PTIA Part 150 Update Assessment

Purpose

The purpose of this assessment is to analyze the results of the draft *Piedmont Triad International Airport Part 150 Update* study to determine if any changes to the city's Airport Overlay District are warranted. The *Piedmont Triad International Airport Part 150 Update* is an airport noise compatibility study that was recently completed and is currently under review by the Federal Aviation Administration (FAA) for authorization. This assessment report provides information on prior airport noise studies, the draft Part 150 Update study's conclusions, and the Planning & Development Department's resulting recommendations for the Airport Overlay District.

Background

In 1998, a citizens committee was formed to create a plan for the Johnson Street/Sandy Ridge Road area. The study area included approximately 6,000 acres on both sides of Sandy Ridge Road and Johnson Street between Interstate 40 and Skeet Club Road. The announcement that Piedmont Triad International Airport (PTIA) was chosen as the intended location of a FedEx regional package sorting hub, which would require the construction of a third runway parallel to the primary runway, expanded the focus of the corridor plan.

The committee understood that noise from the proposed third runway presented the potential for impacts on noise sensitive uses such as residential development, schools, and churches. However, the committee was faced with the difficulty of recommending land use policies that responded to this potential impact without knowing exactly where it would be most strongly felt. This was because the Environmental Impact Statement (EIS) on the project, which contained this information, was delayed several times. As a result, the *Johnson Street/Sandy Ridge Road Area Plan* was adopted in April 2000 with a set of interim land use policies, including designating a large amount of land for industrial use in the northern High Point Planning Area to prevent conflicts with noise sensitive land uses, primarily residences.

After the final EIS was published in December 2001, the Planning & Development Department researched solutions; and in August 2002, the department released the *Aircraft Noise and Land Use Planning* report, which reviewed the issues and presented some possible options. However, the information released in the EIS and researched by the department was not sufficient to develop adequate land use solutions to potential nighttime noise impacts. The department's report recommended hiring an acoustical consultant to analyze the situation and to make recommendations to address anticipated nighttime noise impacts.

In the fall of 2002, the City hired Wyle Laboratories, Inc. The acoustical consulting firm presented its findings and recommendations in a report in February 2003. The Wyle Report stated that Day-Night Average Sound Level (DNL), which is the metric most used in calculating potential noise impacts from airports, is based on a day-night,

24-hour average noise level. As such, it can underrepresent the effects of nighttime flight operations when impacted residents are asleep.

The Wyle Report concluded that estimating and mitigating the effects of aircraft noise would be more effective and accurate if the City's program was based on the number of individual nighttime noise occurrences above certain benchmark noise levels. This noise measurement method is termed "Number of Events Above" or NA. Based on the NA metric, the study defined a noise impact area where the proposed nighttime aircraft noise events on a typical night can affect sleep. In this noise impact area under existing conditions, two percent or more of the population will experience various levels of sleep disturbance (i.e. delaying the onset of sleep, changes in stages of sleep, or waking up). It is impossible to eliminate sleep disturbance (i.e. personal needs, indoor noise sources, etc.). However, the report stated that there are steps that can be taken to reduce the number of people experiencing sleep disturbance due to aircraft noise.

City Council directed the Planning & Development Department to pursue the implementation of the Wyle Report recommendations, which included amending the *Land Use Plan* and adopting the Airport Overlay (ARO) District In August 2003, City Council adopted the ARO district to protect noise sensitive land uses, which was based on the Wyle Laboratories' analysis of the EIS and the DNL & NA metrics.

Airport Overlay District

The ARO district boundaries are based on noise contours that radiate outward from the airport's runways and which indicate specific decibel levels – a 24-hour average noise reading in the case of DNL contours and a number of individual aircraft flights above a specific decibel level for NA contours. However, the district boundaries do not precisely coincide with the noise contours. Instead, they are normally tied to physical features on the ground that can be identified, such as streets and streams. This accomplishes two things: first, determining when a particular development proposal is within one or more of the zones is more straightforward; and second, mapping the boundaries beyond the contour line allows for variations in aircraft flights patterns and noise that will occur.

The four zones of the ARO district contain the following requirements:

- Zone 1: The intent of Zone 1 is to prevent the development of land uses sensitive to objectionable noise resulting from daytime and nighttime aircraft flights and those uses that could pose safety hazards to aircraft, such as schools, hospitals and other places where there would be large groupings of people on the ground. No new residential uses are allowed. Zone 1 boundaries are generally based the 65 DNL contour, which represents average daily sound levels of 65 decibels.
- Zone 2: The intent of Zone 2 is to prevent the development of land uses sensitive to objectionable noise resulting from nighttime aircraft flights. No new residential uses are allowed. Zone 2 boundaries are generally based on the number of individual aircraft flights that exceed the NA 90(1) decibel level.
- Zone 3: The intent of Zone 3 is to protect residential uses and their residents by reducing the interior level of objectionable noise resulting from nighttime aircraft flights. This goal is accomplished by new residential construction meeting a

noise level reduction standard. The boundaries of Zone 3 are based on the same NA 90(1) metric as used for Zone 2. The area included in Zone 3 would have been part of Zone 2, except for the established pattern of residential development and Oak Hollow Lake watershed considerations (i.e. watershed critical area).

- Zone 4: The intent of Zone 4, along with the other three zones, is to provide public notification of potential nighttime aircraft noise impacts. The boundaries of Zone 4 are generally based on the NA 85(2) metric.

In all zones, potential buyers of property must be notified of possible noise from aircraft overflights. A waiver of claim is required for all subdivisions of land within the ARO district. The waiver is executed by the owner of the property for the benefit of the City, and it waives all existing and future owners' right to any claim or cause of action against the City in connection with adverse aircraft noise impacts or other consequences of the airport overlay district's noise mitigation requirements.

The original ARO district boundaries were adopted in 2003 prior to the initial PTIA Part 150 Study. The current ARO district boundaries are shown on Map 1, Existing Airport Overlay District.

Initial PTIA Part 150 Study

As previously stated, a Part 150 Study is a comprehensive aircraft noise compatibility study that is conducted to reduce the impact of airport operations on noise sensitive uses surrounding an airport. This voluntary study defines the five-year vision of noise compatibility between an airport and the surrounding communities.

The initial PTIA Part 150 Study examined four basic components:

- Airport Plan - the layout of the airport and its physical facilities
- Airport and Airspace Use - airport operational activities
- Land Use - the impacts of airport operations on its surroundings, and
- Noise Program Management - ways in which noise impacts are managed over time.

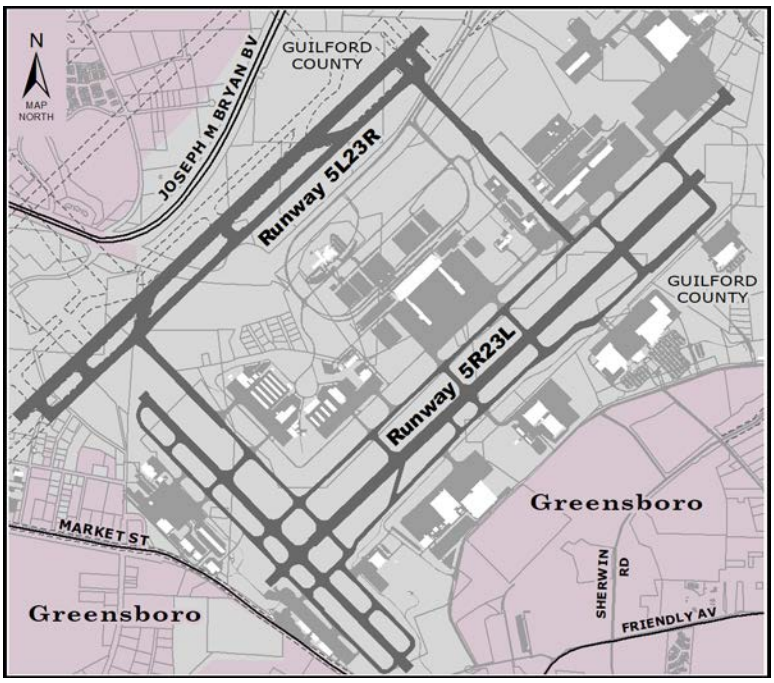
Three committees were appointed to review the airport layout, flight procedures and land use around the airport. The committees (which included residents living near the airport, elected and appointed government officials and airport tenants) were led by a consultant and met regularly for more than two years to determine how best to reduce airport noise in the neighborhoods surrounding the airport.

Several scenarios were created under the methodology of the study using a variety of configurations of flight arrival and departure patterns, runway assignments, flight paths, aircraft mix and other aspects of the proposed operation. The study used the planned peak operational year of 2014, with 126 nighttime arrivals/departures, to analyze the potential impacts on the airport's surroundings and develop noise mitigation measures.

The initial Part 150 Study produced two products: Noise Exposure Maps (NEMs) and mitigation measures collectively known as the Noise Compatibility Program (NCP). The NCP included 21 mitigation measures. One of the important assumptions used in developing the NCP was that Boeing 727s would continue to be a part of FedEx's fleet in 2014. These aircraft were the noisiest of all aircraft serving the air cargo hub and would eventually be replaced by quieter aircraft. The Part 150 Study's NEMs and NCP were accepted by the FAA in June and November 2008, respectively.

Of the 21 noise mitigation measures recommended in the Part 150 Study, the following six measures, all from the Airport and Airspace Use component of the NCP, were of the most interest to the City in mitigating aircraft noise impacts. They are summarized as follows:

- Preferred Night Runway Use – When weather and other conditions permit, all nighttime flights arrive on runways 5L and 5R and depart from runways 23L and 23R (see diagram of the airport that follows). That is, nighttime flights generally land from the southwest and depart to the southwest, over north High Point. Where feasible, arrivals were recommended to be split between left and right runways.
- Night Runway Use Assignments – All departing retrofitted stage 3 aircraft (e.g. Boeing 727s) would use the new runway, 23R. That is, departing 727s take off from the new runway toward the southwest. Departing aircraft other than stage 3 aircraft would be assigned to runways according to their destinations.
- Night Southbound Departure Corridor from Runway 23L – Aircraft departing from runway 23L for southern destinations would use a new nighttime flight path east of and parallel to NC 68 (Eastchester Drive). A left turn for aircraft onto this flight path was recommended to occur as soon as practicable.



