Appendix L

Supplemental Alternative Analysis and Compensatory Mitigation Analysis

McFarland Johnson

TWEED
NEW HAVEN
AIRPORT

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APPENDIX L
Supplemental Alternatives Analysis and Compensatory Wetland Mitigation Analysis

Appendix L presents supplemental information of the alternatives evaluated for the Tweed New Haven EA. The reasonable and practicable alternatives developed for the various project elements (e.g., Runway extension and Terminal expansion including additional parking and new access) are described in **Chapter 3,** and along with Appendix L the EA establishes the framework for the least environmentally damage practicable alternative (LEDPA). Each key project element was scrutinized individually and the Proposed Action as a whole to identify and evaluate opportunities to avoid and minimize environmental impacts (e.g., wetlands) while still fulfilling the Purpose and Need of the Proposed Action.

One of the main objectives of the alternative analysis was to avoid and minimize impacts to regulated wetlands. As described in **Chapter 3**, the proposed extension to Runway 02-20 was reduced by approximately 60 feet. This reduction in the proposed runway length avoids impacts within tidal wetlands (e.g., fill).

As shown in **Table L-1** below, the focus on reducing overall wetland impacts resulted in a 2.2 acre, or 19.2% reduction in wetland impacts compared to the initial alternatives. The initial concept of constructing the east side terminal is based on the findings of the 2021 Master Plan Alternatives analysis, which identified east side location of the former RW 14-32 as the preferred terminal alternative. The 1st concept shown below is an evolution of the Master Plan preferred alternative. The 2nd concept and ultimately the Proposed Action are further evolutions of that concept.

Table L-1: Variations to Conceptual Designs (Build Alternatives)

Concept	Conceptual Changes to Reduce Wetland Impacts	Lower Function and Value Wetland Impact[1]** (acres)	Higher Function and Value Impact (acres)	Total (acres)	Net Change (compared to original
1st Concept (derived from Master Plan	First concept responsive to Purpose and Need	9.3	2.1	11.4	0

[1] ***Note: The U.S. Supreme Court on May 25, 2023, issued its opinion in Sackett v. Environmental Protection Agency, 598 U.S. (2023). The opinion addresses the definition of "Waters of the United States" (WOTUS) pursuant to the Clean Water Act (CWA), which narrowed the scope of federal regulatory authority under the CWA concerning wetlands that are relatively-permanently connected to other federal waters. Therefore, federal jurisdiction over some of the wetland impacts addressed in the EA and Appendix L may not be subject to regulatory process under Section 404 of CWA. It is understood that USACE and EPA will issue guidance interpreting the court's opinion, as it did with Rapanos v United States / Carabell v United States. HVN will continue coordinating with the USACE during the permitting process.*

Concept	Conceptual Changes to Reduce Wetland Impacts	Lower Function and Value Wetland Impact[1]** (acres)	Higher Function and Value Impact (acres)	Total (acres)	Net Change (compared to original
Preferred Alternative)					
2nd Concept Revision of 1st Concept	Reconfigured parking, reduced spacing between facilities, Relocated access road	9.0	0.5	9.5	-1.9
Proposed Action (further revisions)	Additional internal circulation road modifications for incorporation of parking garage, use of bridge instead of fill section for access road	9.1	0.1	9.2	-0.3

Given the presence of wetland habitats and the other physical constraints within HVN property, there is not sufficient upland area available to construct a terminal facility that meets the project Purpose and Need without affecting wetlands. State and Federal wetland regulations require that project proponents go through the sequencing process where it must be shown that the project has been practicable and reasonably configured to avoid wetland impacts. Wetland impacts that cannot be avoided, must be minimized. Remaining wetland impacts can then be considered for compensatory mitigation. Under Section 404 of the Clean Water Act, the U.S. Corps of Engineers (USACE) can only issue permits for the LEDPA. According to Section 404 (b)(1) guidelines, two "rebuttable presumptions" must be addressed to establish the LEDPA:

- Alternatives that do not affect special aquatic sites (including wetlands, riffle pool complexes, etc.) are presumed to be available.
- Practicable alternatives located in non-special aquatic sites (e.g., other waters, uplands, etc.) have less impact on the aquatic ecosystem.

The EA is intended to fulfill the requirements of the National Environmental Policy Act under NEPA and was prepared in accordance with FAA Order 1050.1F. The EA is based on available planning information. Additional design details that are not currently available will be provided during the permitting process. Appendix L is intended to provide pertinent background information to support a future LEDPA determination during the permitting process, which would occur after completion of the NEPA process. Avoidance and minimization measures will be continuously evaluated during the design phase.

PROJECT HISTORY

Reasonable and practicable development ("build") alternatives are severely limited by several constraints present on airport property (see **Figure L-1**). Additionally, airside improvements must meet FAA design standards, which dictate the configuration and spacing requirements for the airside facilities. Development alternatives are further limited by space constraints and physical constraints as it was determined that the

alternatives development should focus on the previously developed airfield and preference for minimizing impacts on aquatic ecosystems by focusing the wetland impacts on those areas with lowest ecological function and value.

The initial concepts for the proposed east side terminal began with the Master Plan Update that was completed in 2021. The Master Plan envisioned a new terminal and associated facilities. Master Plan pre-dated the current airline servicing HVN (i.e., Avelo), and the proposed facilities were sized for much smaller activity levels than HVN is currently experiencing. Since completion of the Master Plan, airline activity at HVN has surged beyond what was forecast in the Master Plan, and it became clear that that the original terminal area concepts were undersized to meet demand. A larger terminal, terminal apron, and additional parking would be needed to accommodate the demand. Construction of the new terminal on the east side was common to all of the concepts. The first terminal area concept that fully addressed the EA Purpose and Need was finalized in August 2021 (see **Figure L-2**). That concept closely resembles the Proposed Action; however, it proposed a total of 11.4 acres of wetland impact, including 2.1 acres of impact to the higher function and value wetlands surrounding the former Runway 14-32 airfield facilities. That concept was modified by eliminating some of the open space between the various facilities and reconfiguring some of the parking. Estimated wetland impacts were reduced by 1.9 acres to a total of 9.5 acres. Additional adjustments were made, most notably by relocating the airport access road to the existing right of way, a shorter crossing distance than originally proposed, and utilizing a bridge to cross the wetland to Proto Drive.

The net result after relocating the access road and associated modifications to the internal circulation roads was the Proposed Action's 9.2 acres of wetland impact, a 19.2% reduction from the first concept that fully met the project Purpose and Need (see **Figure 5-7** in **Chapter 5**). The ecological importance of wetlands often described in terms of their Functions and Values. The Functions and Values of the impacted wetlands are described in the Wetland Delineation Report (**Appendix F**).

Compensatory wetland mitigation requirements are established based on replacing the Functions and Values "lost" due to the proposed wetland impacts. As described in **Appendix F**, the lower Function and Value wetlands are those that have formed on filled, graded, and maintained grassy areas comprised of former airfield. The higher Function and Value wetlands are less disturbed and not maintained. As described in **Chapter 3**, the alternatives development focused on confining wetland impacts to the disturbed lower Function and Value wetlands and avoiding impacting the higher Function and Value wetlands. As shown in **Table L-1**, impacts to the higher function and value wetlands were reduced from the initial 2.1 acres to 0.1 acre, a 95% reduction in impacts to those wetlands.

The summary above is based on preliminary plans available at the time the EA is being prepared. Further opportunities to avoid and minimize wetland impacts may be feasible during detailed design.

In the following sections is presented a summary of the key project elements, key constraints, and rationale for their siting and configurations. The analysis addresses the rebuttable presumptions in the Section 404(b)(1) guidelines, using the planning information available at this time.

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Figure L-1: Airport Constraints

