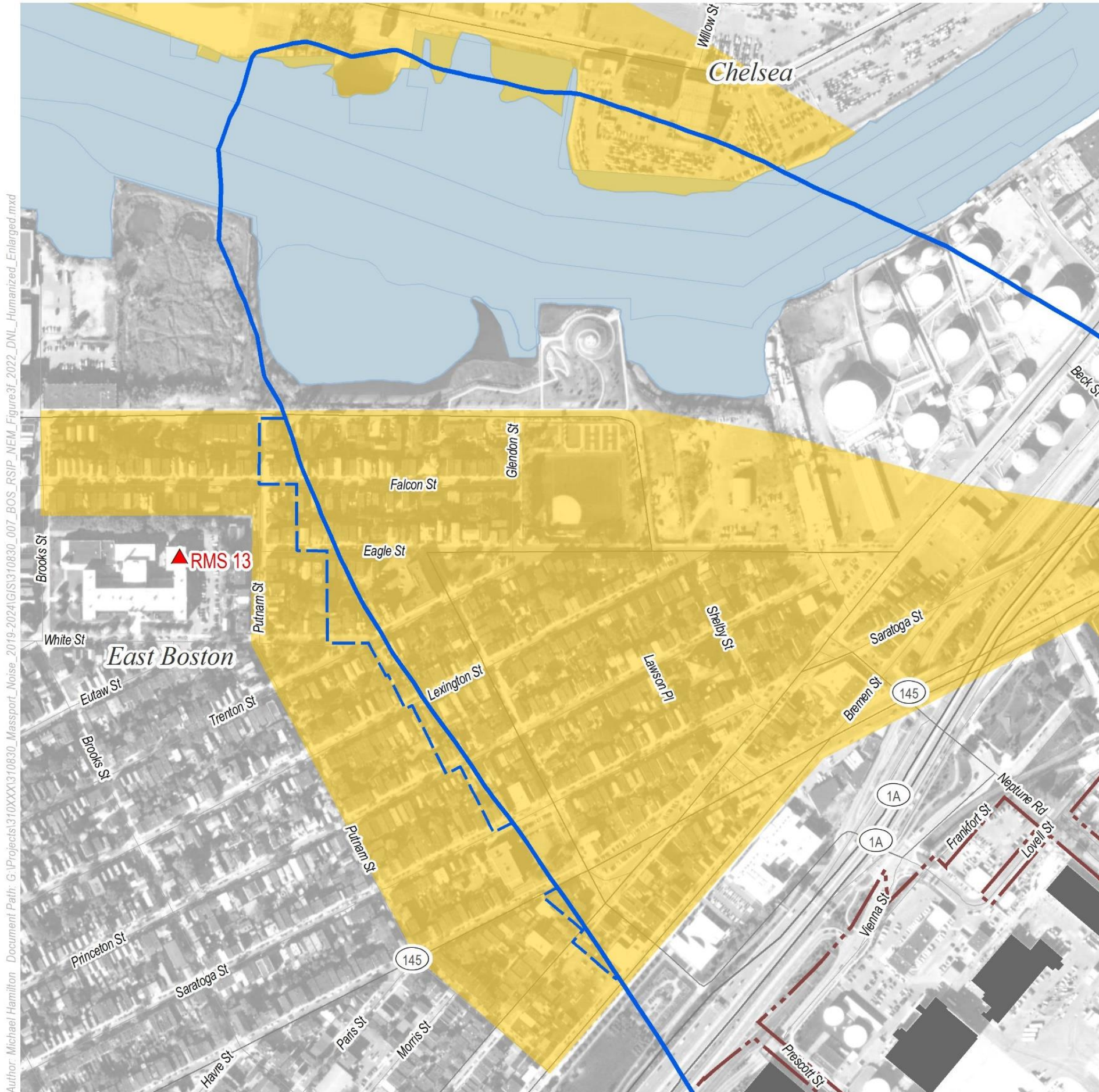


Boston Logan International Airport

Figure 3f

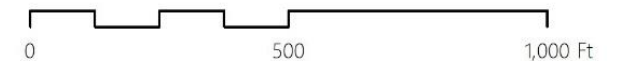
2022 RSIP DNL 65 Humanized Contour Over Residential Areas

- 2022 RSIP Humanized Contour Line
- 2022 RSIP Forecast Contour Line
- BOS Airport Boundary
- Runways
- Permanent Noise Monitor
- Sound Insulation Areas
- Parcel Boundary



Author: Michael Hamilton Document Path: G:\Projects\1310XXXX\1310830_Massport_Noise_2019-2024\GIS\1310830_007_BOS_RSIP_NEM_Figure3f_2022_DNL_Humanized_Enlarged.mxd

Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS



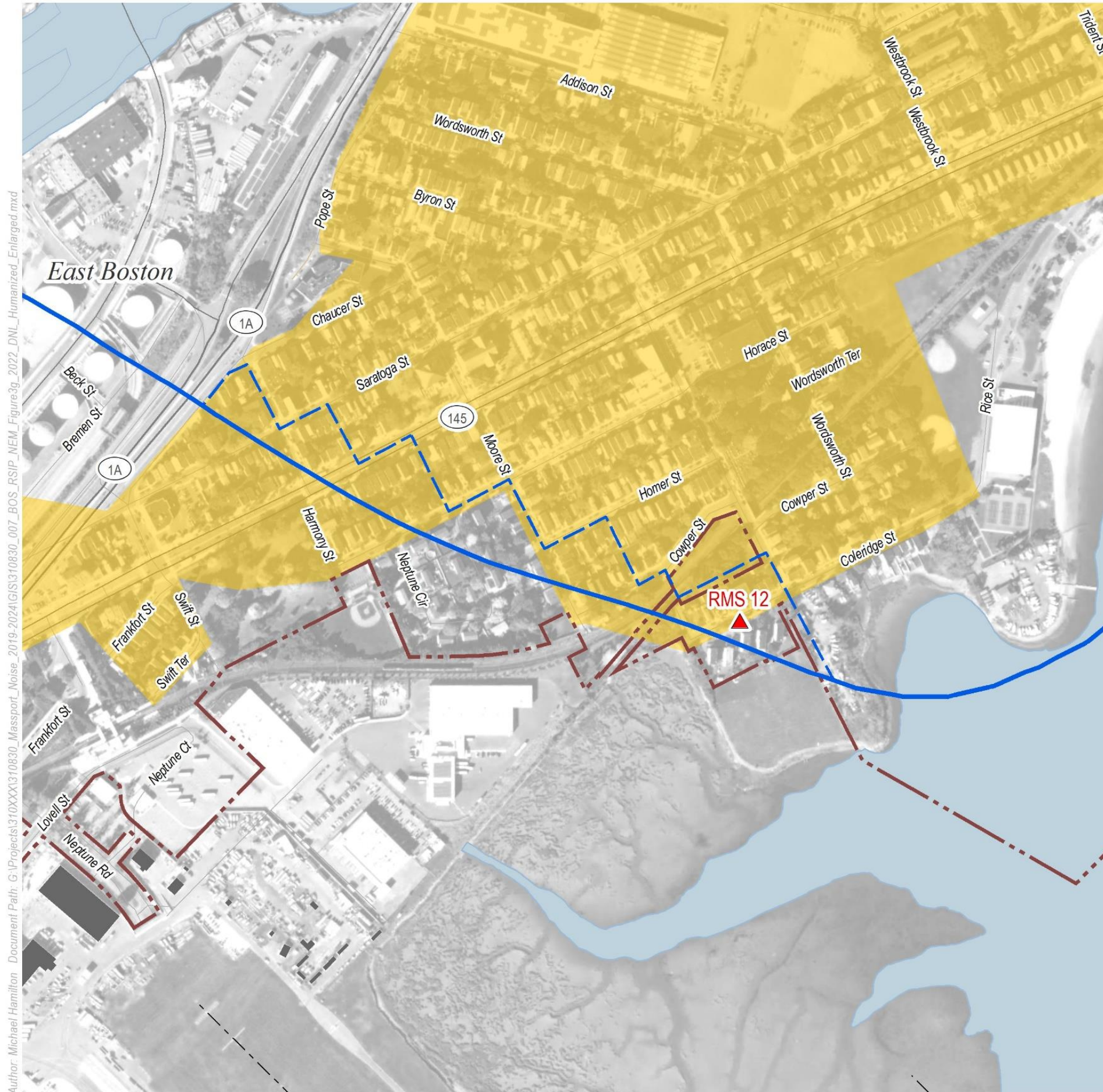










Figure 3g


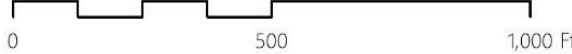
2022 RSIP DNL 65 Humanized Contour Over Residential Areas

-  2022 RSIP Humanized Contour Line
-  2022 RSIP Forecast Contour Line
-  BOS Airport Boundary
-  Runways
-  Permanent Noise Monitor
-  Sound Insulation Areas
-  Parcel Boundary

Author: Michael Hamilton Document Path: G:\Projects\310XXXX\310830_Massport_Noise_2019-2024\GIS\310830_007_BOS_RSIP_NEI_Figure3g_2022_DNL_Humanized_Enlarged.mxd

Source: Harris Miller Miller & Hanson Inc. 2018, U.S. Department of Agriculture, National Agriculture Imagery Program (NAIP), 2018; MassGIS



The humanization process adds approximately 1,464 more people in 623 more dwelling units⁶ to the region enclosed by the 2022 DNL 65 dB contour. **Table 3** lists the dwelling unit and population counts by community, noting the difference made by expanding the eligibility line. The majority of those homes have already been soundproofed. Massport will use RSIP records to produce an estimate of the properties currently eligible for participation in the program. Field verification of the individual neighborhoods is required in order to determine an accurate count of the number of dwelling units within the DNL 65 dB line that have not been sound-insulated or which were treated prior to 1993.

Table 3. Noise-Exposed Dwelling Units and Population within the Humanized 2022 DNL 65 dB Contour

Dwelling Units	70-75 DNL	65 ¹ -70 DNL	Total (65+) ¹ DNL	Estimated Additional due to Humanization Process
Boston	0	1,685	1,685	270
Chelsea	0	0	0	0
Everett	0	0	0	0
Revere	0	1,585	1,585	225
Winthrop	11	554	565	128
Total (All communities)	11	3,824	3,835	623
Population	70-75 DNL	65 ¹ -70 DNL	Total (65+) ¹ DNL	Estimated Additional due to Humanization Process
Boston	0	4,502	4,502	640
Chelsea	0	0	0	0
Everett	0	0	0	0
Revere	0	3,932	3,932	516
Winthrop	27	1,188	1,215	308
Total (All communities)	27	9,622	9,649	1,464
Source: Massport and HMMH, 2024.				
Notes: Population counts use the 2020 U.S. Census block data, merged with 2016 Residential Land Use.				
The 2022 noise analysis uses AEDT version 3e; The humanization process extends the contour line outward to include whole neighborhood blocks, if possible.				
1	Day-Night Average Sound Level (DNL) 65 decibel (dB) is the federally-defined noise criterion used as a guideline to identify when residential land use is considered noncompatible with aircraft noise.			

6 These estimates are calculated with GIS software that determines the fraction of the area of each census block that is residential land use and that is within the contour. That fraction is applied to the census dwelling units and population counts for that block.