- Night Departure Procedures from Runway 23R - Aircraft departing runway 23R at night and turning right toward western destinations would initiate the right departure turn as soon as practicable.
- There were two other measures that involved the Piedmont Triad Airport Authority (PTAA) requesting that the FAA Air Traffic Control Tower personnel direct all jet aircraft arriving at the airport to maintain optimal altitudes while landing to minimize noise impacts on the ground.

The effect of these noise mitigation measures was to reduce the noise impacts from nighttime aircraft upon established residential uses in north High Point directly southwest of the two parallel runways. The new runway, 5L/23R, was to accommodate all departing 727s and place the noisiest aircraft over the least-inhabited part of north High Point. Departing flights from the older runway, 5R/23L, would shift to the east along Eastchester Drive (NC 68), with less noise impact on residential areas and more on nonresidential areas.

The NA and DNL contours from the initial Part 150 Study for the 2014 forecast year are shown on Map 2, 2014 NA Contours – PTIA Part 150 Study and on Map 3, 2014 DNL Contours – PTIA Part 150 Study.

Airport Overlay District Amendments

Part 150 Study Assessment

In January of 2011, the Planning & Development Department completed an assessment report based upon the approved Part 150 Study. Based upon the assessment's recommendations, City Council initiated amendments to the ARO district, which were adopted on March 5, 2012.

There were two areas where district boundaries changed.

- Southwest – The southwest portion of the ARO district was expanded southward from Sandy Ridge Road to Skeet Club Road and westward to the Forsyth County line. Within the district, Zone 3 was expanded from Kendale Road to the West Fork of the Deep River. This expansion was warranted due to the mitigation measure utilizing runway 23R for the departure of the noisier retrofitted stage 3 aircraft (i.e. 727s).
- East – The eastern portion of the district was expanded to extend from Eastchester Drive eastward to Tarrant Road. A portion of the expansion north of Regency Drive was included in Zone 2 with the remainder of the expansion included in Zone 4. This expansion was warranted due to the mitigation measure for departures on runway 23L using a flight path east of and parallel to Eastchester Drive.

City-Initiated Amendments

At the request of two property owner representatives, the Planning & Development Department investigated the potential to amend the district's zone boundaries in 2017 and 2019.

In 2017, the department reviewed the noise metrics and the basis for the zone boundaries in the vicinity of property north of Willard Dairy Road, just east of Southwest School Road. The department determined that the noise metrics would support specific properties being reclassified from Zone 2 to Zone 3. Zone 3 allows residential development provided new residential dwellings meet a 30 dB noise level reduction design standard, whereas Zone 2 does not. Property lines were utilized when this portion of the boundary between Zone 2 and 3 was originally created because there were no physical features in this portion of the district that aligned with the noise metric analysis. Approximately 50 acres were recommended to be rezoned to Zone 3. On November 20, 2017, City Council approved a zoning map amendment (ZA-17-21) that implemented that change.

Later in 2019, the applicant for a proposed medical-related industrial/business research park requested that the department review the potential for changing the ARO to allow a residential component to support the park that was limited in its density and location. The department conducted a comprehensive review of the area beyond the property the applicant desired to develop and concluded that it was feasible for an approximate 267-acre area north of Clinard Farms Road and just east of Barrow Road to be amended to Zone 3 while continuing to maintain effective noise mitigation. The request was presented to the City Council to initiate a zoning map amendment, which was approved on June 3, 2019 (ZA-19-06).

In both cases, the department inquired with PTIA to gather comments and concerns regarding the two proposed changes. And in both cases, the airport requested an avigation easement, which provides rights to an airport to use the airspace above property and provides additional notice to subsequent property owners. The easement was addressed as part of the conditional zoning of property and when the properties are developed, the owner will provide the easement as part of the land development plan approval.

PTIA Part 150 Update

Beginning in 2019, PTIA began an update to the initial FAA approved Part 150 Study. Like in the initial Part 150 process, PTIA contracted with consultants to conduct the noise study, utilized stakeholder committees for input, and conducted periodic public meetings. The committees consisted of a technical advisory committee composed of airport users and governmental representatives, and a citizen advisory committee that was appointed by the surrounding local governments.

The Part 150 Update demonstrated that aircraft operations varied over the years since the initial Part 150 Study was completed in 2007. Operations grew until 2010, after

which they remained relatively constant until 2013, when they fell slightly. Operations returned to 2009 levels in 2017 and then began growing substantially. Future aircraft operations were expected to grow by 10.5 percent from 2018 to 2020 where they were forecasted to grow another 4.2 percent until 2025. Forecasts for the future year aircraft operations were developed just prior to the COVID-19 pandemic.

Air traffic at PTI is about 60 percent commercial flights, and most commercial flights are passenger flights. Passenger flights were forecasted to grow at a slower rate than cargo flights, due partly to the expected gradual replacement of small regional jet aircraft with larger aircraft capable of seating more passengers. However, the more recent expansion of cargo operations was expected to continue, which would drive much of the flight growth from 2020 to 2025.

The initial Part 150 Study included three categories of noise compatibility measures: (1) noise abatement measures intended to reduce aircraft noise at the source, (2) land use measures intended to mitigate existing non-compatible land uses and to discourage the introduction of new non-compatible land uses and (3) program measures intended to implement and monitor compliance with the PTI Noise Compatibility Program. The update study reviewed each of the measures to determine if any of the measures needed amending. The following measures from the update study are most applicable to High Point.

<u>Noise Abatement Measures</u>

NA-2 Preferred Night Runway Use

- Description: A head-to-head pattern of runway use, where nighttime arrivals occur over High Point and land on the parallel runways (5L & 5R) and nighttime departures occur over High Point using the same parallel runways (23L & 23R). Equal numbers of aircraft use both runways to the extent feasible. This measure is subject to favorable weather conditions.
- Status: Implemented the head-to-head pattern; not implemented was equal use of both parallel runways
- Compliance: 92% of nighttime departures and 75% of nighttime arrivals
- Recommendation: Maintain the head-to-head pattern and modify measure to allow control tower to assign use of runways instead of on an equal use basis.

NA-3 Night Runway Use Assignments

- Description: The primarily aspect of this measure assigned the western parallel runway (5L/23R) for all retrofitted stage 3 aircraft nighttime arrivals and departures. Thus, the nosiest aircraft (e.g. Boeing 727s) would arrive and depart over less populated areas of High Point.
- Status: Not implemented because agreements with air carriers did not occur and the air carriers divested in retrofitted stage 3 aircraft
- Compliance: N/A
- Recommendation: Eliminate measure since there are no retrofitted stage 3 aircraft in current US commercial fleet.

NA-4 Night Southbound Departure Corridor from Runway 23L

- Description: A departure procedure for the eastern parallel runaway (23L) for southbound aircraft where the initial flightpath is in a southerly direction east of and parallel to Eastchester Drive (NC 68). Aircraft will reach 4,000 feet mean sea level (MSL) before transitioning to another heading.
- Status: Implemented; used by both nighttime and daytime flights
- Compliance: 79% of nighttime departures; 93% of these reach 4,000 feet MSL before transitioning to another heading
- Recommendation: Maintain measure and modify by adding northeast destinations, which is how the measure was implemented by the FAA.

NA-5 Night Departure Procedures on 23R

- Description: A nighttime departure procedure for the western parallel runway (23R) where the aircraft initiates a right turn as soon as practicable.
- Status: Implemented
- Compliance: 100%
- Recommendation: Maintain measure and modify to add a portion of the NA-3 measure where aircraft heading in a southerly direction delay the transition until they have reached an altitude of 4,000 MSL.

NA-6 Night Northbound Departure Corridor from Runway 23L

- Description: A nighttime departure procedure for the eastern parallel runway (23L) to northern destinations where the aircraft initiates a left turn to a northeasterly heading as soon as practicable.
- Status: Not implemented
- Compliance: NA
- Recommendation: Eliminate measure because routing aircraft using other departure procedures is preferrable from both an air traffic control perspective and for reducing aircraft operations over densely populated areas.

NA-12 Noise Abatement Approach Procedures

- Description: Control tower directs all jet aircraft arriving at airport to intercept the final approach at least 5.5 nautical miles from intended runway and stay at or above glide slope throughout approach; and those aircraft on the final approach within 12.5 nautical miles from intended runway and stay at or above glide slope throughout approach
- Status: Partially implemented
- Compliance: 89% at or above glideslope at or beyond 5.5 nautical miles and 97% at or above glideslope at 2.5 nautical miles
- Recommendation: Maintain measure

NA-13 Altitude for Downwind Legs

- Description: Control tower directs all jet aircraft on the downwind leg for arrival on the runways to remain at or above 4,000 feet MSL until crossing the extended centerline of runway 14/32

- Status: Implemented
- Compliance: 94% on 5L and 90% or greater on 5R
- Recommendation: Maintain measure

Map 4, PTIA Nighttime Departure Flight Tracks, illustrates the nighttime departure procedures over northern High Point.

Land Use Measures

The initial Part 150 Study recommended five land use measures. Three measures were implemented, which involved the acquisition of noise-sensitive properties where DNL exceeds 70dB; sound insulation of noise sensitive structures where DNL exceeds 65dB; and the pursuit of compatible use zoning. Two measures, acquisition of avigation easements and assistance for owners where DNL exceeds 65dB were not implemented primarily because PTIA pursued acquisition of property and sound insulation measures which eliminated most of the need. There are no residential structures in the new DNL contours.