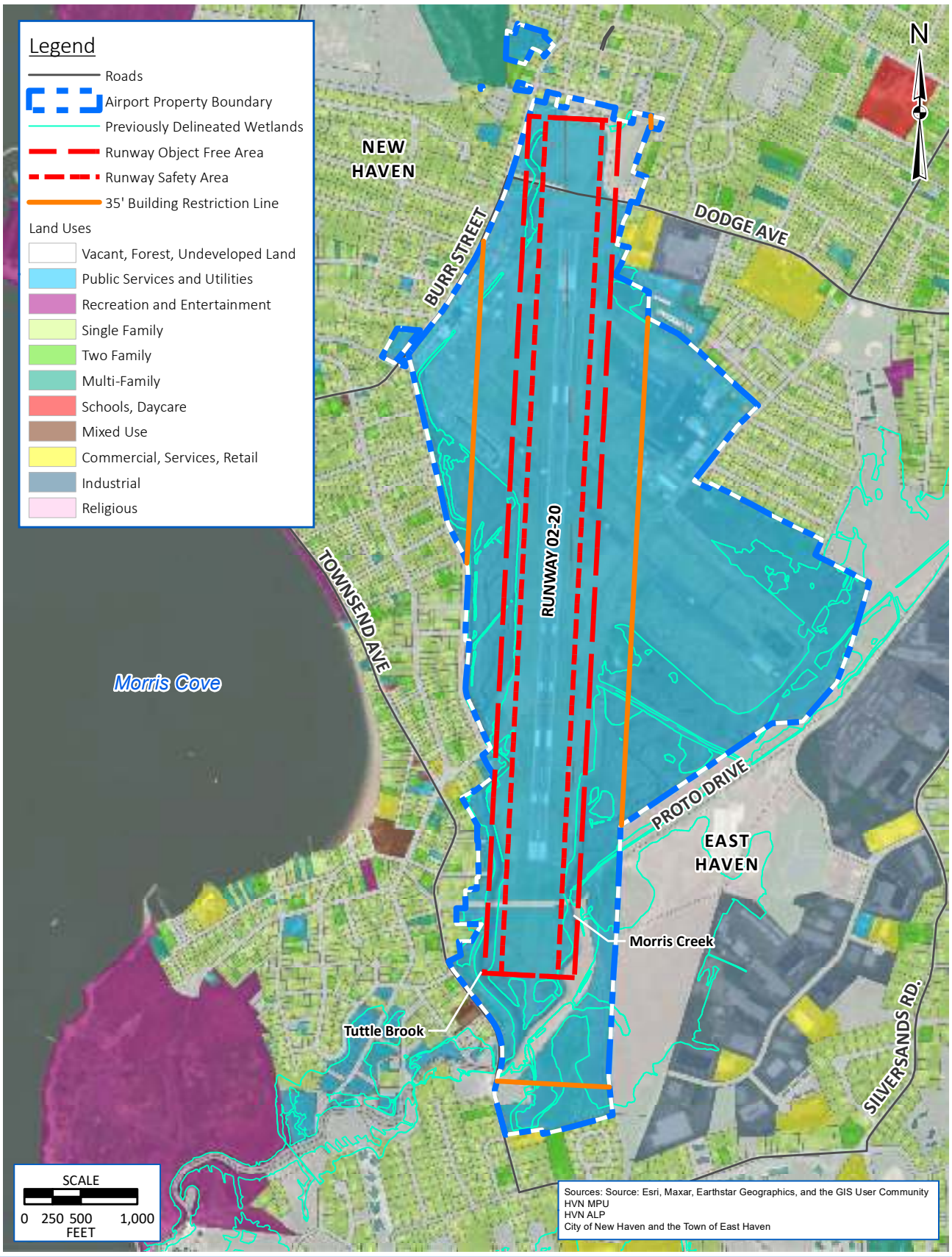

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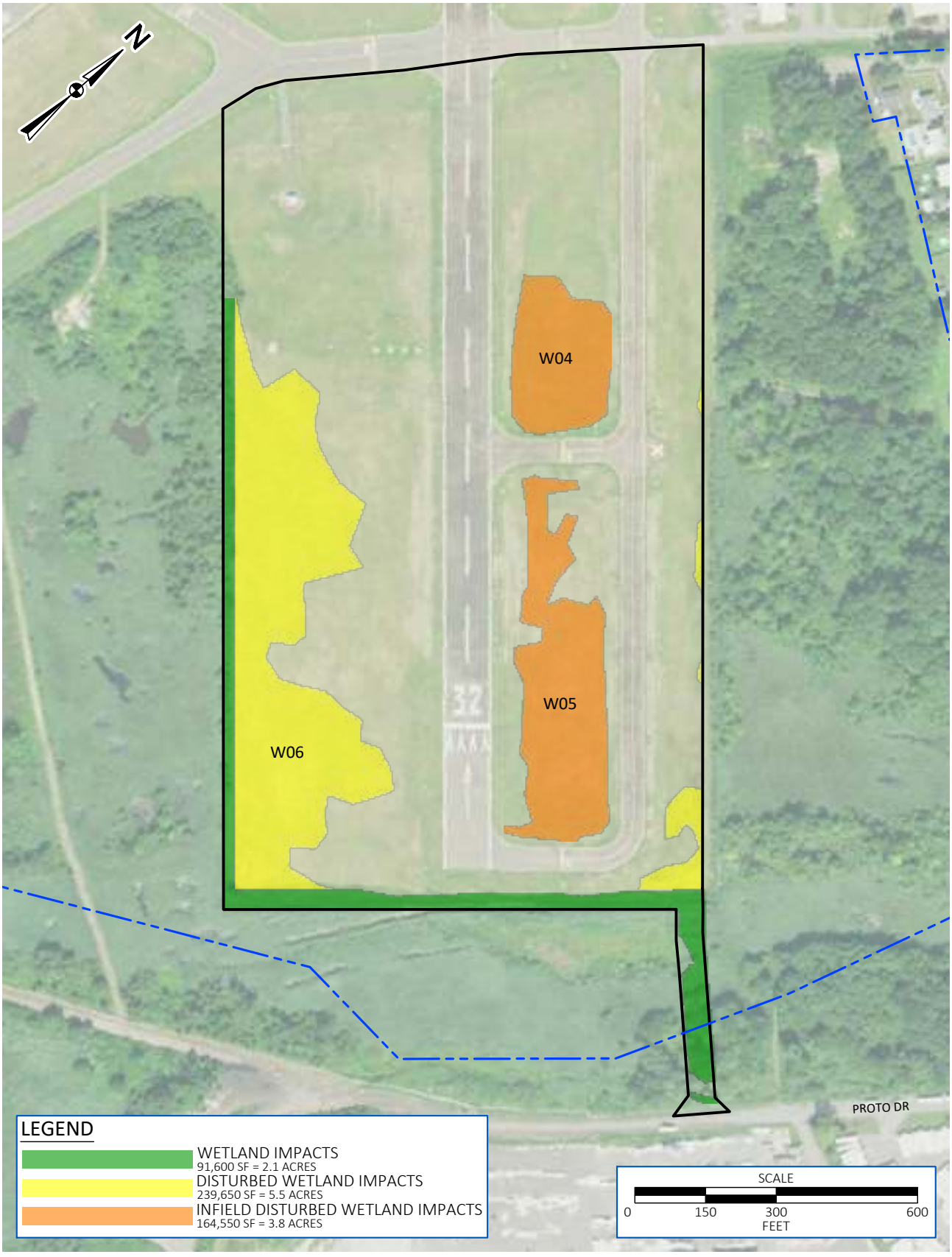
Figure L-2: East Terminal Wetland Impacts Under First Design Concept



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RUNWAY EXTENSION

The Runway Extension preferred alternative has been refined to eliminate freshwater and wetland impacts; therefore, the Proposed Action shown in **Figure 1-3** of **Chapter 1** represents the LEDPA.

TERMINAL AREA/PARKING GARAGE ALTERNATIVES

Terminal Area

- As described in the EA, construction of a new off-site airport is not feasible, practicable, would not address the Purpose and Need of the Proposed Action, and would result in higher environmental impacts.
- Relocation of various facilities near the existing Robinson Aviation facilities was briefly explored. Under this scenario, general aviation hangars, maintenance, the airport fire station and the air traffic control tower could be relocated to the west side and the new terminal area could be constructed facilities where those facilities are located. This was quickly deemed not feasible and impractical due to the expense of relocating all of those facilities. Additionally, even with relocation of all of those facilities, sufficient land area is not available to accommodate the Proposed Action. Finally, passenger access to this location would most likely be along Thompson Ave., which is impractical (see Access Road discussion below).
- HVN is surrounded by residential and commercial development. Undeveloped property adjacent to airport property is almost entirely inland and tidal wetlands. Acquisition of land to construct the new terminal and related facilities entirely in upland areas would require extensive acquisition of occupied residences, commercial developments and relocation of their inhabitants. The massive acquisition of residential communities and/or businesses to allow the Proposed Action to occur entirely in uplands is impractical in terms of the cost and socio-economic impacts on the community. The Purpose and Need for the Proposed Action includes accomplishing the Project without land acquisition. Based on the unacceptable impacts to the community and not meeting the Purpose and Need, acquisition of nearby upland areas to accomplish the project is not considered reasonable or practicable and would result in higher overall environmental impacts. It was not considered further.
- High function and value wetlands are present around the developed perimeter on the east side of the former Runway 14-23 and associated taxiway system. Low function and value wetlands (some isolated) are present in the graded, mowed, and previously developed area of the former runway. There are no suitable sites on airport property to construct the proposed terminal area facilities that entirely avoid wetland impacts. The alternatives development focused impacts on the lowest function and value wetlands to minimize impacts on the aquatic ecosystem.
- The west side location of the existing terminal does not provide sufficient space to develop facilities that meet the Purpose and Need. Nor does it address the land use compatibility concerns of the existing terminal, which is an important element of the Purpose and Need. Redevelopment of the west side was deemed not practical for these reasons. Additionally, developing similar sized facilities (in terms of gross square footage) on the west side within the airport property would require impacting an estimated 3.5 acres of tidal wetlands south of the existing terminal and enclosing approximately 1,200 linear feet of Tuttle Brook. Impacting 3.5 acres of tidal wetlands and enclosing Tuttle Brook would result in higher environmental impact on the aquatic ecosystem than the low function and value wetlands that would be impacted by the preferred alternative.

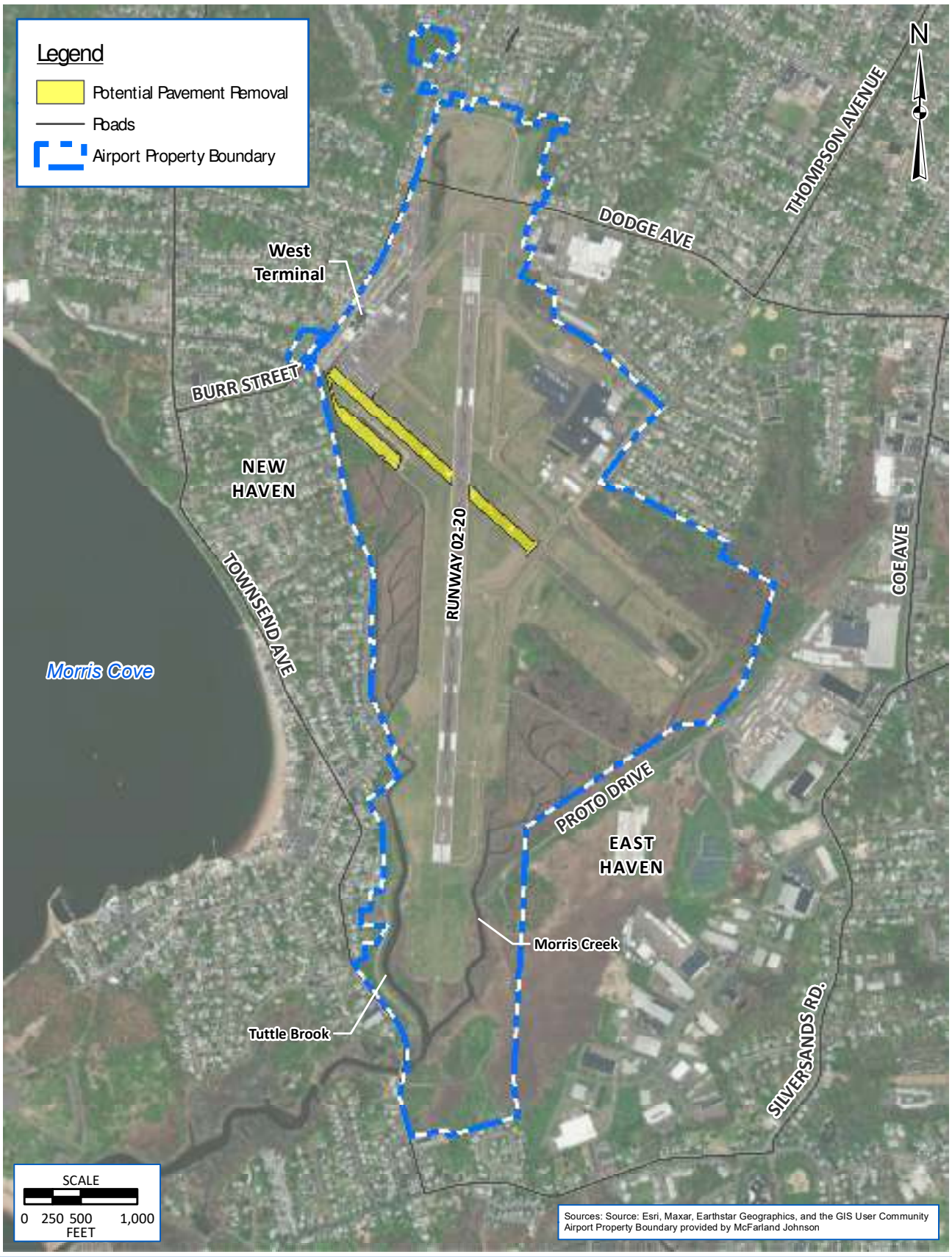
Considering the above, the redevelopment of the west side terminal facilities is not reasonable, practical and has a higher impact on the aquatic ecosystem. Therefore, redevelopment of the west side was not considered further.

