EPCAL 8-Lot Major Subdivision Map
Town of Riverhead Community Development Agency
200 Howell Avenue
Riverhead, Suffolk County, NY 11901

COMPREHENSIVE HABITAT PROTECTION PLAN UPDATE

March 25, 2020
REVISED/UPDATED October 12, 2020
*Note, all revisions in red type for ease of review and comparison

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Introduction

This document is an Update to the Comprehensive Habitat Protection Plan (CHPP) dated February 2016 and updates to Comprehensive Habitat Protection Plan submitted as part of the Riverhead Community Development Agency's (referred to as CDA or Town, interchangeably) application for Wild Scenic Recreational Rivers permit for the 8 Lot division of land known and described as EPCAL. Note, all updates from the most recent March 25, 2020 Updated Comprehensive Habitat Plan appear in red font for ease of review and comparison to March 25th Update and NYSDEC's most recent communication, to wit: Notice of Incomplete dated July 20, 2020. (The February 2016 Comprehensive Habitat Protection Plan is available at https://riverhead.municipalcms.com/files/documents/document958113957031616.pdf).

The CHPP had been prepared and developed in conjunction with the NYSDEC to mitigate potential impacts to the habitats of identified Endangered or Threatened species resulting from the proposed development of a the 50-Lot Subdivision, known as "Subdivision Map for Enterprise Park at Calverton," known as the Enterprise Park at Calverton (EPCAL)prepared by VHB, dated June 6, 2014, approximately 2,323.9 acres of land known as the Enterprise Park at Calverton (EPCAL) owned by the Town of Riverhead Community Development Agency.[1]

Since the preparation of the CHPP, the Town of Riverhead and the Town Community Development Agency (the CDA), as the owner of EPCAL, determined that it was in the best interest of the Town to amend the 50-lot subdivision map to reflect division of the 2,323.9 acres the CDA owned into an 8-lot Subdivision of 2,106.69 acres)[2]. Five of the lots (Lots 1, 2, 3, 4 and 5) would remain public-purposed lots and the other three (lots 6, 7, and 8), comprising approximately 1600 acres, would be lots offered for sale and future development by a third party. In November of 2018, the CDA, after requisite and extensive qualified and eligible hearings required under the Urban Renewal Law (General Municipal Law Articles 15 and 15-A), entered into a contract of sale to sell Lots 6, 7 and 8 to Calverton Aviation & Technology LLC, (CAT).

The areas and acreage for potential development of Lots 6, 7 and 8 of the 8-lot Subdivision mirror the areas and acreage for development depicted in the 50-Lot

[1] The CHPP is Exhibit G to the FEIS. The FEIS is attached as Exhibit 2 to the CDA's application submittal.

[2] Note, the difference in acreage between the two subdivision maps reflects that United States Department of Navy parcels described as "Parcel A" and "Parcel B" totaling approximately 216.7 acres are under a remedial action program to address groundwater contamination and are not part of the proposed 8-Lot Major Subdivision Map. Once these parcels are environmentally suitable for transfer, the parcels will be transferred to the Town of Riverhead Community Development Agency (CDA) and in turn, preserved as open space and managed in accordance with the Comprehensive Habitat Protection Plan. In addition, the 4.9 acres and 12.69 aces proposed for Burman Boulevard right of way and dedication for highway purposes for Rt. 25 and Grumman Boulevard respectively are not included in the acreage for the 8 Lot subdivision.

Subdivision described as Lots 1-50, excluding Lot#s 21, 42, 45, 46, 48 and 49. The following maps overlaying the identified habitats that have been studied in the CHPP onto the 8-lot subdivision are attached as Exhibits A (50-Lot Subdivision Areas under Supervision of Habitat Protection Plan; Exhibit B (8-Lot Subdivision Areas under Supervision of Habitat Protection Plan; and Exhibit C (8-Lot Subdivision with Areas under Supervision of Habitat Protection Plan with underlying ecological communities depicted/underlying areas of supervision).