Programmatic Measures

The initial Part 150 Study recommended three programmatic measures, all which were implemented.

The Piedmont Triad Airport Authority (PTAA) established a noise monitoring function with dedicated staff that: monitors aircraft noise; provides a point of contact within the PTAA for issues related to aircraft noise; serves as a liaison with the community for such issues; and keeps air carriers and the public informed about compliance with measures.

PTAA publishes aircraft noise contours at 5-dB intervals for values of DNL of 60 dB and above and such information is maintained on the PTAA website.

And PTAA installed and operates an aircraft noise and operations monitoring system to monitor aircraft noise and aircraft operations in the vicinity of the airport. The system has four permanently installed noise monitors on PTAA property; one at each end of the two parallel runways. In addition, three portable noise monitors are available for temporary monitoring in other locations. PTAA staff monitors the system, responds to noise complaints, and provides information on aircraft operations causing specific noise events.

These programmatic measures are recommended by the update study to continue.

Noise Exposure Maps

Based upon the existing and forecasted flight mix at the airport, the update study created two new Noise Exposure Maps (NEM). One map addressed aircraft operations for the existing year and the other map was for the 2025 forecast year. The FAA's Part

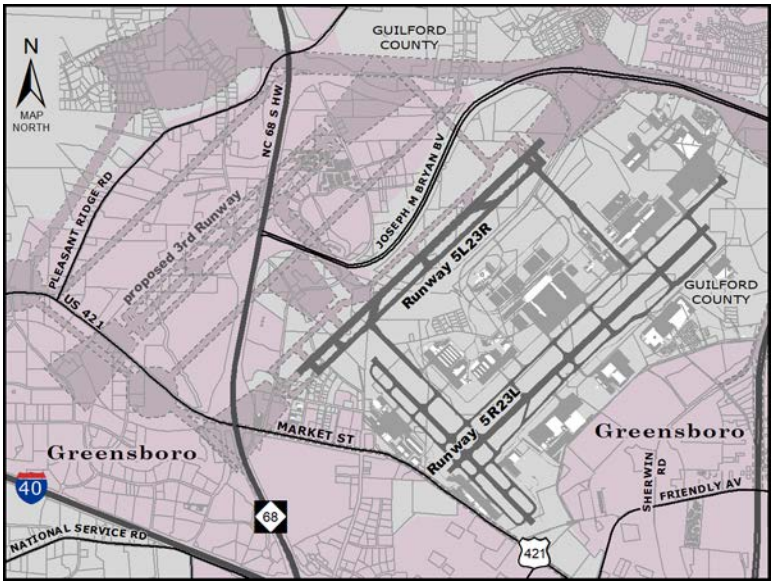
150 study only utilizes the DNL noise metric, which is a 24-hour average of aircraft noise with a 10dB weighting for nighttime flights (i.e. 10:00 pm to 7:00 am). The 65 DNL is the only noise level contour recognized by the FAA. The FAA considers all land uses, including residential uses, are compatible beyond the 65 DNL contour. Both the existing year and 2025 forecast year 65 DNL contours were contained almost entirely within the airport's property. And none of the 65 DNL contours extended beyond airport property south of the two parallel runways or crossed Interstate-40 toward High Point.

The NA and DNL contours from the Part 150 Update for the 2025 forecast year are shown on Map 5, 2025 NA Contours – PTIA Part 150 Update and on Map 6, 2025 DNL Contours – PTIA Part 150 Update.

PTIA Master Plan

In 2010, PTAA approved an updated PTIA master plan. The master plan forecasted airport growth over the next 30 years to 2040, both in physical size, from 4,000 acres to 6,300 acres, and in aircraft operations. (see diagram of the airport master plan that follows). Growth was anticipated in three phases:

- Phase 1 (0 to 10 years) – acquisition of 317 acres, new control tower, various equipment and facility upgrades, expansion of original runway, site preparation for FedEx next phase. Phase 1 anticipated construction of Interstate-73 and a major new aviation tenant requiring a new taxiway crossing Bryan Boulevard.
- Phase 2 (beyond 10 years) – acquisition of 742 acres, additional tenants, need to abandon Bryan Boulevard as a public right-of-way.
- Phase 3 (beyond 30 years) – acquisition of 1,247 acres, potential for a third parallel runway, relocation of NC 68 to the west with a new interchange with Interstate-73.



Currently, PTAA is in the process of completing a new update of the PTIA master plan due to the improvements and land acquisitions completed since 2010. In the new master plan update, PTAA anticipates no change regarding the future third parallel runway; however, given forecast demand through 2040, the runway is not expected to be needed within the master plan's 2040 horizon year.

Map 7, Land Use Plan & PTIA Master Plan shows the PTIA master plan as it was approved in 2010 along with the City's adopted Land Use Plan for the northern portion of the planning area. The airport master plan validates the need to maintain a solid industrial and commercial land use pattern south of Interstate-40 that prevents the establishment of new land uses that would be impacted both now and in the future by aircraft operations.

Noise Modeling of Airport Master Plan

The Part 150 Update demonstrated that aircraft operations varied over the years since the initial Part 150 Study was completed in 2007 and that significant aircraft growth is not expected in the short term. More specifically, passenger flights are expected to grow at a slower rate than cargo flights in the near term due to the expected gradual replacement of small regional jet aircraft with larger aircraft capable of seating more passengers. Cargo operations are forecasted to create most of the flight growth to the forecast 2025 year.

The Part 150 Update demonstrated that the removal of retrofitted stage 3 aircraft from the aircraft mix, the use of quieter aircraft, and the forecast for limited growth in the number of passenger aircraft operations for the next five years significantly reduced the aircraft noise footprint resulting from the initial Part 150 Study. As previously stated, the 65 DNL contour for the 2025 forecast year is contained almost entirely within the airport's property. In addition, the NA metric contours are drastically reduced in comparison to those generated by the EIS and the initial Part 150 Study.

The update study occurred during a time of transition—where noisier aircraft were replaced by quieter aircraft, where the FedEx cargo operations had been slow to grow, and where regional jet flights are replaced by larger aircraft that result in fewer passenger flights in the short-term. Thus, the forecasted growth for the next five years appears not to be a realistic picture for the long-term, but more of a short-term snapshot. There will be future land use/aircraft noise conflicts if the City makes long-term and permanent land use decisions on a such a snapshot of data.

While aircraft flights may not be growing by large numbers to the 2025 forecast year, the PTIA infrastructure and land area is growing. Much of the first phase of the master plan is complete, including runway expansion, a new air traffic control tower, and land acquisition. The land area of the airport has physically grown over the last 10 years. Aircraft based tenants, like FedEx, Honda Jet, and HAECO Americas, are key factors in the future growth of aircraft operations at PTIA. It is reasonable to expect that in the long-term the number of flights out of the airport will be more than forecasted for 2025,

based on that airport land growth, tenant growth, and the future economic growth within the region that will need aircraft services, both cargo and passenger.

The department decided that the Part 150 Update with the five-year forecast did not provide a realistic long-term representation of aircraft operations for PTIA needed to determine the long-term impact over the City's northern planning area. After discussions with PTAA, it was determined that the PTIA master plan would be a better long-term target for the noise modeling data needed for land use planning in that area.

Based upon reasonable assumptions, the PTIA master plan was used to model aircraft operations and thus aircraft noise impacts. This modeling provided a more realistic picture of aircraft operations and noise impacts needed for land use planning. A land use pattern once established is very difficult to change. For example, the Cardinal residential development was approved in the 1980s on the north side of the airport. It was developed prior to the construction of the new parallel runway and the development's residences are directly impacted from the noise of aircraft arrivals and departures on that runway.

The following are the assumptions used for the noise modeling of the PTIA master plan:

<u>Noise Modeling</u>

- Average annual day
- Nighttime flights only (10pm – 7am)
- Metrics calculated in Sound Exposure Level (SEL)
  - NA 90(1)
  - NA 85(2)
  - NA 80(5)

<u>2040 Forecast Assumptions</u>

- Consistent with Master Plan Update forecast
- Assumes 63 FedEx arrivals and 63 FedEx departures during their nighttime sort, four nights per week
- Makes some assumptions about cargo aircraft retirements/replacements (B767 to replace a portion of the A300 fleet; B737 to replace a portion of B757 fleet)

<u>Runway Use Assumptions</u>

- 2040 Baseline
  - Runway use assumptions for all nighttime flights remain the same as assumed in the Part 150 Update.
  - The FedEx nighttime sort retains the same runway use as the Part 150 Update, which was based on actual data from December 15, 2018 through March 31, 2019.
- 2040 Adjusted
  - Runway use assumptions are adjusted for only the nighttime FedEx sort flights. Runway use for all other flights remains unchanged from Baseline.

- The FedEx nighttime sort is assumed to use Runway 5R-23L 75% of the time and 25% would be offloaded to 5L-23R. This assumption reflects that with 63 arrivals and 63 departures in a compressed period, additional use of Runway 5L-23R would occur to enhance runway throughput and reduce delays.

Assumed 2040 FedEx Nighttime Sort Runway Use

Runway	Arrivals		Departures	
	Baseline	Adjusted	Baseline	Adjusted
5L	6.6%	18.8%	0.8%	2.1%
5R	68.5%	56.2%	7.7%	6.4%
23L	22.3%	18.3%	90.0%	68.7%
23R	2.1%	6.1%	1.6%	22.9%

- PTAA believes that at the forecast 2040 level of demand, the *adjusted* runway use is a more realistic assumption of how the runways would be used beyond 2025. It is reasonable to assume that as the FedEx nighttime sort increases to 63 flights per night, the runway use will not stay the same as it is currently with 10 flights per night. Instead, additional offloading and runway balancing will occur to maintain needed throughput during the arrival and departure banks, while still retaining a preference for eastern parallel runway (5R/23L).

Map 8, 2040 NA Contours – PTIA Master Plan, provides the noise contours based upon modeling the master plan at the 2040 forecast year.