- Federal Aviation Regulation Part 77 Transitional Surface restricts the height of objects along the sides of Runway 02-20. Figure L-1 illustrates the Building Restriction Line on the east side of RW 2-20, which runs parallel to RW 2-20, offset from the runway centerline by 745 feet. The tail heights of aircraft parked on the terminal apron and height of the proposed terminal are the limiting factors in terms of location of the terminal apron and terminal building. The terminal and apron cannot move closer to the runway because of the Transitional Surface.

Other Design Considerations

- Removal of excess pavement (former Runway 14-32) and parking on the west side is planned to offset increased impervious surface proposed in the preferred alternative and to provide mitigation opportunities for grassland bird habitat and state listed plant species. The remaining parking on the west side will be utilized for employee parking and airport administrative purposes and would not be available for passenger use. (See Figure L-3.)
- The proposed terminal and aircraft apron are positioned as close to the runway/taxiway system as possible, without violating FAR Part 77 standards to minimize aircraft taxi time. Minimizing taxi time reduces the fuel used during taxi operations and provides a corresponding reduction in emissions and greenhouse gas emissions, thus reducing environmental impacts for the Proposed Action.
- The proposed terminal apron is positioned on the south side of the disturbed area that was the former location of Runway 14-32 to maximize the distance between the aircraft apron and the nearby residential community to the northeast. This positioning minimizes nuisance noise and fumes from terminal apron aircraft operations in the nearby residential community to the north. Additionally, positioning the proposed terminal and parking garage between the terminal apron and the nearby residential community provides a visual and acoustic barrier between the terminal apron and the residences. The long axis of the proposed terminal building and parking garage are roughly parallel to Burgess Street to maximize the acoustic benefits.
- The proposed terminal is positioned centrally on the long axis of the terminal apron to make passenger movements to and from aircraft as efficient as possible for all boarding positions. Additionally, shore power and pre-conditioned air will be provided to parked aircraft.
- The terminal apron is the minimum size and configuration necessary to meet FAA design standards for parking and maneuvering aircraft of the sizes expected to use the apron. The Apron is sized to meet the expected aircraft parking requirements in the terminal area and include 2 Remain Over Night positions.
- The terminal building will be constructed on two levels to minimize the footprint occupied by the building. One of the levels will not be accessible to the public and will accommodate building equipment and non-public areas.

Figure L-3: Potential Pavement Removal



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- The terminal building, terminal apron, and parking garage are sited to optimize efficient aircraft operations (reducing noise and air emissions) and provide a buffer between aircraft operations and the nearby neighborhood. The proposed configuration strikes a careful balance between avoidance and minimization of wetland impacts and minimizing other environmental consequences such as impacts to the surrounding community, minimizing air and noise emissions, and eliminating the need for land acquisition to construct the proposed facilities. The facilities meet the minimum size requirements to meet the Purpose and Need and are configured for efficient operations. By focusing impacts on the lowest function and value wetlands, the proposed configuration strikes the optimal balance between these competing environmental consequences.
- Based on the considerations above, it is concluded that the preferred alternative is the LEDPA for the terminal apron, terminal, and parking garage elements of the proposed action.

Surface Vehicle Parking Alternative

- Surface parking for approximately 2,000 vehicles is proposed combined with a 2,000-car parking garage to meet expected parking demand. Existing vehicle parking on the west side will no longer be available for passenger use. Continued use of the existing west side car park would not address the land use compatibility issues on west side. Some would be decommissioned, some paved surfaces may be removed, and the remaining would be committed to other uses. Assuming 350 square feet per parking space is required for surface parking to provide circulation and access, approximately 5.7 acres is required to meet surface parking requirements. A suitable upland area encompassing 5.7 acres of upland is not available on airport property.
- Due to the construction and operating cost differential for parking garages compared to surface parking, rates in garages are necessarily higher in order to recoup the initial construction and operating cost differential. Surface parking provides an economical alternative for passengers of all abilities who do not want or cannot afford to pay a premium for structured parking.
- A 2,000car parking garage is estimated to cost approximately $50 million. Due to the high cost of constructing and maintaining a parking garage, a premium is charged for garage parking to recover the initial investment and provide working capital for maintenance. Acceptance of the parking premium is based on the convenience of proximity to the terminal and/or the desirability of parking sheltered from the weather. Parking garages located remote from the terminal lose their ability to charge a premium because of the lost convenience advantage. Longer duration travelers usually prefer lower cost surface parking because the accumulated parking cost becomes unaffordable. Construction of a second parking garage is economically impractical, and it is unlikely the market can support the premium associated with additional parking garages.
- Off-site surface parking was considered. As described previously, 350 sf/parking space, a 2000 car surface parking lot would require an approximately 5.7-acre parcel. Multiple searches for five acre or greater sites within 5 miles of HVN have been conducted. The most recent search, conducted on May 12, 2023, found one available property comprising nearly 13 acres. However, a review of available resource mapping showed that only approximately 2 acres are upland, with the remaining 11 acres as tidal wetlands. Development of this site for surface parking would impact nearly 4 acres of tidal wetlands. The adverse impacts of impact the 4 acres of tidal wetlands are greater than the proposed impacts to low function and value wetlands on airport property. This is consistent with previous findings that found suitable sites for off airport surface parking are not available, and therefore off airport parking is not a practicable alternative. Additionally, off-airport parking would

impose substantial operating costs and environmental impacts associated with operation of a shuttle service between the off-airport parking location and the terminal.

- Based on this analysis, it can be concluded that the proposed surface parking is the LEDPA.

NEW TERMINAL ACCESS ROAD

- The Runway Safety Area (RSA) associated Runway 2-20 end extends from the proposed runway end to north edge of airport property. Public roads are prohibited within the RSA. Therefore, a publicly accessible ground transportation link between the east and west side on airport property is not feasible.
- As described previously, on-airport ground vehicle access from the west side to the east side cannot be provided without violating FAA mandated Runway Safety Area standards, therefore, the only possible ground vehicle access to the west side would be via Dodge Ave and Thompson Ave from the north, or via a new access road from Proto Drive. Access via Thompson Avenue is impractical because it would require terminal area traffic to be routed through residential neighborhoods along Dodge Avenue, Thompson Avenue, and intersecting streets. Additionally, a park (Memorial Field) is located at the critical intersection (Dodge and Thompson Avenues) where most traffic would be routed to and from the terminal. It is likely that intersection improvements required to accommodate the volume of expected traffic would require intersection improvements, including turning lane(s), which would entail acquisition of residential land, and/or impacts to the Memorial Field which is a Section 4(f) resource. Finally, access to the terminal area at Thompson Avenue would be the sole means of ingress and egress during an emergency. Multiple paths of ingress/egress are preferred during emergencies. Access via Proto Drive would provide primary access to the terminal area, with Thompson Avenue available for emergency services use.
- Using Thompson Avenue as the primary access does not address a key element of the project Purpose and Need of improving land use compatibility with the terminal area. Thompson Avenue access would essentially relocate the access and land use compatibility issues that currently exist on the west side and would create an Environmental Justice concern by directing the associated impacts to an Environmental Justice community. Providing public access to the proposed east side terminal area via Thompson Ave was deemed impractical and would result in higher environmental impacts.
- The proposed access road from Proto Drive to the east side terminal area utilizes an existing Right of Way. This access route largely addresses the land use compatibility concerns on the west side and Thompson Avenue by airport traffic along Hemingway Avenue and Proto Drive. The pre-dominant land use along this existing corridor is commercial and industrial. Other alternatives would require land acquisition, which is contradictory to the project's purpose and need. Additionally, the east terminal complex is located in the Town of East Haven. Constructing the access road in a different location from the proposed right-of-way would require acquisition of the necessary land. Furthermore, the Tweed New Haven Airport Authority (TNHAA) does not have the ability to use eminent domain in the Town of East Haven to acquire land or right of way; therefore, constructing the access road outside the existing right of way would be entirely contingent on acquiring the land from a willing seller. No practical alternative location is available for the access road.
- A bridge is proposed for the wetland crossing to further reduce the wetland impact, which is estimated at 0.1 acre, which is less than half of the expected impacts of constructed the access

road on a fill section. The wetland impacts associated with the new access road have been minimized to the extent practical at this early planning stage.

Based on the analysis above, the Proposed Action is the LEDPA.

SUMMARY ALTERNATIVES DEVELOPMENT

The major project elements have been evaluated individually and collectively to address the rebuttable presumptions described earlier. As described, no reasonable or practicable alternative upland sites are available that meet the project's Purpose and Need and can fully accommodate the Proposed Action. Furthermore, by eliminating all wetland impacts associated with the proposed runway extension and focusing development on the lower function and value wetlands, disregarding alternatives that affect tidal and higher function and value wetlands, the Proposed Action demonstrably avoid and minimizes adverse effects on the aquatic environment and is the only practicable alternative that meets the project purpose and need.

SUMMARY OF COMPENSATORY WETLAND MITIGATION ANALYSIS AND AGENCY COORDINATION

Compensatory wetland mitigation to offset lost wetland functions and values is an important consideration for both the CT DEEP and the USACE wetland permitting. Applicable permits are expected to contain explicit compensatory mitigation permit conditions. The final mitigation requirements would be determined during the permitting process. Following is a description of potential mitigation alternatives and agency discussions regarding compensatory wetland mitigation.

Conceptual mitigation strategies considered combinations of the following:

- Preservation – Acquire high value wetlands that are at risk for development. Typical candidates are typically in private ownership and are desired to be protected by public entities or Non-Government Organizations (NGO's) for their ecological value.
- Restoration/Enhancement – Improve the Functions and Values of degraded and/or filled wetlands, typically through grading and drainage modifications combined with planting of desired native wetland species. Often these sites have extensive coverage by invasive plant species.
- Creation – This strategy involves creating new wetlands where uplands currently exist. Typically, this is the most intensive mitigation strategy in terms of grading, drainage, and risk.
- Mitigation Banking/In Lieu Fee Program – This strategy involves purchase of wetland mitigation "credits" from a wetland mitigation service provider to offset the lost functions and values. The New England Region USACE offers an in-lieu fee program in which permittees make a financial contribution to USACE restoration and wetland creation programs. This approach offers the lowest financial risk for the permittee and is the preferred mitigation methodology for the USACE. Fee contributions are determined during the permitting process.