In reviewing the CDA's application for a WSRR permit for the division of the EPCAL property into 8 Lots, the NYSDEC has requested that the CHPP be updated to supplement the studies and mitigation measures included and made part of the FSGEIS and Findings Statement. Thus, this updated CHPP provides for, among other things, the management of grasslands in accordance with the NYSDEC's guidance for managing grassland birds; restrictions on clearing of woodland habitats for the Northern Long Eared Bat; and an updated the field survey of the property to determine any evidence of the presence of two plant species know to provide food for the Frosted Elfin Butterfly. In addition, the NYSDEC requested that the Town of Riverhead consider designing a program for deicing procedures that can meet water quality requirements for outfalls that discharge to surface waters as prescribed under State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity (GP-0-17-004) (issued pursuant to Article 17, Titles 7,8,and Article 70 of the Environmental Conservation Law, effective July 23, 2020). This water quality protection program is necessary to avoid disruption of eastern tiger salamander populations as well as other amphibians sensitive to changes in surface water chemistry. As described herein, the maximum concentration of contaminants will be determined during the SPDES permit application and review process. The NYSDEC has also requested the CDA conduct a substantive review, summary or analysis of the potential use of the property for aviation (reflecting use of two runways FSGEIS and proposed 50-Lot Subdivision appended as "Appendix D" to FSGEIS versus one runway with reduced length set forth in DSGEIS and proposed 50-Lot Subdivision appended as "Appendix G" to DSGEIS) and impacts aviation use may have on EPCAL grassland birds[3]; and aviation deicing procedures, protocol and mitigation measures to protect the ecological communities identified in the FSGEIS and CHPP. In addition, this update shall provide information related to aviation use and SPDES requirements. This Update will address each of the above items below.

HABITAT PROTECTION PLAN

Active management of existing and created grassland habitats at the subject property would occur the CHPP, as described below.

[3] Initially, the 50-Lot subdivision plan provided for the western runway and the southern 3,000 feet of the eastern runway to be converted to grassland. During the review process of the 50-Lot subdivision, the FSGEIS revised the 50-Lot subdivision map by eliminating the proposed conversion of these runways, leaving them both available for aviation use.

The details of the habitat protection areas for the subject property are illustrated on the *Habitat Protection Plan*. The Plan complies with recommendations described by the NYSDEC's Guidance Documents, including

- NYSDEC Website https://www.dec.ny.gov/docs/wildlife_pdf/neuplandhabgd.pdf Managing Grasslands, Shrublands and Young Forests for Wildlife Habitats, A Guide for the Northeast, Oehler, et al, 2006.

- NYSDEC Website http://www.dec.ny.gov/pubs/86582.html Guidance for Managing Grassland Birds

- NYSDEC Website https://www.dec.ny.gov/animals/106090.html General Guidelines for Protection of Eastern Long-Eared Bat

- NYSDEC Website https://www.dec.ny.gov/animals/7143.html Eastern Tiger Salamander Factsheet

- NYSDEC Guidance for Land Cover Set Asides for Conservation of the Eastern Tiger Salamander and Suggested Methods to Avoid, Minimize and Mitigate Impacts

- NYSNHP https://guides.nynhp.org/frosted-elfin Frosted Elfin Factsheet

- Best Management Practices Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States, Aram J. K. Calhoun, Ph.D. Maine Audubon Society1 /University of Maine 5722 Deering Hall Orono, ME 04469 calhoun@maine.edu Michael W. Klemens, Ph.D. Metropolitan Conservation Alliance/Wildlife Conservation Society2 68 Purchase St., 3rd Floor Rye, NY 10580 mca@wcs.org

Specific details regarding habitat protection measures for each of the vegetated ecological communities identified and are provided below:

Grasslands

The subject property's grasslands have has been identified by the NYSDEC and the Nature Conservancy (TNC) as the largest remaining grassland habitat on Long Island and represent an important habitat for many declining grassland-dependent birds, including eight avian species that are listed as Endangered, Threatened or Special Concern species in New York State. The disturbance that has maintained these grasslands and prevented succession to later ecological stages has been historic maintenance of the runway areas in the form of periodic mowing.

Currently, however, the grasslands are not actively managed, and there is no long-term management plan in place. In the absence of periodic management, colonization by shrub and tree species from surrounding wooded communities would result in succession

to later ecological stages (i.e., shrubland and forest) and the incremental loss of grasslands from the subject property, thus rendering the site unsuitable as habitat for grassland specialist birds.

Pursuant to the Reuse & Revitalization Plan set forth and studied in the FSGEIS, the implementation of the proposed action would result in the removal of 133.8 acres of the existing 646.2 acres of grassland habitat at the site, primarily in the area to the north of both runways and to the south of the western runway. Given that development within these lots would likely occur in incremental stages over the course of multiple years, grassland habitat loss would also occur incrementally as well. In order to mitigate this habitat loss, this CHPP provides for the preservation and maintenance (as described below) of the remaining 512.4 acres of grassland habitat, representing 79.3 percent of the existing grasslands at the site.