Recommendations

The adjusted runway use assumption from the noise modeling of the PTIA master plan, which shifted some nighttime flights to the western parallel runway (5L/23R), provides the most realistic forecast of how the parallel runways will be used long-term and for the aircraft noise produced. Therefore, it provides a better representation for planning purposes, and it was used to produce the NA metric contours, which were used for the recommended changes in the ARO district boundaries. Map 9, Revised Airport Overlay District, shows the recommended ARO district boundaries, and Map 10, Area of Boundary Change – Airport Overlay District, illustrates each area recommended to change.

<u>Airport Overlay District Map</u>

- Area A, which is adjacent to Forsyth County and in the westernmost portion of the ARO district, is recommended to be removed from Zone 4 and the district. The removal of this area from the district is due to the divestment in retrofitted stage 3 aircraft in the US commercial fleet, which a noise abatement measure placed them on the western parallel runway (5L/23R) for nighttime arrival and departure so as to impact fewer existing residences.
- Area B is adjacent to Interstate-40 and is recommended to change from Zone 2 to Zone 4. This area was placed in Zone 2 as the result of a proposal made during the 2003 district adoption process that departing flights from the new

runway to the south and west be directed to use the Interstate-40 corridor until well away from High Point. The desire was to quickly shift aircraft to the west and thus noise away from residential areas to the south. This noise abatement proposal was not accepted in the initial Part 150 Study and the department's prior assessment report recommended this area be placed in Zone 4. However, City Council at that time was concerned with the impact from the third parallel runway proposed in the 2010 Airport Master Plan and no change was made.

- Area C, which is generally between Kendale Road on the east and the West Fork of the Deep River on the west, would change from Zone 3 to Zone 4. The West Fork of the Deep River would become the new western outer boundary of the district. Like Area A, the change in Area C is due to the divestment of retrofitted stage 3 aircraft.
- Area D is bounded by Sandy Ridge Road on the north, Clinard Farms Road on the east, the alignment of future Piedmont Parkway on the south and Sandy Camp Road on the west. Again, like Area A and C, this area's change is due to the removal of the noisiest component from the US commercial fleet (i.e. retrofitted stage 3 aircraft). It is recommended to change from Zone 2 to Zone 3.
- Area E is bounded by Gallimore Dairy Road on the north, and unnamed public right-of-way on the east, Clinard Farms Road on the south and Sandy Ridge Road on the west. It is to change from Zone 1 to Zone 2 primarily because of the removal of retrofitted stage 3 aircraft. Zone 1 is based upon the DNL metric, which is a 24-hour average of aircraft noise.
- Area F is a very small area between Gallimore Dairy Road and a stream named the Sandy Ridge Tributary, which would change from Zone 3 to Zone 2. Because Gallimore Dairy Road is recommended to be the southern boundary of Zone 1, the department recommends this change to prevent noise sensitive land uses abutting Gallimore Dairy Road. This change is consistent with the adopted Land Use Plan and with prior approved zoning for property in this area that is currently within the city.
- Area G is also a small area north of Gallimore Dairy Road that abuts Pegg Road on the west and the City of Greensboro to the north and east. It is zoned for nonresidential uses and being developed with a nonresidential use. Adding this area to Zone 1 allows Gallimore Dairy Road to be a consistent and identifiable boundary for Zone 1.
- Area H is currently within Zone 2 and recommended for Zone 3. It is bounded by the Sandy Ridge Tributary on the north, Eastchester Drive on the east, Willard Dairy Road on the south and various property lines on the west. The department recommends this change based upon prior the 2017 and 2019 amendments to the district and the aim to use physical boundaries (i.e. streets, streams, etc.) as zone boundaries instead of property line whenever practical. The effect of this change would potentially allow some residential development in this area subject to such development meeting the noise level reduction standard for Zone 3. Any such future residential development would require proper zoning and consistency with the adopted Land Use Plan.

Airport Overlay District Text

The department recommends an additional form of protection and notification be added to the text of the ARO district. Because there are two large areas recommended to change from Zone 2 to Zone 3, there will be new residential uses developed in these areas. As previously stated, a land use pattern once established is very difficult to change. Also, based upon the airport master plan and anticipated aircraft operations, it is unlikely that the noise abatement measures recommended in the Part 150 Update will significantly change in the long term. Providing long-term protection and notification is in the interest to both the City and the PTAA. Therefore, the department recommends that an avigation easement requirement be added to the Zone 3 standards for new residential development. Such an easement would be provided by the owner/developer at the time of new residential land development approval and it provides another form of notice to future owners within the development as well as protection for the airport to continue to fly the flight patterns recommended by the Part 150 Update.

The Appendix contains a summary of the ARO district standards by zone and indicates the proposed change in district text.

Land Use Policy

The recommended map changes to the ARO district should be evaluated regarding adopted policy to ensure clarity in land use policy. For example, Area D, which is recommended to change from Zone 2, which does not allow residential uses, to Zone 3, which does allow residential uses, is located within Tier 3 of the Oak Hollow Lake watershed critical area. This portion of the watershed critical area limits built-upon area to a maximum of 50 percent of the site, which is more favorable for residential than nonresidential development. Such an evaluation would determine any warranted land use policy changes and the evaluation would be conducted if City Council determines the recommended map amendments should be initiated.

Appendix

Summary of Airport Overlay District Requirements

The Airport Overlay (ARO) District was designed to apply as an overlay zoning district on top of existing zoning districts. The underlying zoning district determines the general use and development standards. The purpose of the ARO district is intended to: facilitate orderly development within the vicinity of the Piedmont Triad International Airport, ensure land use compatibility by protecting noise sensitive land uses from objectionable aircraft noise impacts, mitigate noise impacts from aircraft over-flights, and contribute to the safe operation of the airport.

Requirements by Zone

The ARO district is divided into 4 different zones to manage the development of uses that are sensitive to and incompatible with certain levels of daytime and nighttime aircraft noise and to mitigate adverse noise impacts to the public, where possible. A description of each zone follows:

Zone	Notification	Waiver of Claim	Prohibited Uses	NLR* Design Standards 30dB	**Avigation Easement**
1	X	X	X		
2	X	X	X		
3	X	X	X	X	**X**
4	X	X			

***** Noise Level Reduction

Zone 1: The intent of Zone 1 is to prevent the development of land uses sensitive to objectionable noise resulting from daytime and nighttime aircraft flights and to uses that could pose safety hazards to aircraft. It is based on the 65 DNL contour. No new residences are allowed, new daytime noise sensitive uses like schools are prohibited, and certain uses presenting safety concerns are barred. Owners of residential properties are required to provide notification of potential aircraft overflight noise to prospective purchasers and a notification statement is required on all final subdivision plats of property.

Zone 2: The intent of Zone 2, which is based on the NA 90(1) contour, is to prevent the development of land uses sensitive to objectionable noise resulting from nighttime aircraft flights. No new residences are allowed. Owners of residential properties are required to provide notification of potential aircraft overflight noise to prospective purchasers and a notification statement is required on all final subdivision plats of property.

Zone 3: The intent of Zone 3, which is based on the NA 90(1) contour, is to protect residential uses and their residents by reducing the interior level of objectionable noise resulting from nighttime aircraft flights. **New residential subdivisions and group developments are required to provide an avigation easement upon development approval** and residential dwellings constructed in those developments are required to meet design standards that reduce interior sound levels by 30 decibels (dB). Owners of residential properties are required to provide notification of potential aircraft overflight noise to prospective purchasers and a notification statement is required on all final subdivision plats of property.

Zone 4: The intent of Zone 4, which is based on the NA 85(2) contour, is to provide public notification of potential nighttime aircraft noise impacts. Owners of residential properties are required to provide notification of potential aircraft overflight noise to prospective purchasers and a notification statement is required on all final subdivision plats of property.

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 1

Existing Airport Overlay District

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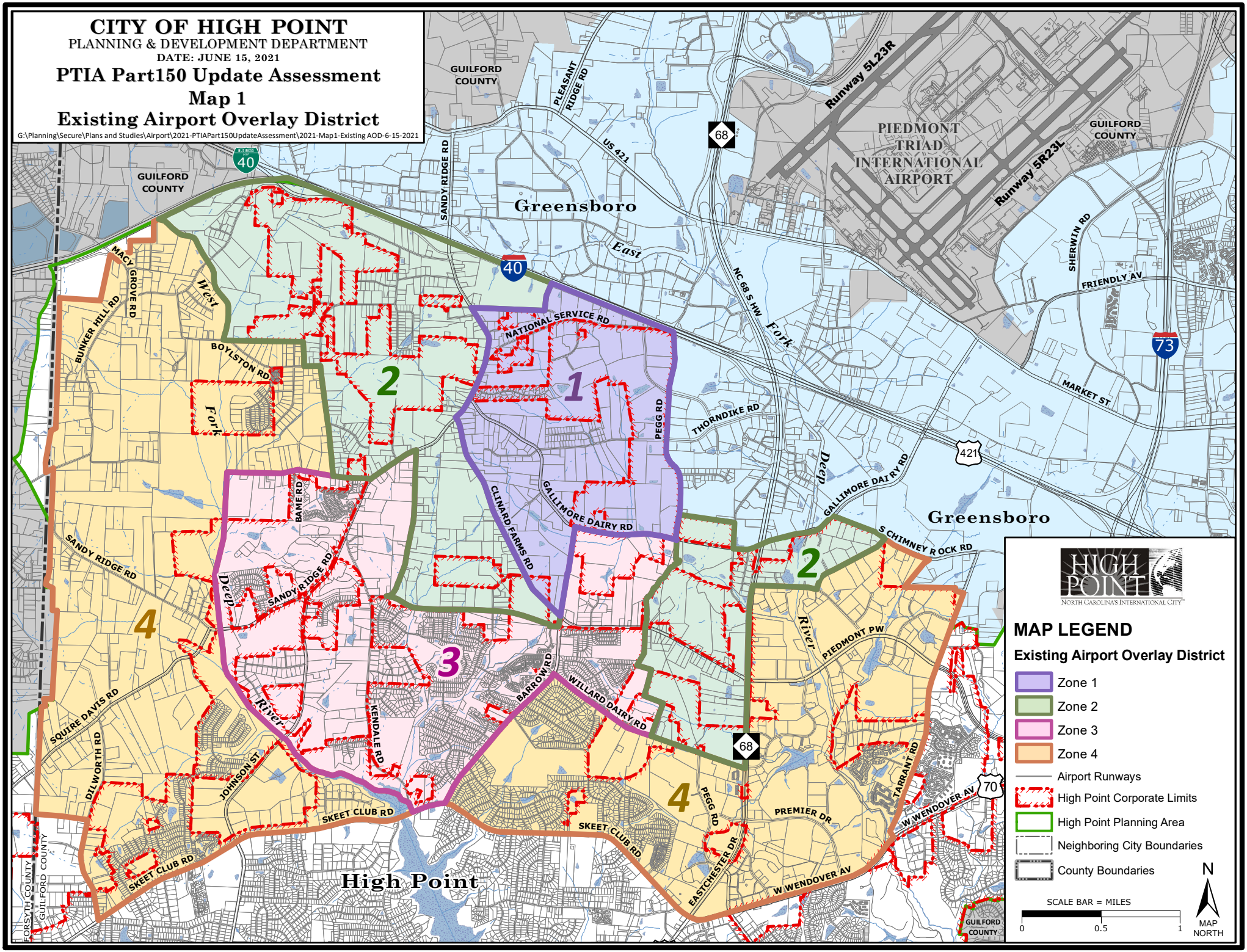


HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

MAP LEGEND

Existing Airport Overlay District

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Airport Runways
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

N

SCALE BAR = MILES

0 0.5 1

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

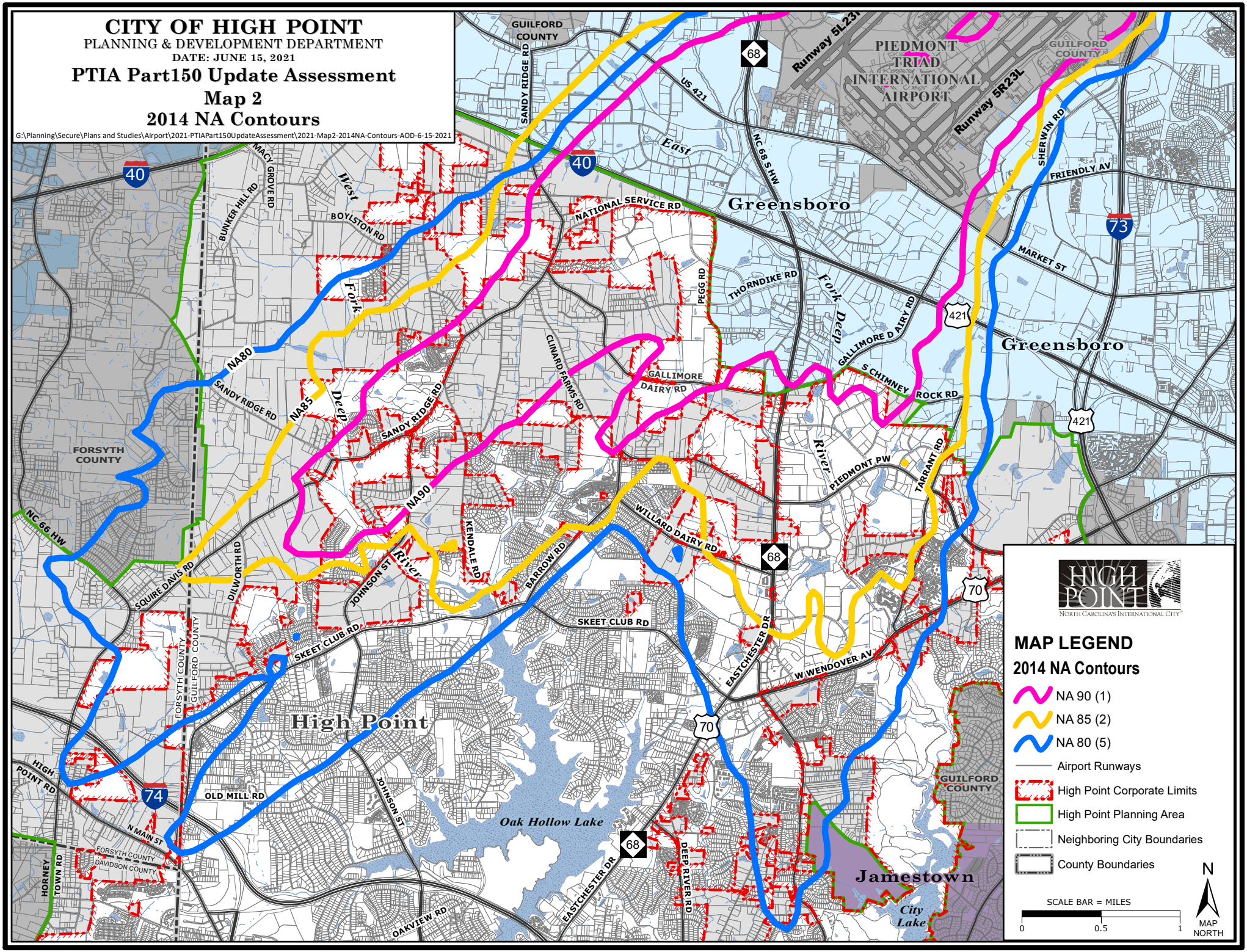
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 2

2014 NA Contours

G:\Planning\Secure\Plans and Studies\Airport\2021-PTIAPart150UpdateAssessment\2021-Map2-2014NA-Contours-AOD-6-15-2021



MAP LEGEND

HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

2014 NA Contours

- NA 90 (1)
- NA 85 (2)
- NA 80 (5)
- Airport Runways
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

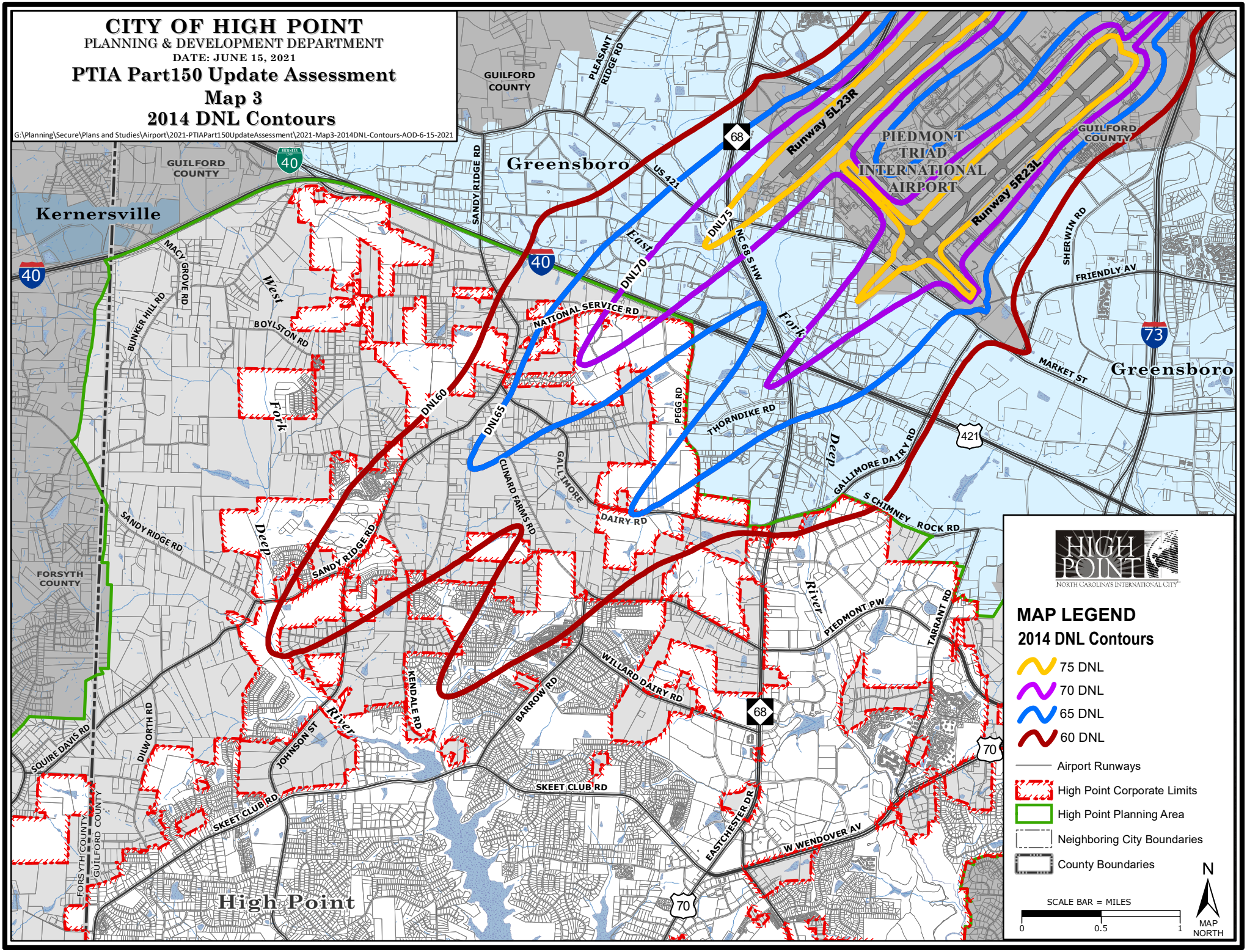
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 3