A search for suitable mitigation sites was conducted utilizing the following criteria:

- Proximity to HVN (within 2 miles)
- Upland site or site with minimal wetlands adjacent to a waterbody
- Proximity to habitats with high ecological value
- Undeveloped site

- Extent of earthwork required.

Considering that the proposed wetland impacts are entirely to inland wetlands, the strategies and search criteria prioritized opportunities to preserve, restore/enhance, and/or create inland wetlands. The mitigation site search identified eight (8) sites that met the criteria above. The sites were presented to CT DEEP representatives during a briefing held on April 20, 2022 (Meeting PowerPoint is provided in Appendix L – Attachment 1). During that discussion, CT DEEP representatives suggested two (2) additional sites for consideration during the permitting process:

- Bradford Preserve – CT DEEP noted that the Bradford Preserve, a tidal wetland just west of the mouth of the Farm River, is subject to significant erosion. CT DEEP suggested consideration of "Thin Layer Deposition" at this location to offset the noted erosion. Thin Layer Deposition is a relatively new technique that aims to improve tidal marsh resiliency against sea level rise by applying thin layers of sediment. CT DEEP noted that a mitigation ratio of 3:1 would be required.
- Pig Farm Road – The dike carrying Pig Farm Road, located south of the proposed East Side terminal, on airport property provides a man-made barrier between inland and tidal wetlands. Breaching the dike would provide tidal access to the inland wetland and may provide ecological benefits by restoring existing inland wetlands to their historical condition as tidal wetlands.

After the agency meeting held on April 20, 2022, (see email from Sue Jacobson dated April 26, 2022) CT DEEP advised that tidal wetland mitigation would be favorably considered for the wetland impacts being considered in this Environmental Assessment. This finding was because the Airport and surrounding environs were historically tidal wetlands. Humans have induced changes in the landscape, including original construction of the Airport, converted the historic tidal wetlands to uplands and inland wetlands. The consensus of the meeting and follow up discussions was that the Bradford Preserve and Pig Farm Road sites were preferred by CT DEEP and will be subject to detailed engineering analysis during the design and permitting phase of the Proposed Action. The detailed engineering analysis and mitigation planning would occur during the permitting process. Representatives from the USACE were briefed on the mitigation site search findings during a meeting on May 11, 2022 (Meeting PowerPoint is provided in Appendix L – Attachment 2). The site search findings were amended to incorporate the April 20, 2022, discussion with CT DEEP and focused on the Bradford Preserve and Pig Farm Road sites. The consensus of the discussion was that utilization of the USACE in-lieu fee program as the preferred alternative for wetland mitigation and addressing the compensatory mitigation requirements under Section 404 of the Clean Water Act. The fee would be determined after CT DEEP mitigation requirements have been determined. A follow up briefing with the USACE summarizing wetland permitting and mitigation discussions was held on November 22, 2022. The briefing was held due to staff changes at the USACE and summarized prior discussions with CT DEEP and the USACE. The Meeting PowerPoint is provided in Appendix L-Attachment 3.

COMPENSATORY WETLAND MITIGATION SUMMARY

Compensatory mitigation has been discussed extensively with the USACE and CT DEEP throughout the course of the EA. Compensatory mitigation for Federally regulated wetlands would be addressed through the in-lieu fee program, which is straightforward and readily available. Detailed CT DEEP mitigation requirements would be addressed during the permitting phase of the project (after completion of the NEPA process). As described, 10 potential mitigation sites were identified through a combination site searches and consultation with CT DEEP. It is anticipated that a combination of strategies and sites would be utilized to satisfy CT DEEP requirements; however, the 10 potential sites provide substantial flexibility in addressing these requirements.

Appendix L – Attachment 1

CT DEEP Presentation - April 20, 2022

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CT DEEP Mitigation Coordination Meeting

NEPA Environmental Assessment

Runway Extension and Terminal Expansion Program

April 20, 2022

Agenda

- Introduction
- Mitigation Framework
- Potential Mitigation Sites
- Next Steps / Coordination
  - Mitigation Ratio
  - Connecticut's In Lieu Fee Program

Mitigation Framework

- Wetland mitigation is expected to be achieved by a combination of preservation, restoration, enhancement and utilization of Connecticut's in-lieu fee program
- Wetland mitigation ratio to be established in coordination with CTDEEP and USACE
- Mitigation for *Paspalum laeve* is expected to be achieve by species relocation (subject to changes in regulation or State Protected Species List)
- Several potential mitigation sites have been preliminarily identified within two (2) miles from the airport
- These potential mitigation sites are within the same watershed (i.e., South Central Shoreline and Farm River local basin subregions)
- The potential mitigation sites were preliminarily screened based on vacant land availability, presence of wetlands and proximity to habitats with high ecological value
- Screening was based on National Wetland Inventory (NWI) Map, Connecticut ECO Viewers and Town of East Haven MapExpress Property Information Viewer
- During the design and permitting phase, impacts would be further evaluated, and mitigation plan continue to be developed to satisfy applicable regulations

Potential Mitigation Parcels

- Map is preliminary and for assessment purposes only

Sources:

- https://easthaven.mapxpress.net/ags_map/
- https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

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Parcel 1

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
120-1412-001	280 Proto Drive	Town of East Haven	27.83	Industrial Vacant Land	South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (PEM1/5Ed, PFO1Ed) occur throughout the site.

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Parcel 2

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
090-1010-001	76 Proto Dr	Private	22.92	Industrial Vacant Land	South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (PFO1E, PFO1Ed, PEM1/5Ed, PEM1/5F) occur throughout the site.

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Parcel 3

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
060-0608-001	14 Commerce St	Town of East Haven	29.06	Industrial Vacant Land	South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (E2EM1/5Pd, E2EM5/1P) occur throughout the site.

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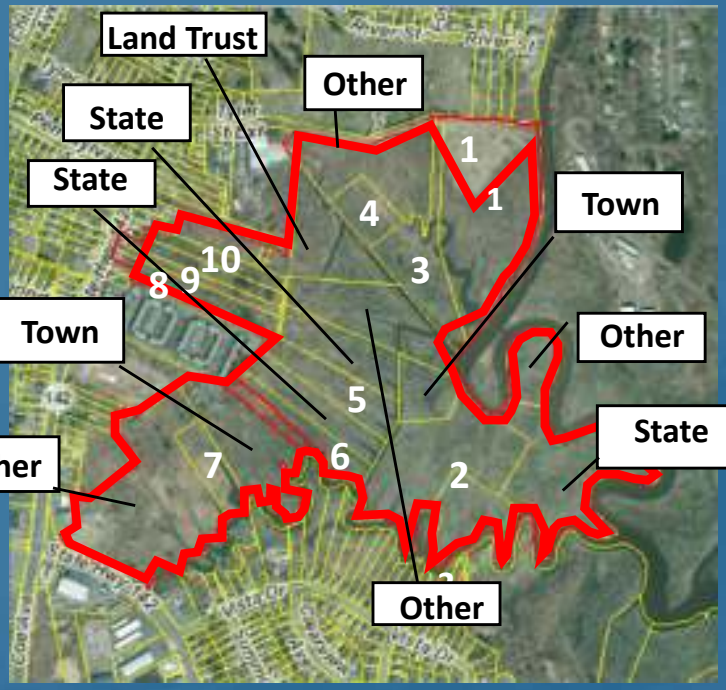
Parcel 4



Sub Parcel ID	Location	Owner	Acres (+/- 45.62)	Land Use	DEEP Local Basin Subregion
1. 190-2120-001	8 Tyler St	Private	13.3	Industrial Vacant Land	Farm River
2. 160-1819-001/ 160-1820-001	104 & 106 Vista Dr	Private	13.03	Residential Vacant Land	Farm River
3. 190-2019-001	12 Tyler St	Private	4.7	Industrial Vacant Land	Farm River
4. 190-2118-002	22 Tyler St	Private	1.83	Industrial Vacant Land	Farm River
5. 160-1917-005	111 Hemingway Ave	Private	3.66	Industrial Vacant Land	Farm River
6. 160-1917-002	101 Hemingway Ave	Private	2.13	Industrial Vacant Land	Farm River
7. 160-1817-002	24 Vista Dr	Private	1.6	Residential Vacant Land	Farm River
8. 190-2016-003	133 Hemingway Ave	Private	2.59	Residential	Farm River
9. 190-2016-004	137 Hemingway Ave	Private	1.16	Residential	Farm River
10. 190-2116-023	141 Hemingway Ave	Private	1.62	Residential	Farm River

According to the USFWS National Wetland Inventory Map, wetlands (E2EM5Pd) occur throughout the site.

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Parcel 5

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
140-1221-002	86 Wheaton Rd	Private	7.05	Residential Vacant Land	Farm River; South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (PFO1E) occur throughout the site.

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Parcel 6

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
100-0819-001	234 Mansfield Grove Rd	Town of East Haven	18.66	Residential Vacant Land	South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (PFO1E, PFO1C) occur throughout the site.

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Parcel 7

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
070-0619-001	70 Whitman Ave	East Haven Land Trust Inc	5.06	Residential Vacant Land	South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (E2EM1Pd, E2EM5P) occur throughout the site.

***Note: Parcel appears to be within the Bradford Preserve.**
https://shorelinegreenwaytrail.org/2010/11/12/east-haven-2/?msclkid=bc493ec6bfea11ec926c08bb83c2098a

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Parcel 8

Parcel ID	Location	Owner	Acres	Land Use	DEEP Local Basin Subregion
070-0519-001	47 Atwater St	East Haven Land Trust Inc	24.19	Residential Vacant Land	South Central Shoreline

According to the USFWS National Wetland Inventory Map, wetlands (E2EM5P, E2EM1Pd, E1UBL) occur throughout the site.

***Note: Parcel appears to be within the Bradford Preserve.**
https://shorelinegreenwaytrail.org/2010/11/12/east-haven-2/?msclkid=bc493ec6bfea11ec926c08bb83c2098a

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Next Step / Coordination

- Mitigation Ratio
- Connecticut's in Lieu Fee Program (USACE)
  - https://ct.audubon.org/conservation/in-lieu-fee-program?msclkid=7e1b1a72c0a711ec812bc8f486bb807d
- Others

Thank You!