Furthermore, the proposed action would also result in the creation of an additional 70.6 acres of on-site grassland habitat, through among other things, the conversion of existing wooded habitat to grasslands within three areas located to the north of the eastern runway. This conversion would occur during the initial stages of the proposed action, thus ensuring that replacement habitat has been established before any clearing of grasslands occurs. In total, a net loss of 63.2 acres of grassland habitat would occur as a result of the proposed action. However, as a result of preservation of existing habitat and creation of new habitat, the CHPP provides for a total proposed grassland area of 583.0 acres. The preserved and created grassland habitats would be actively maintained, as opposed to developing into shrublands and ultimately woodlands through the process of ecological succession that would occur in the absence of a maintenance plan.

The latter two habitat types, shrublands and woodlands, are unsuitable for the resident grassland birds. In contrast, implementation of the Habitat Protection Plan for the proposed action is expected to result in the perpetuation of grassland habitat that would continue to attract resident grassland birds to the subject property.

As detailed previously, periodic mowing has prevented the succession of the existing grasslands into other ecological communities that occur on the site. Currently, no management plan for the maintenance of the on-site grassland habitat exists. As part of the proposed action, the total proposed grassland area of 583.0 acres would be actively maintained as habitat for grassland bird species in accordance with Best Management Practices (BMPs) developed by New York Audubon and the NYSDEC for grassland bird habitat (see updated CHPP Exhibits "G" and "L", respectively), as detailed below. (Managing Grasslands, Shrublands and Young Forests for Wildlife Habitats, A guide for the Northeast, Oehler, et tal, 2006.)

In order to avoid disturbance during the grassland bird breeding season and the overwintering period for short-eared owl, northern harrier and other raptors, activities associated with the creation of 70.6 acres of grassland habitat by pavement removal, clearing of disturbed areas in non-wooded areas that require preparation for planting (tilling, seed planting, etc.) would occur between August 16 and October 31. Tree cutting

within woodland habitats is restricted to between December 1 and February 28 of any calendar year due to Northern Long-eared Bat protection guidelines.

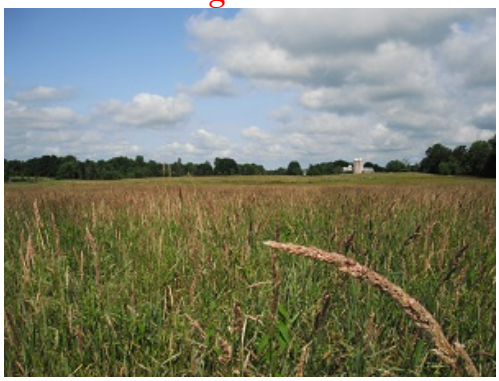
In general, existing woody vegetation (i.e., trees, shrubs and vines) and invasive herbaceous plants would be removed from the existing and created grassland habitats to the maximum extent practicable through both mechanical means and manual methods (i.e., "by hand"). Removal efforts would occur between August 16 and October 31 during the first year of management. If necessary, subsequent removal efforts would occur during the same time period, in order to remove undesirable colonizing vegetation, including invasive plant species.

Seeding of created grassland areas with warm- and/or cold-season grasses will be accomplished according to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Plant Materials Technical Note NY-36: Plant Materials – Seeding Mixes for Wildlife 10 or similar approved guidance.

Management for perching species (e.g., upland sandpiper, vesper sparrow, eastern meadowlark), can be accomplished through maintenance of a limited amount of scattered woody vegetation or the installation of fence posts within portions of the grassland.

The management of grasslands will be developed and conducted in accordance with the NYSDEC's guidance for managing grassland birds as referenced below:

NYSDEC Guidance: Best Management Practices for Grassland Birds



Leaving grasslands undisturbed from April through August allows grassland nesting birds time to raise their young.

These Best Management Practices (BMPs) (updated CHPP Exhibit "L") should be used to guide habitat management on grassland habitat or habitat to be converted into grassland. The management goal of these BMPs is to maintain the open, grassy conditions necessary for successful breeding by grassland birds and to avoid disturbance to nesting birds. Techniques to be used may include seeding, mowing, and removal of trees and shrubs. Typically, land should be managed for a minimum of 5 years to begin showing benefits for grassland birds.

Although developed for the Landowner Incentive Program (LIP) for Grassland Protection and Management, these BMPs can be applied to any sizable grassland to benefit grassland birds. These BMPs will form the basis for specific 5-year Site Management Plans for landowners selected to receive technical and financial assistance through LIP.

Target Bird Species

The management recommendations in these BMPs are aimed towards grassland birds. Target birds are those listed as "probably" or "confirmed" breeding in the 2005 Breeding Bird Atlas (BBA) Block where the subject field is located. Birds registered in BBA blocks adjacent to the block where the field is located could colonize the subject field once the habitat becomes suitable for them. View the list of "at-risk" grassland bird species that are a high priority for protection and management.