2014 DNL Contours

G:\Planning\Secure\Plans and Studies\Airport\2021-PTIAPart150UpdateAssessment\2021-Map3-2014DNL-Contours-AOD-6-15-2021



HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

MAP LEGEND

2014 DNL Contours

- 75 DNL
- 70 DNL
- 65 DNL
- 60 DNL
- Airport Runways
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

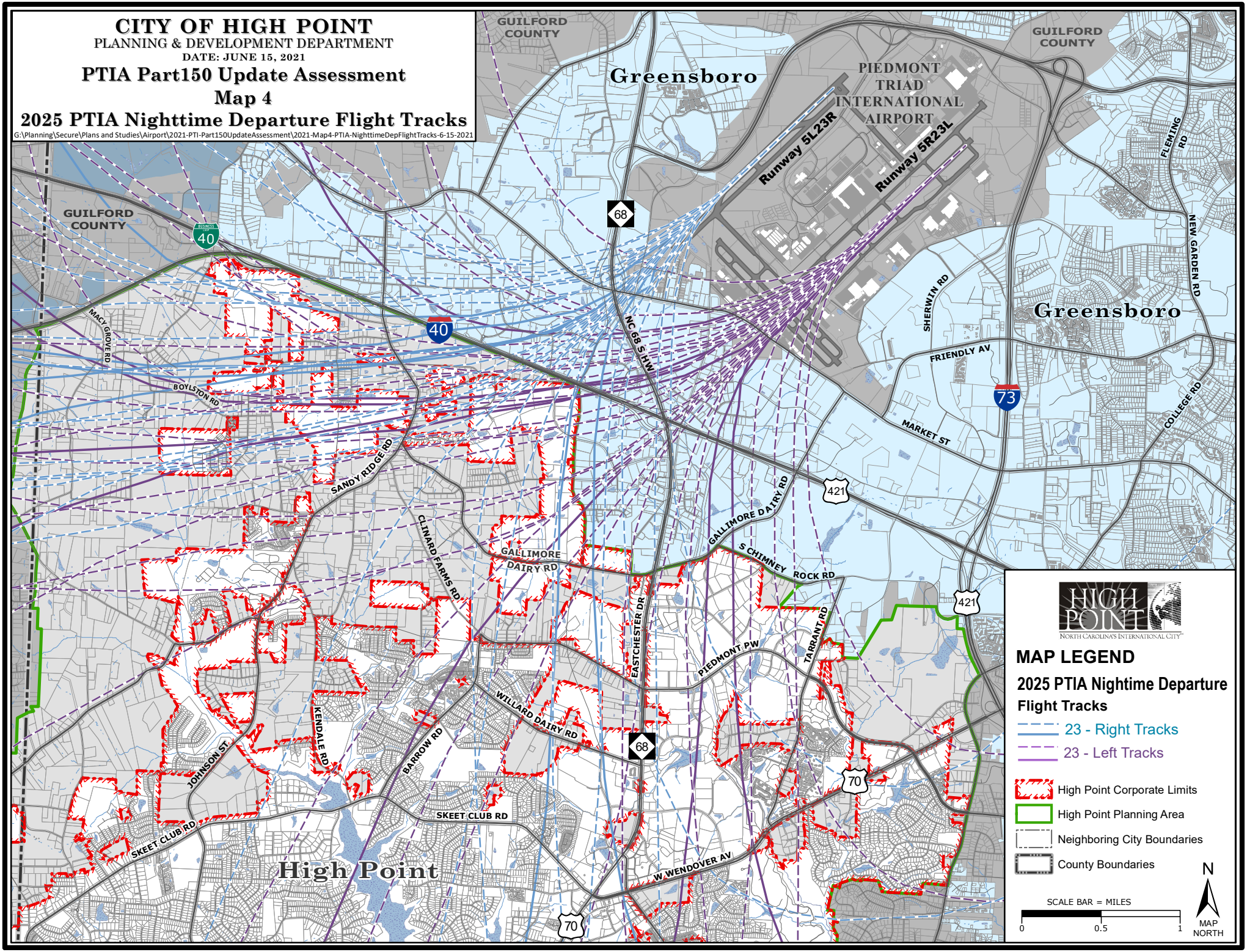
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 4

2025 PTIA Nighttime Departure Flight Tracks

G:\Planning\Secure\Plans and Studies\Airport\2021-PTI-Part150UpdateAssessment\2021-Map4-PTIA-NighttimeDepFlightTracks-6-15-2021



HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

MAP LEGEND

2025 PTIA Nightime Departure Flight Tracks

- 23 - Right Tracks
- 23 - Left Tracks
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 5

2025 NA Contours

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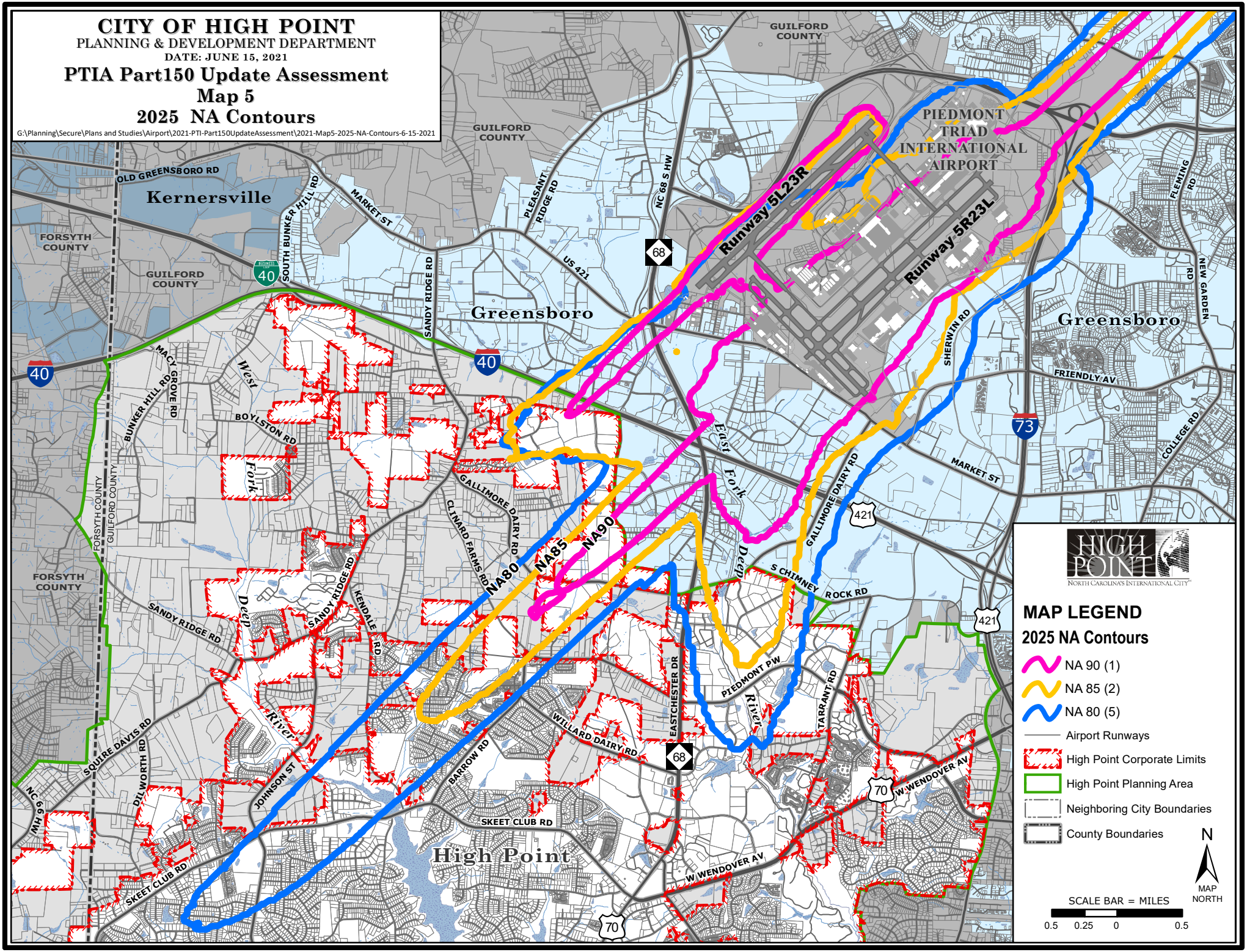


CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

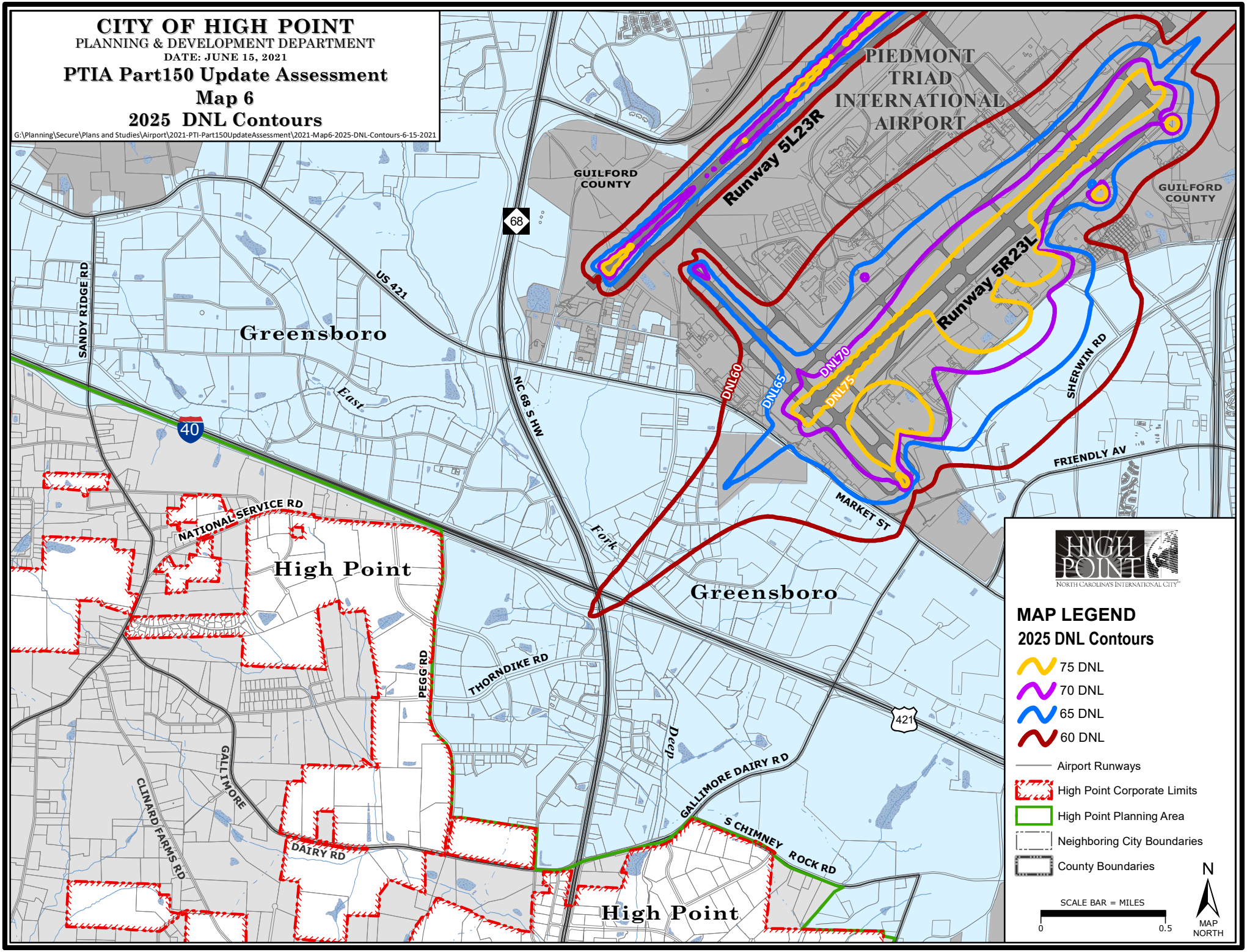
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 6

2025 DNL Contours

G:\Planning\Secure\Plans and Studies\Airport\2021-PTI-Part150UpdateAssessment\2021-Map6-2025-DNL-Contours-6-15-2021



CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 7

Land Use Plan & PTIA Master Plan

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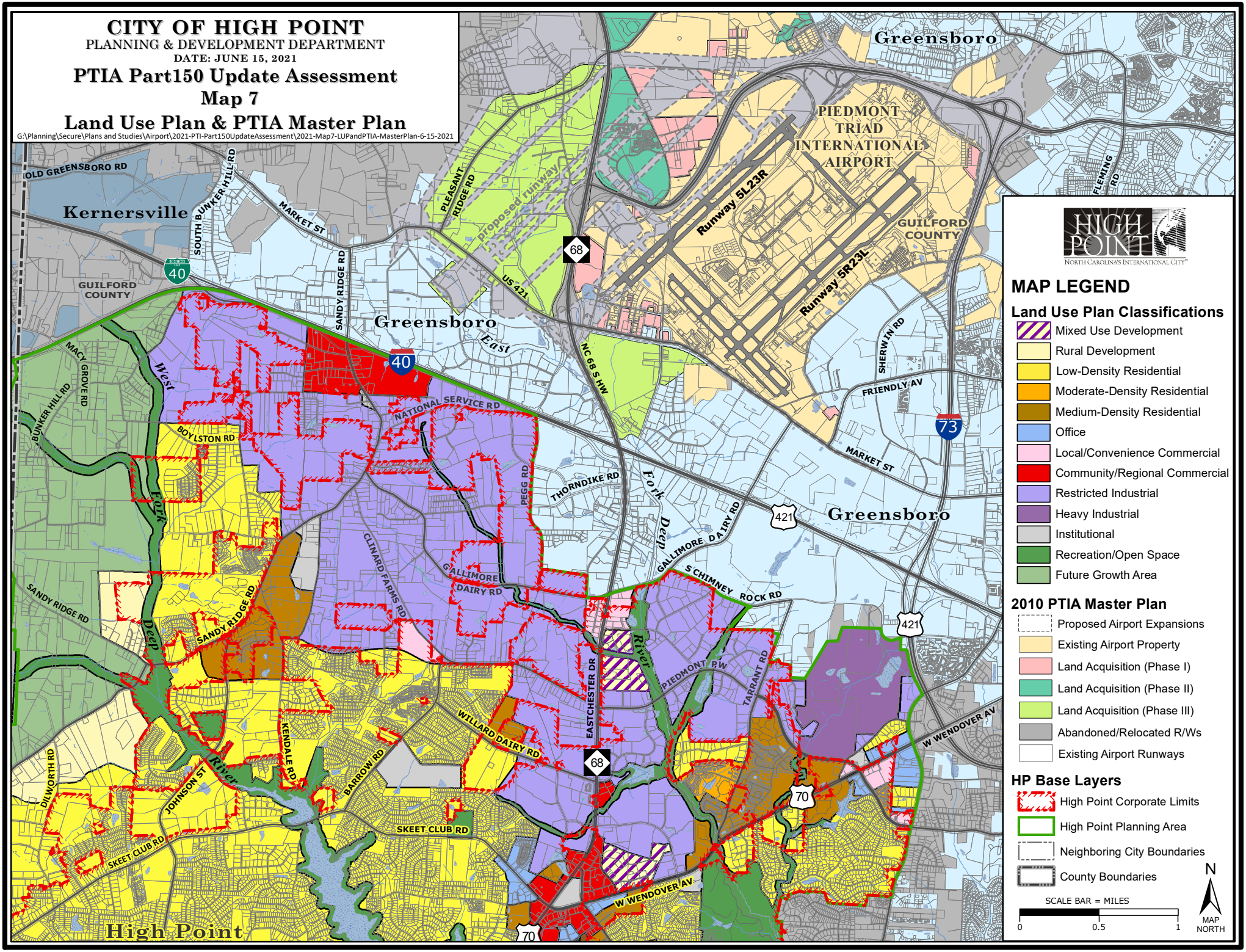


MAP LEGEND

Land Use Plan Classifications

- Mixed Use Development
- Rural Development
- Low-Density Residential
- Moderate-Density Residential
- Medium-Density Residential
- Office
- Local/Convenience Commercial
- Community/Regional Commercial
- Restricted Industrial
- Heavy Industrial
- Institutional
- Recreation/Open Space
- Future Growth Area

2010 PTIA Master Plan

- Proposed Airport Expansions
- Existing Airport Property
- Land Acquisition (Phase I)
- Land Acquisition (Phase II)
- Land Acquisition (Phase III)
- Abandoned/Relocated R/Ws
- Existing Airport Runways

HP Base Layers

- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

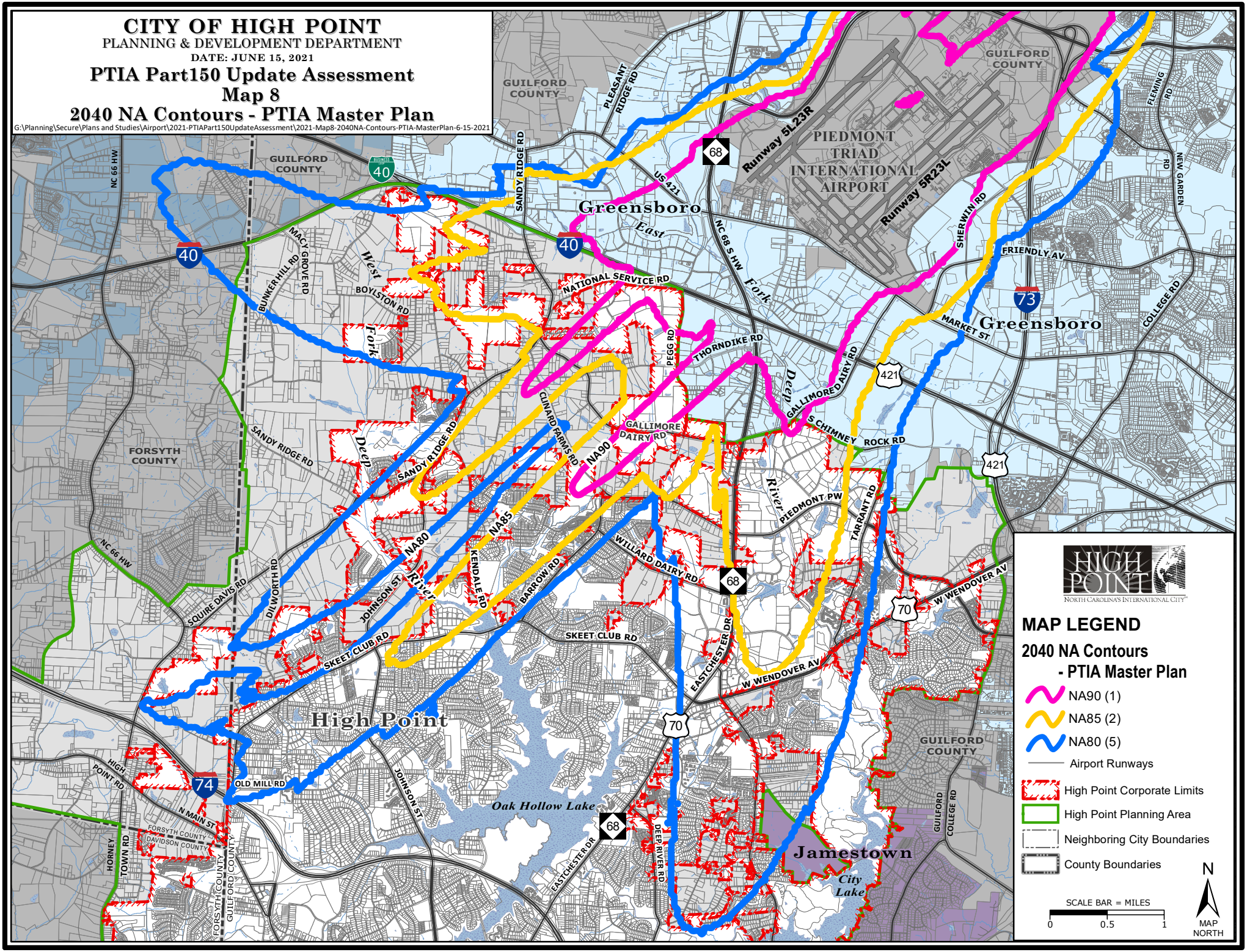
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 8