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Appendix L – Attachment 2

US Army Corps of Engineers Presentation – May 11, 2022

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USACE Wetland Mitigation Meeting
(NAE-2022-00290)

Runway Extension and Terminal Expansion Program

May 11, 2022

Agenda

- Introductions
- Project Overview
- Summary of Previous Discussions
  - Anticipated Wetland Impacts RW – 0 (tentative)
  - Anticipated Wetland Impacts Terminal - ≈ 9-10 acres disturbed inland wetlands on fill
  - Alternatives Analysis/LEDPA
  - Mitigation
- Mitigation Strategies
  - FAA Restrictions
  - Few Sites Available
  - Most have issues
  - Tidal Wetlands
- Next Steps / Coordination

Project Overview

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1934 vs Present Day

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Example Sites

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General Description of the Project Area

Area for Runway 2 Extension

Terminal Area Development – Northeast view

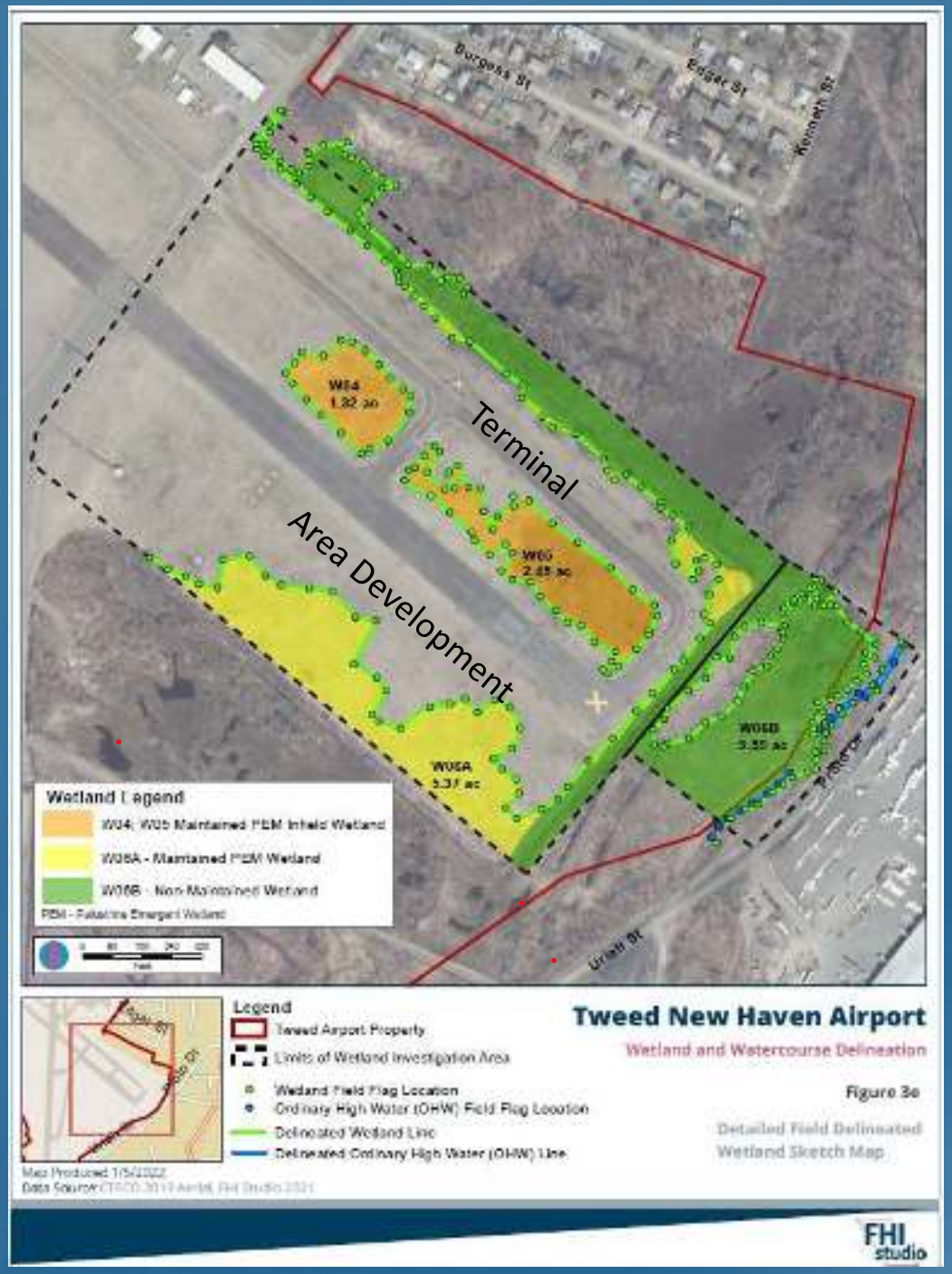
Terminal Area Development – Southwest view

Wetlands adjacent to area for Runway 2 Extension

Terminal Area Dev. – North view

Terminal Area Dev. – South view

2021 Wetland Delineation



- **Wetland 4 (1.32 acres):**
  - Low quality
  - Drainage retention area from former Runway 32 and taxiways
  - Existing catch basin / drainage inlet
  - Routinely mowed lawn bounded by Taxiway C on the northeast side, and Taxiway H on the southeast side
  - Low depression with suspected high groundwater table
- **Wetland 5 (2.45 acres):**
  - Low quality
  - Drainage retention area from former Runway 32 and taxiways
  - Existing catch basin / drainage inlet
  - Routinely mowed lawn bounded by Taxiway C on the northeast side, and Taxiway H on the southeast side
  - Low depression with suspected high groundwater table

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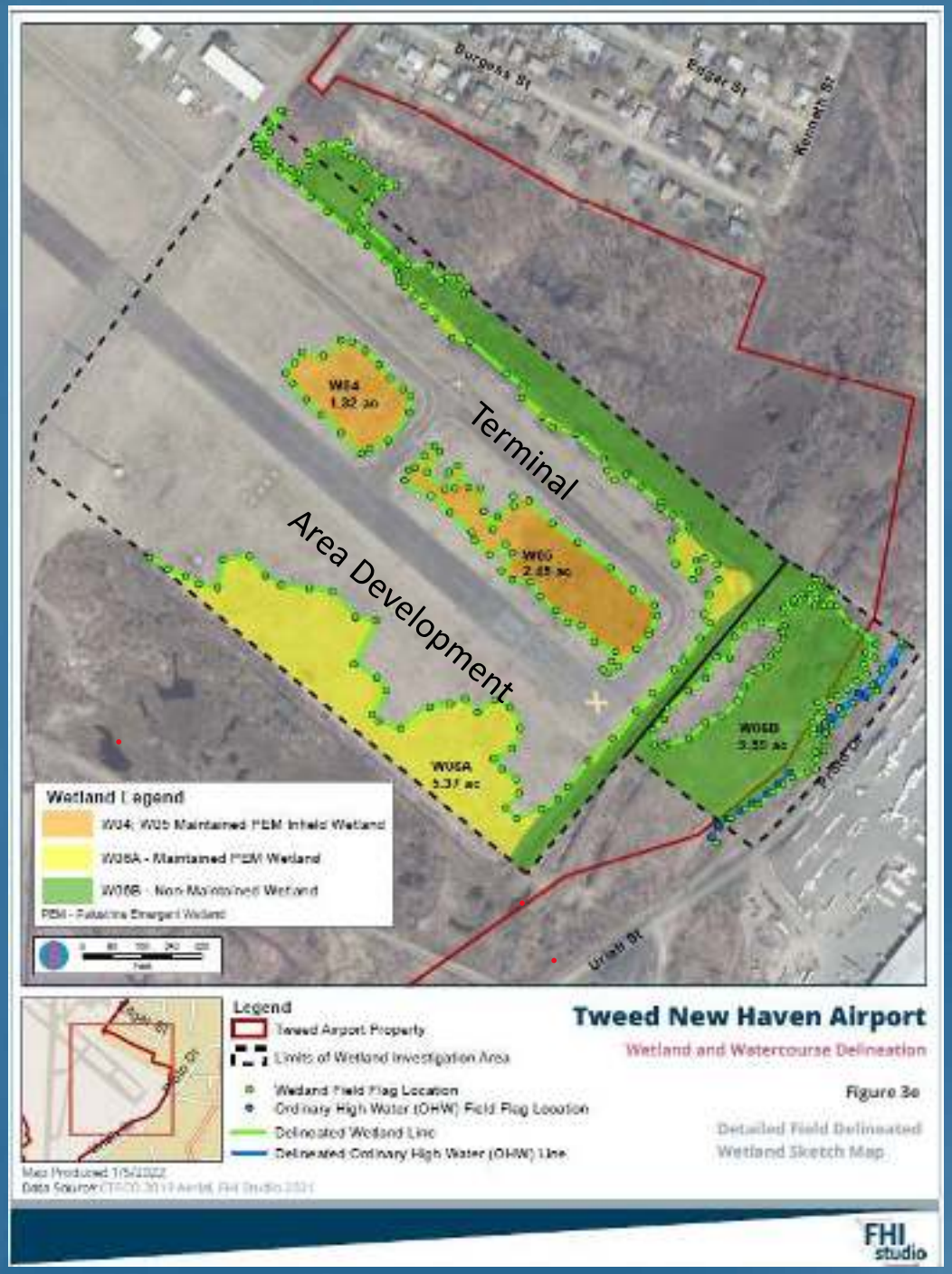
2021 Wetland Delineation



- **Wetland 6 (14.96 acres):**
  - WA 06A (5.37 acres) Low quality; low depressions with apparent high groundwater table in mowed lawn areas (airfield)
  - WA 06B (9.59 acres): Forested wetland and bordering maintained Palustrine Emergent wetland transected by permanently flooded excavated channel

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2021 Wetland Delineation

- **Wetland 7 (6.76 acres):**
  - Majority of this wetland system consists of a *Phragmites australis* (invasive) dominated tidal wetland
  - Bordered by a zone of *Baccharis halimifolia* landward
  - Wetland impacts = Avoided