Timing

Nesting Restrictions: Grasslands should not be disturbed by mowing, planting, harvesting, driving, or by any other mechanized means from 23 April to 15 August, inclusive (the nesting season) of every contract year.

Wintering Restrictions: Excessive disturbance such as frequent high speed snowmobile, ATV, motorized vehicle operation, or loud noises such as fireworks should be avoided from 1 November to 1 March, inclusive for the protection of wintering raptors.

Mowing window: All mowing must be done between 16 August and 1 October.

Preliminary Site Management

Between 16 August and 1 November of the first year of management, reduce fragmentation of the grassland by eliminating hedgerows, shrubs, and trees within the boundaries of the LIP field.

Between 16 August and 1 November and to the extent possible, eliminate woody vegetation, especially hedgerows within and bordering the field. Hedgerows split up habitat and function as predator corridors for coyote, foxes, cats, raccoons, etc; thereby degrading the overall quality of the site for breeding.

Management Schedule

General: Mowing as early within the mowing window as circumstances and conditions allow to prevent the maturation and release of seeds from forbs, especially the species listed below. At least 1/3 of mowed vegetation should be chopped up and left on site after each mowing. Thatch will provide nesting habitat for birds as well as attracting moles and voles which are prey for raptors and owls.

Invasive or Undesirable Species: The following species, if present, may require spot-mowing after August 15th of any year to control their encroachment into the field: spotted or brown knapweed, pale swallow-wort, burdock, or goldenrods.

Years One through Five:
Conduct Preliminary Site Management as described above.
Divide the field into 1/3s (approximately) if total acreage is 30 acres or more, or into 1/2s if field is less than 30 acres. Mow the first 1/2 or 1/3 of the grassland to a height no shorter than 6 inches (8 inches is preferred). Rotate the portion mown every year.

Additional Recommendations

Prevent disturbance of nesting birds by feral or outdoor cats, dogs, fireworks, etc.

In general, mowing would occur every one-to-three years to attract and maintain habitat for different grassland species. Additionally, mowing frequency will vary across the site based upon other factors, including variations in soil types, moisture, dominant vegetative species and the presence of invasive plant species.

Habitat preferences, including vegetation height and density, shrub tolerance, forb component, litter depth, and the need for perches vary widely within the on-site grassland bird species assemblage (see Table 6 of VHB CHPP, Rev 02/16). However, given the large extent of grasslands at the subject property, the site can be managed to attract and provide habitat for a variety of grassland birds by varying mowing frequencies and other maintenance practices across the site, thereby creating a diversity of habitat zones.

Haying (which removes cut vegetation or "thatch") can be employed as opposed to mowing (which leaves thatch on the ground) within habitat patches that are intended to attract species with low tolerance for thatch (see Table 6 of VHB CHPP, Rev 02/16)

Mowing or other mechanized activities would not occur within the grassland habitat during the breeding season (April 23 to August 15, inclusive).

In order to avoid avian breeding season and to establish dominance of grasses over forbs (non-grassy herbaceous vegetation), mowing would occur as early as possible during the time period from August 16 to October 1.

Should spring season mowing be necessary (e.g., to control invasive plant species), the mowing activity would occur no earlier than March 2 and no later than April 22.

Disturbances, including mechanized activity and excessive noise, would be avoided or minimized to the maximum extent practicable during the overwintering season (November 1 to March 1).

It is anticipated that management of the on-site grasslands under the New York Audubon and NYSDEC BMPs and the grassland species habitat preferences detailed above would improve the overall quality of the existing and created grasslands as a habitat

for avian species, including the NYS-Endangered, -Threatened and Special Concern bird species that have been reported on the subject property.

Finally, in addition to preserving habitat for grassland birds and other wildlife, the total proposed grassland area of 583.0 acres would also contain expansive habitat area for the NYS-Threatened plant slender pinweed, which has been documented as occurring on the subject property in NYNHP records.

Pitch Pine-Oak Forest

The majority of existing habitat that would be zoned for ultimate development and subject to clearing as a result of the proposed action would occur in this community type. However, approximately 787 acres of existing on-site forested communities, including large contiguous blocks of Pitch Pine-Oak Forest, would be preserved at the subject property to the north of the eastern runway, to the south of both runways and particularly within the lands comprising the CPB Core Preservation Area at the portion of the site. It is also anticipated that additional Pitch Pine-Oak Forest habitat will occupy the site over time, as preserved areas supporting Tree Plantation and Successional Shrubland communities located to the north of the eastern runway develop into forested communities through the process of ecological succession.