2040 NA Contours - PTIA Master Plan

G:\Planning\Secure\Plans and Studies\Airport\2021-PTIAPart150UpdateAssessment\2021-Map8-2040NA-Contours-PTIA-MasterPlan-6-15-2021



HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

MAP LEGEND

2040 NA Contours - PTIA Master Plan

- NA90 (1)
- NA85 (2)
- NA80 (5)
- Airport Runways
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

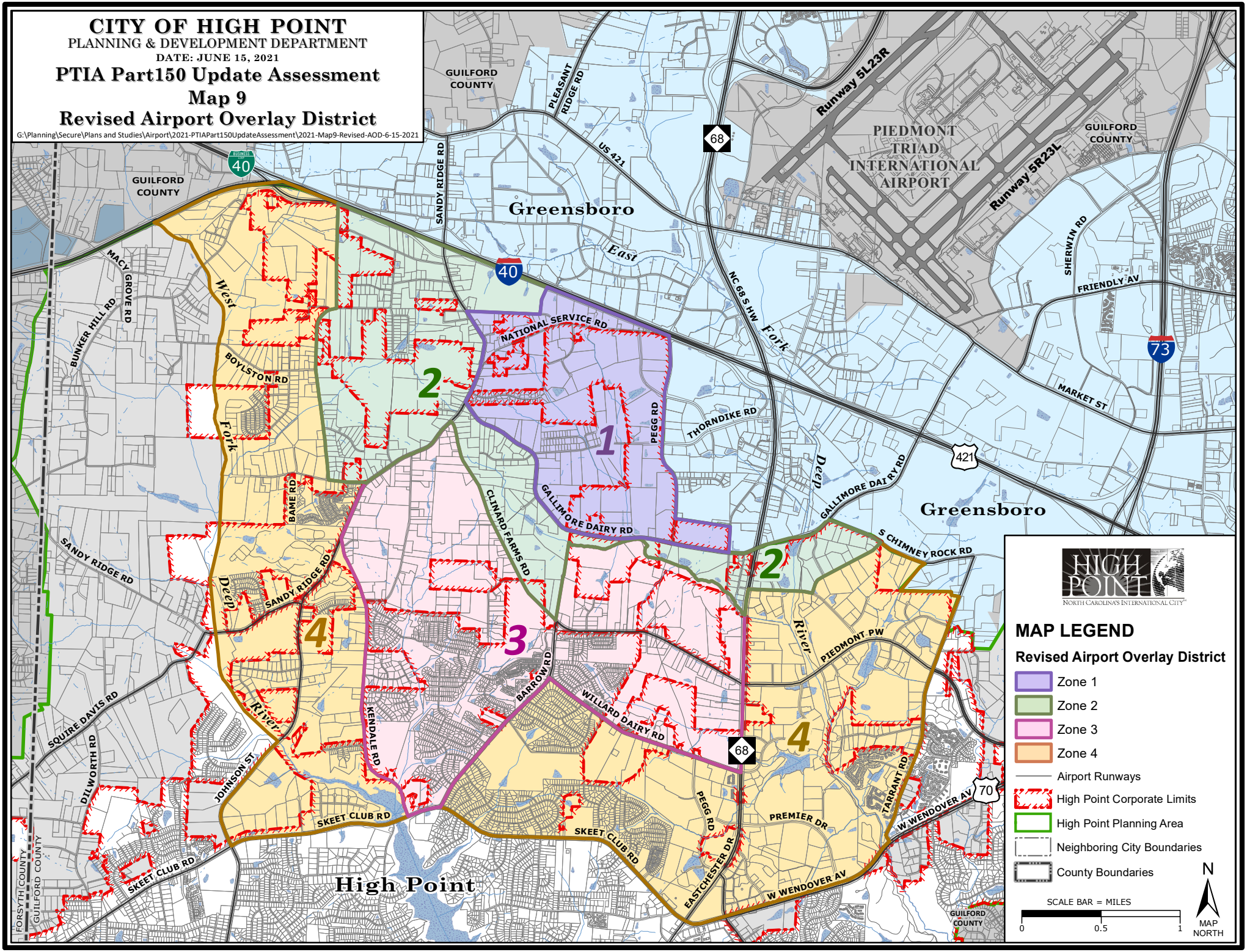
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 9

Revised Airport Overlay District

G:\Planning\Secure\Plans and Studies\Airport\2021-PTIAPart150UpdateAssessment\2021-Map9-Revised-AOD-6-15-2021



HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

MAP LEGEND

Revised Airport Overlay District

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Airport Runways
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH

CITY OF HIGH POINT

PLANNING & DEVELOPMENT DEPARTMENT

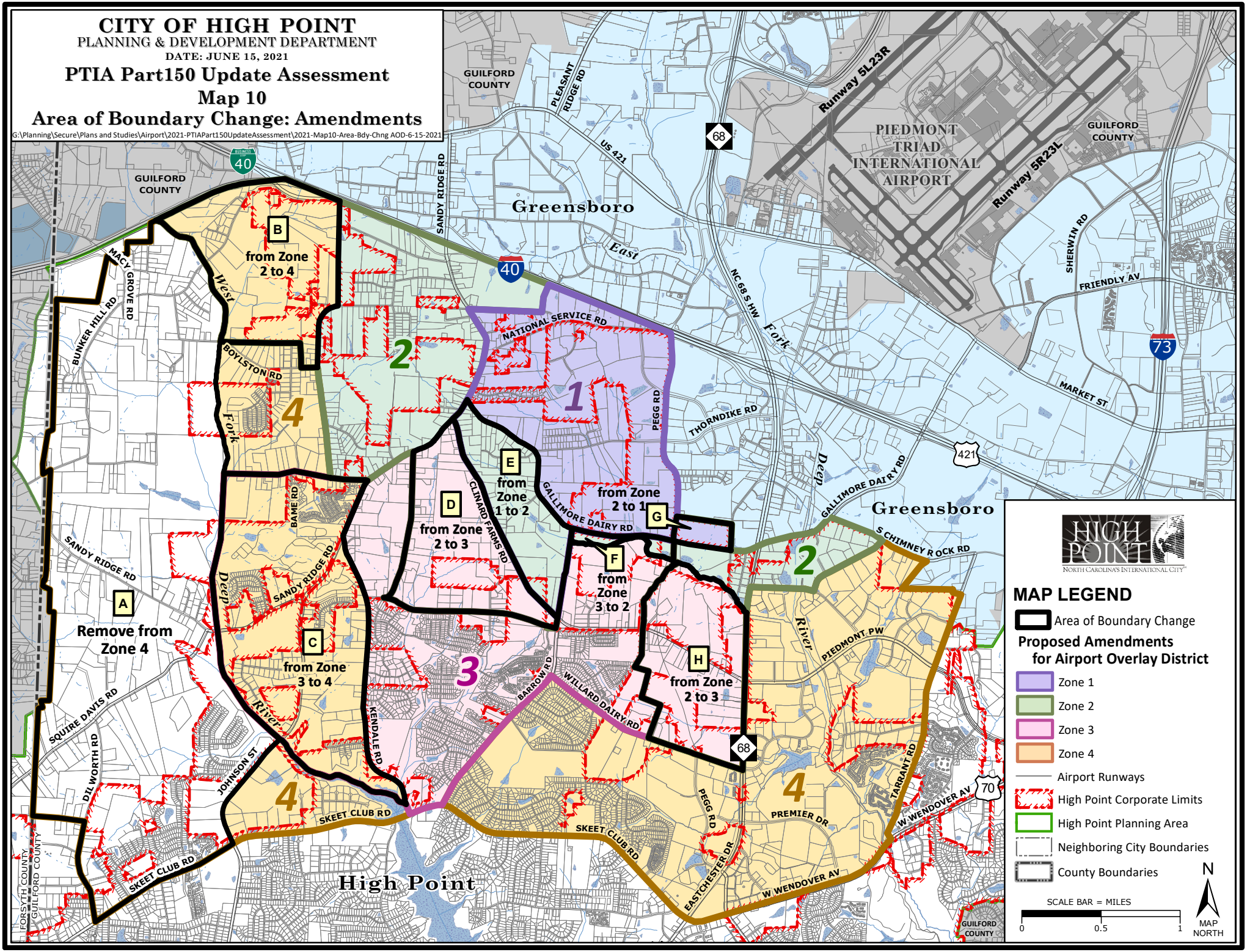
DATE: JUNE 15, 2021

PTIA Part150 Update Assessment

Map 10

Area of Boundary Change: Amendments

G:\Planning\Secure\Plans and Studies\Airport\2021-PTIAPart150UpdateAssessment\2021-Map10-Area-Bdy-Chng AOD-6-15-2021



HIGH POINT
NORTH CAROLINA'S INTERNATIONAL CITY

MAP LEGEND

- Area of Boundary Change

Proposed Amendments for Airport Overlay District

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Airport Runways
- High Point Corporate Limits
- High Point Planning Area
- Neighboring City Boundaries
- County Boundaries

SCALE BAR = MILES

0 0.5 1

N

MAP NORTH