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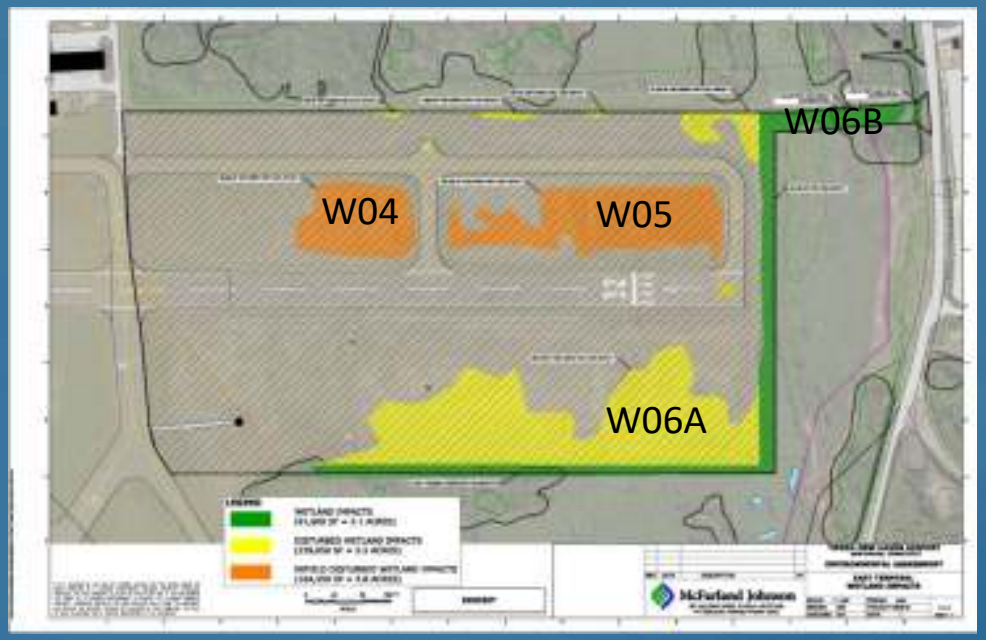
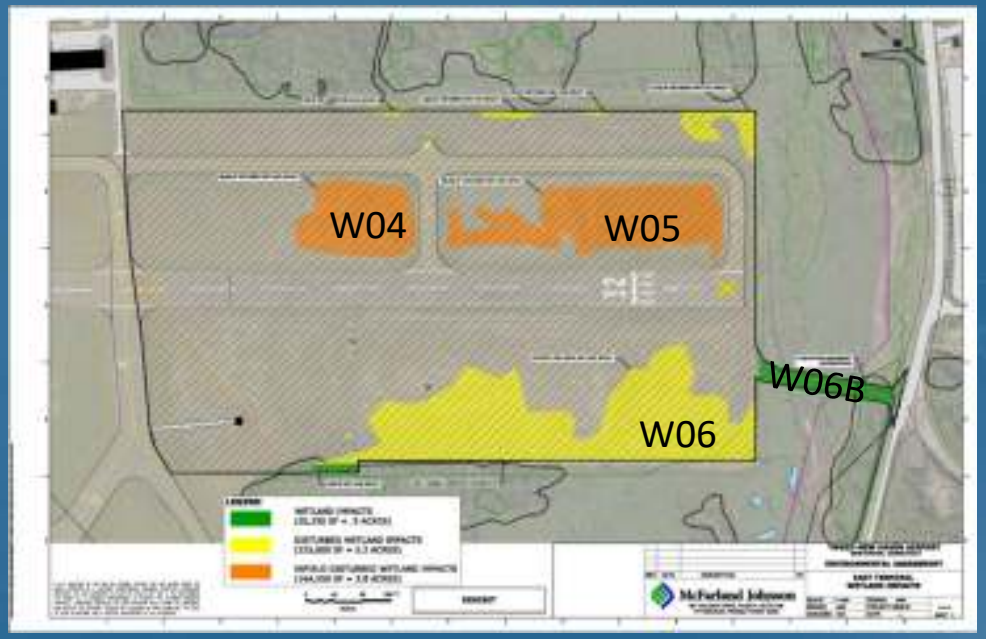
Wetlands within Terminal Area Footprint

- **V1: Wetland Impacts 11.4 acres**



- **V2: Wetland Impacts 9.5 acres (17% reduction)**



Wetland	V1	V2	Change
W06B Non-maintained (Green)	2.1 ac	.5 ac	-1.6 ac
W06A Disturbed/ Connected (Yellow)	5.5 ac	5.2 ac	-.3 ac
W04 and W05 Isolated (Orange)	3.8 ac	3.8 ac	N/C

- **Wetland 04 and 05:** Low quality, drainage retention area from former Runway 32 and taxiways
- **Wetland 06A:** Low quality, mowed lawn airfield
- **Wetland 06B:** moderate quality, scrub-shrub wetland habitat

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Thank You!

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Appendix L – Attachment 3

Us Army Corps of Engineers Presentation – November 22, 2022

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CT DEEP/USACE Wetland Briefing

NEPA Environmental Assessment

Runway Extension and Terminal Expansion Program

November 21, 2022

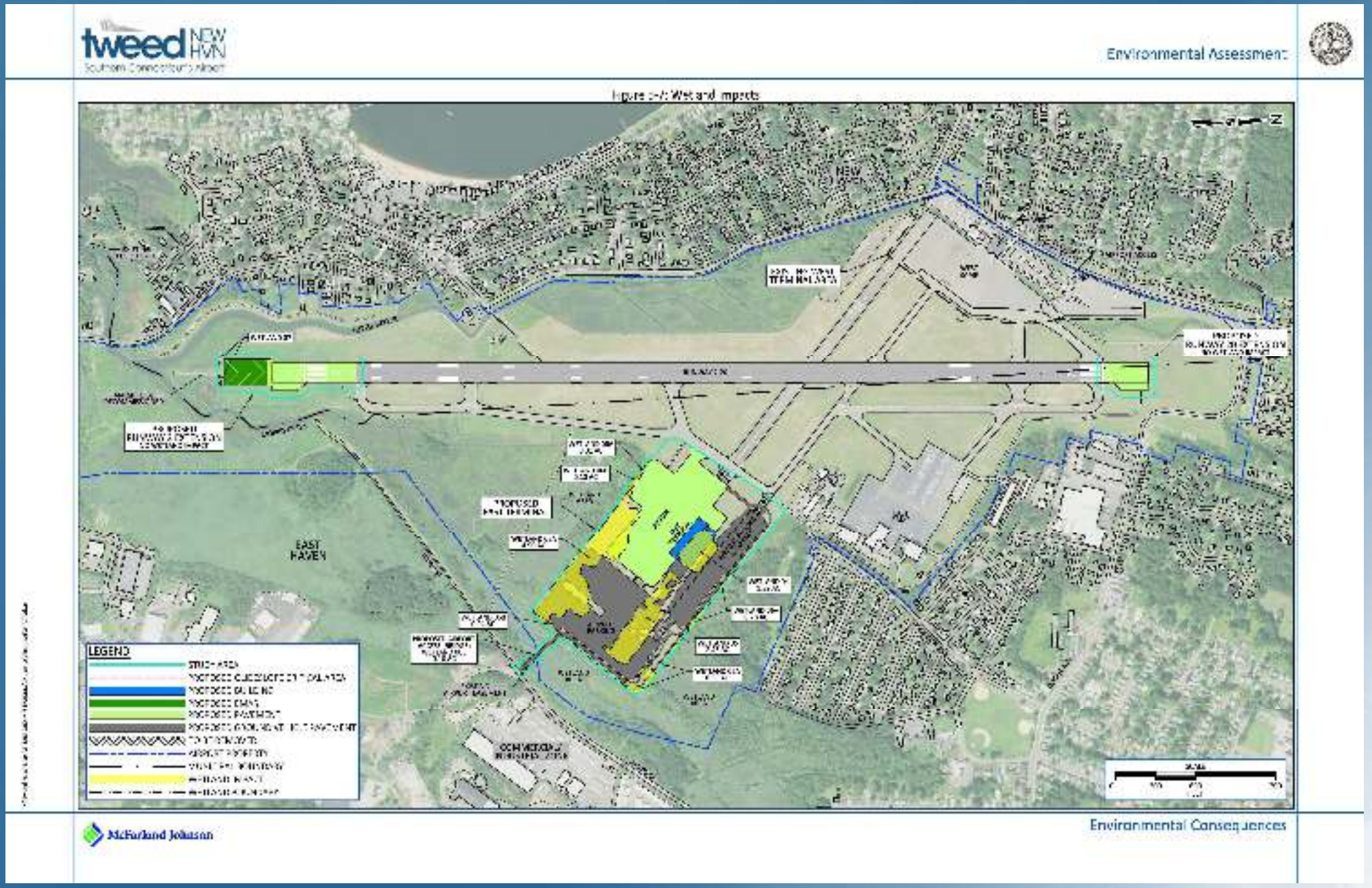
Agenda/Purpose

- EA Overview
  - Wetland Coordination History
  - Existing Conditions
  - Purpose and Need
  - Alternatives
    - RW Extension
    - Terminal Area
    - Parking
  - Wetland Impacts
  - Mitigation Strategies
  - Process

Wetland Coordination History

- Corps
  - January 27, 2022 Wetland Delineation Report
  - Feb 18, 2022 – Project Introduction
  - March 10, 2022 – Corps Assumes Jurisdiction over Delineated Wetlands
  - May 11, 2022 – Mitigation Strategy
- DEEP
  - September 21, 2021 – On-site Meeting/Site Walk
  - January 10, 2022 – Status Update
  - January 27, 2022 Wetland Delineation Report
  - February 28, 2022 – Status Update/Wetland Delineation Results
  - March 2, 2022 – DEEP accepts Delineation Report Results
  - April 20, 2022 – Mitigation Strategy
  - October 12, 2022 – Status Update

Project Overview



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Existing Conditions (Summer 2022)

- Passenger Growth Faster than Expected
  - 14 Destinations
  - 84 Departures/Week
- Existing ≈ 32,000 sf Terminal is Stressed
  - Long Queues (Ticketing, Security, Etc.)
  - Terminal Crowding
  - Chronic Parking Shortages
  - Pax Experience/Amenities Need Improvement

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Purpose and Need

- Accommodate Existing and Expected Passenger Volumes
- Accommodate Existing and Expected Aircraft Fleet Mix (reduce weight penalties and range limitations)
- Provide Terminal that can Comfortably and Efficiently Accommodate Passenger Demand (Approximately 80,000 sf)
- Improve Adjacent Land Use Compatibility of the Terminal
  - Access
  - Noise
  - Congestion
- Improve Resiliency and Sustainability of the Passenger Terminal
- Avoid Land Acquisition

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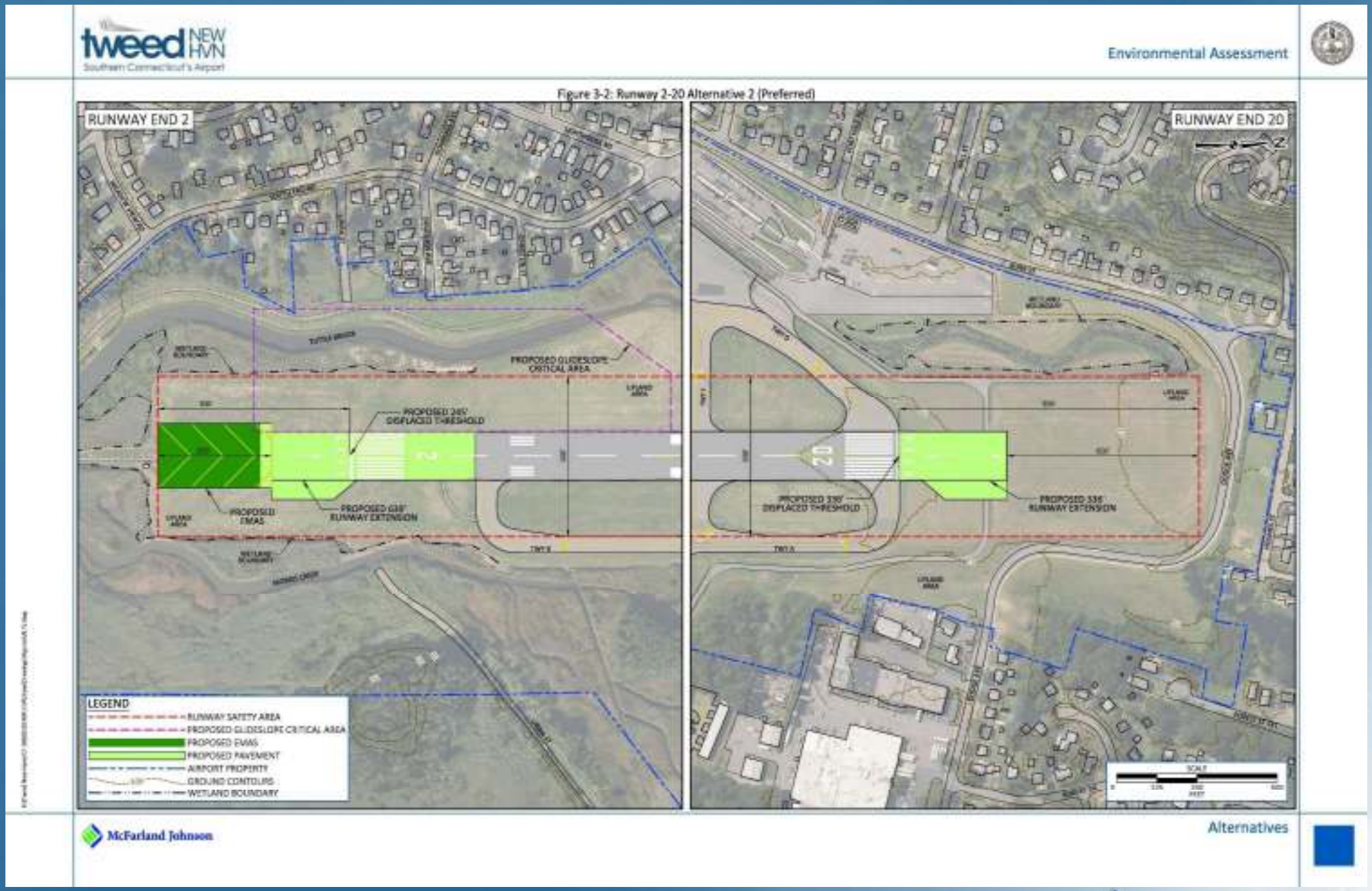
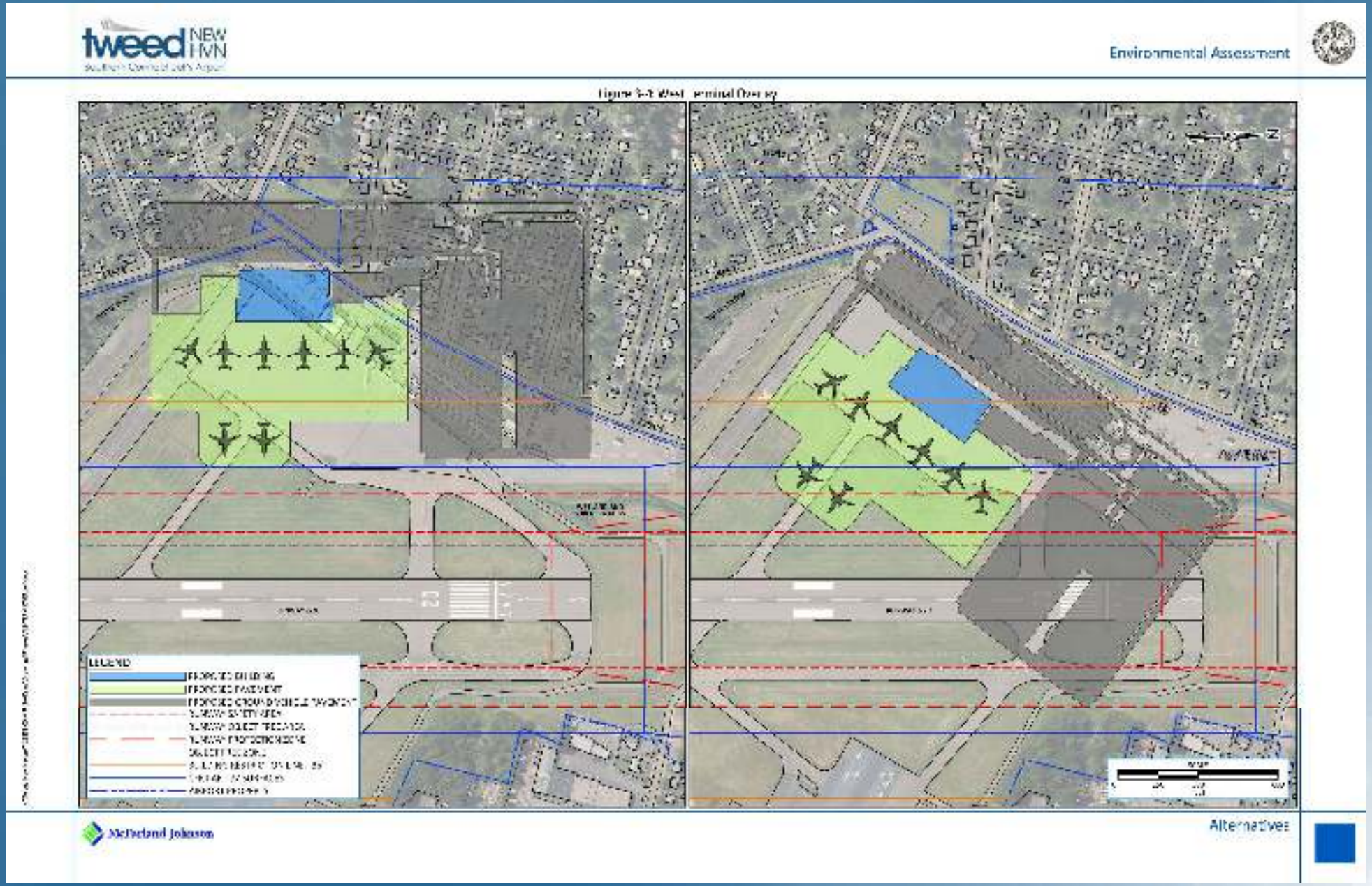
Action Alternative - Runway



Alternatives - Terminal



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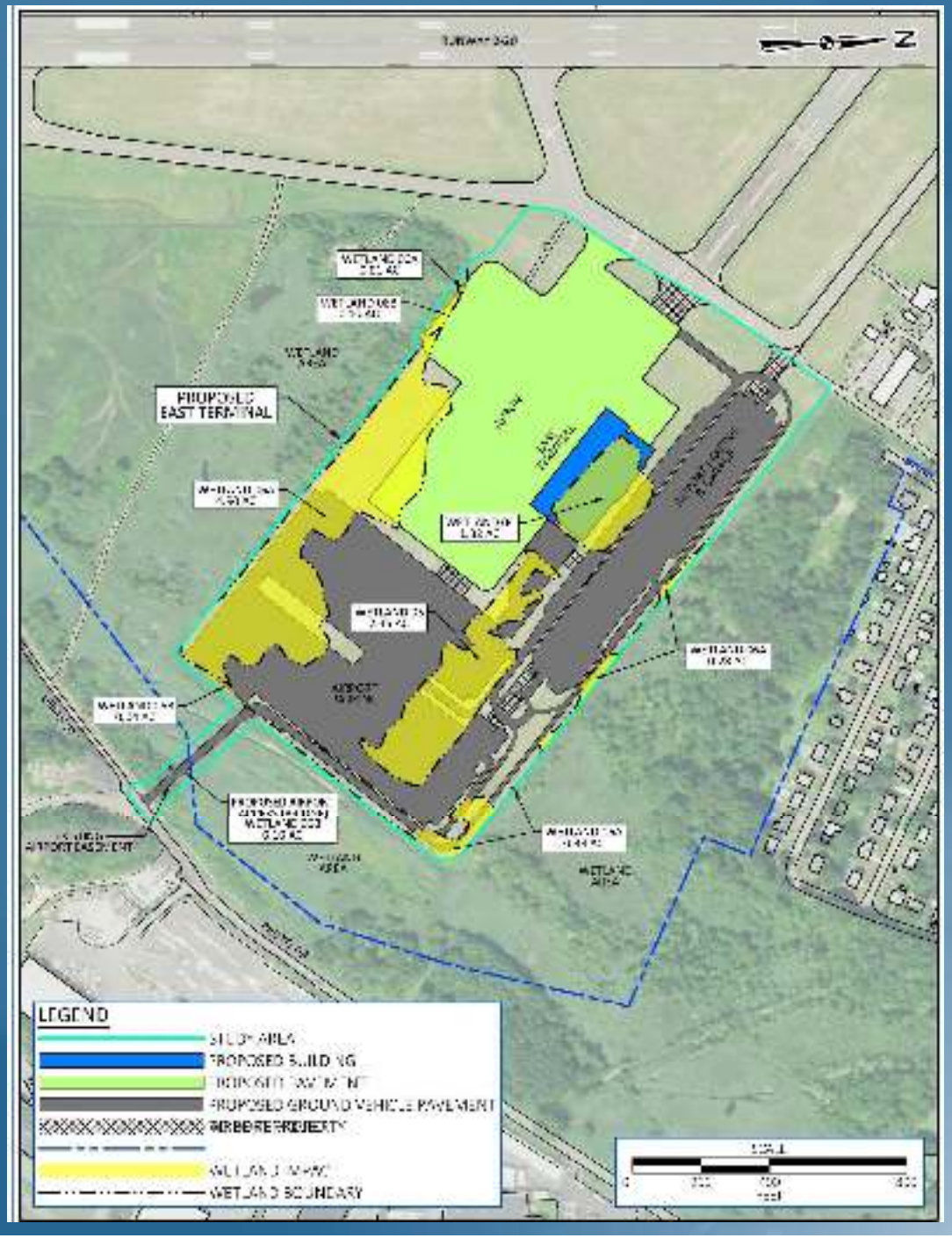
Parking Alternatives

- Off-Site
  - No Suitable “Green Field” Sites Available within 1 mile of Proposed Terminal
  - Off Airport Redevelopment not Practical
    - Cost/Availability
    - Timing
    - Unknown Environmental Conditions (Hazardous Materials, etc.)
- Re-use Existing
  - Existing Parking to be Utilized for Airport Employees
  - Temporary Parking Created on Aprons must Revert to Aeronautical use
- Additional Structured Parking (Garage)
  - Not Economically Viable
  - Construction Duration
  - Construction of 2000 Car Garage Estimated at $60 million
  - Long term Operating Costs are Significant.

Alternatives - Terminal



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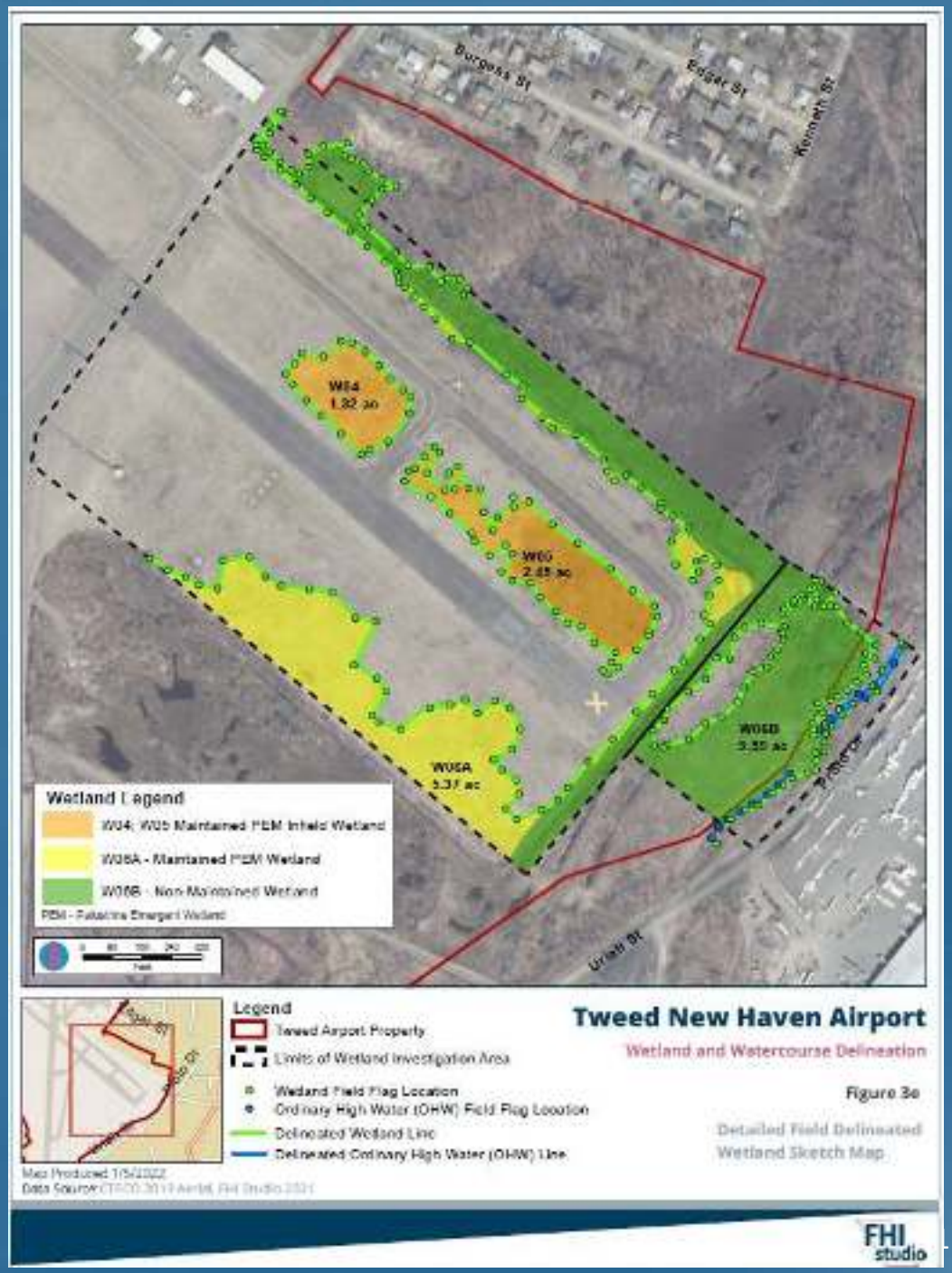
Wetland Impacts



Wetland	V1	V2	Preferred
W06B Non-maintained	2.1 ac	.5 ac	.24 ac
W06A Disturbed/ Connected (Yellow)	5.5 ac	5.2 ac	5.57 ac
W04 and W05 (Infield)	3.8 ac	3.8 ac	3.77 ac

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General Description of the Project Area

Area for Runway 2 Extension

Wetlands adjacent to area for Runway 2 Extension

Terminal Area Development – Northeast view

Terminal Area Development – Southwest view

Terminal Area Dev. – North view

Terminal Area Dev. – South view

Mitigation Framework

- Wetland mitigation is expected to be achieved by a combination of preservation, restoration, enhancement and utilization of Connecticut's in-lieu fee program
- Wetland mitigation ratio to be established in coordination with CTDEEP and USACE
- Several potential mitigation sites have been preliminarily identified within two (2) miles from the airport
- These potential mitigation sites are within the same watershed (i.e., South Central Shoreline and Farm River local basin subregions)
- The potential mitigation sites were preliminarily screened based on vacant land availability, presence of wetlands and proximity to habitats with high ecological value
- Screening was based on National Wetland Inventory (NWI) Map, Connecticut ECO Viewers and Town of East Haven MapExpress Property Information Viewer

Potential Mitigation Parcels

- Map is preliminary and for assessment purposes only

Sources:

- https://easthaven.mapxpress.net/ags_map/
- https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

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Mitigation

- Discussions to Date
  - CT DEEP
    - Will Accept Tidal Wetland Mitigation
    - Two Prospective Sites Contemplated
    - Detailed Mitigation Proposal to be Developed During Permit Process
  - Corps
    - Address CT DEEP Requirements First
    - Very Strong Preference for In Lieu Fee
    - Corps Agreed to Identifying Use of In Lieu Fee for purpose of the EA
    - In Lieu Fee Contribution Will Consider CT DEEP Mitigation Requirements
    - Detailed Mitigation Proposal to be Developed During Permit Process

Sample Sites

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Process

- FAA Review of Final Pre-Draft EA - Ongoing
- FAA Comment Resolution - December
- EPA Review
- 45 Day Public Comment Period
- Public Meeting – 30 days +/- after Public Notice
- Address Public Comments/Draft Final EA
- FAA Decision

Thank You!

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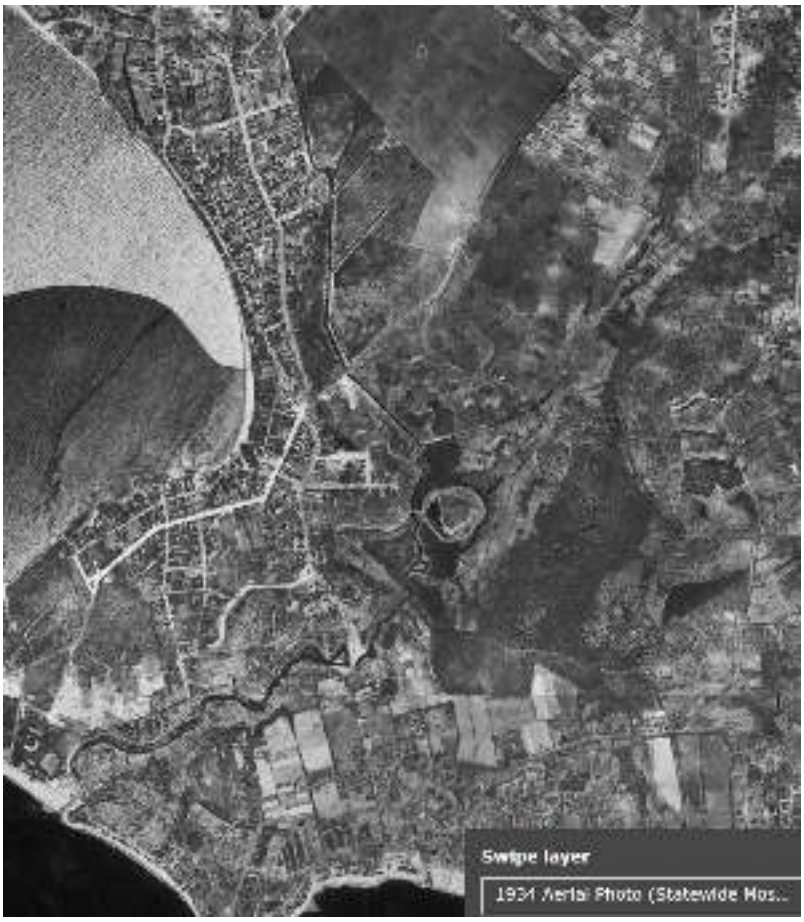
Sue Jacobson (CT DEEP) e-mail dated April 26, 2022

Jeff R. Wood

From: Jacobson, Susan <Susan.Jacobson@ct.gov>
Sent: Tuesday, April 26, 2022 10:48 AM
To: Jeff R. Wood
Cc: Rasmus Agerskov; Peter Byrne; David Rosa
Subject: RE: Tweed Mitigation Site Powerpoint

Importance: Low

Hi Jeff, We discussed the possibility of tidal wetland mitigation rather than inland wetland mitigation.



Before Cove Ave existed, it appears that the Farm River and Morris Creek were one tidal wetland system. As development progressed, tidal water flow to the proposed work area decreased and the wetland became an inland wetland. With the history of tidal wetland loss in this system, mitigation for tidal wetlands is acceptable to DEEP. For thin-layer deposition (TLD), a mitigation ratio of 3:1 is required. As Harry Yamalis mentioned during our April 20 meeting, the area north of Cosey Beach Road in the Bradford Preserve would benefit from TLD. Another possible site for TLDL would be the wetlands north of Caroline Road. For any TLD, Tweed would need to be responsible for completing the project.
Harry also mentioned returning tidal flow to this area:

If this inland wetland system is degraded with a monoculture of *phragmites*, reintroducing tidal flow could eliminate the *phragmites*. If necessary, a berm along the north could minimize flooding from tidal water.
Thank you and let me know when another meeting is appropriate,
Sue

Susan Jacobson, Supervising Environmental Analyst
Land and Water Resources, Regulatory - West
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford, CT 06106-5127

P: 860-424-3693
F: 860-424-4054
susan.jacobson@ct.gov
www.ct.gov/deep

From: Jeff R. Wood <jwood@mjinc.com>
Sent: Wednesday, April 20, 2022 3:29 PM
To: Jacobson, Susan <Susan.Jacobson@ct.gov>
Cc: Rasmus Agerskov <ragerskov@avports.com>; Peter Byrne <pbyrne@avionsg.com>; David Rosa <drosa@mjinc.com>
Subject: Tweed Mitigation Site Powerpoint

Hi Sue,

Thanks again for your time today. It was a very productive discussion.

A PDF of the presentation is attached.

Jeff

McFarland Johnson

Jeff R. Wood | Regional Director of Aviation- Mid-Atlantic
607-723-9421
607-725-6040
Visit our website to see how MJ employee owners are innovating to improve our world.