Furthermore, the proposed action has been designed such that vegetated open space areas within the proposed lots would be contiguous with each other and with vegetated areas on adjacent parcels. The proposed lot layout has specifically been configured such that areas of existing Pitch Pine-Oak Forest and other natural vegetation to remain are concentrated within the rear and side yards of the proposed lots, and contiguous to existing areas of Pitch Pine-Oak Forest on adjoining off-site properties.

The areas of Pitch Pine-Oak Forest to be preserved represent significant upland habitat area for herpetofauna, including the five NYS-Special Concern species that have been documented at the site. With respect to the NYS-Endangered eastern tiger salamander, as described below, Pitch Pine-Oak Forest communities occupy much of the upland area to be preserved within 1,000 feet of the four on-site and six off-site eastern tiger salamander breeding ponds identified by the NYSDEC. As indicated previously, the Town of Riverhead will require that fencing be installed along the eastern tiger salamander buffer zone on those lots that infringe upon or abut the buffer zone. Beyond these measures, no other active management practices are proposed for Pitch Pine-Oak Forest habitat to be preserved under the CHPP.

Preservation of forested habitat under the CHPP would also afford habitat protection for the NYS-Special Concern woodland bird species whip-poor-will, which was observed and noted as a probable on-site breeder in 2009.

NYS-Threatened butterfly species frosted elfin were reviewed as part of this assessment, the NYSDEC has identified this species as potentially occurring on-site. The

large contiguous blocks of Pitch Pine-Oak Forest to be preserved under the CHPP represent significant potential habitat area for this species.

Pitch Pine-Oak-Heath Woodland

As detailed previously, the NYNHP ranks this fire-dependent community as "very vulnerable," with few remaining acres remaining in New York State. The Pitch Pine- Oak-Heath Woodland community occurs within scattered pockets at the southeastern portion of the site, in the area to the north of the eastern runway. As this area would be preserved as open space under the CHPP, no significant adverse impacts to the on-site Pitch Pine-Oak-Heath Woodland habitat are anticipated as a result of the proposed action.

The preserved areas of this community represent potential upland habitat for the five NYS-Special Concern species that have been documented at the subject property. The preservation of this community would also preserve the optimal on-site breeding, larval and adult habitat for the NYS-Special Concern coastal barrens buckmoth and the NYS-Threatened frosted elfin, as well as potential habitat for NYS-Threatened slender pinweed. Finally, the Pitch Pine-Oak- Heath Woodland to be preserved at the subject property under the CHPP represents potentially suitable summer foraging and/or roosting habitat for the NYS and federally-Threatened northern long-eared bat.

Pine/Spruce/Conifer Plantation

Portions of the tree plantation communities noted to the north of the eastern runway are located and zoned for ultimate redevelopment and clearing as a result of the proposed action. However, other onsite examples of these communities would be preserved within the proposed open space areas to the north and south of these lots, including those within lands proposed for preservation. Similar to existing conditions, it is anticipated that colonization by successional vegetation from surrounding wooded and grassland habitats observed during the field inspections would continue within the preserved tree plantations following implementation of the proposed action, resulting in the eventual conversion of these anthropogenic habitats to forested communities dominated by tree species from neighboring habitats (i.e., Pitch Pine-Oak Forest).

However, as tree plantation communities are noted by the NYNHP as being distributed throughout New York State and are common regionally, no significant adverse impacts to this community type are anticipated as a result of the proposed action.

The protection of portions of the former tree plantation areas would provide additional upland habitat protection for the rare herpetofauna noted on-site, as well as potential habitat for slender pinweed within disturbed openings. Finally, the tree plantation communities to be preserved at the subject property under the CHPP represents potentially suitable summer foraging and/or roosting habitat for the NYS and federally-Threatened northern long-eared bat.

Successional Shrubland

As indicated previously, the Successional Shrubland ecological community is represented in scattered locations at the subject property that have been subject to historic disturbance, including portions of the former agricultural fields and tree plantations to the north of the eastern runway. Some areas of this community are zoned for ultimate redevelopment and eventual clearing as a result of the proposed action. However, other on-site examples of Successional Shrubland would be preserved under the CHPP within the proposed open space areas to the north and south of these lots. Regardless of the proposed action, and in the absence of additional disturbance, it is anticipated that the process of ecological succession that is already underway will continue within the Successional Shrubland habitats, resulting in the eventual conversion to wooded communities. However, given that the Successional Shrubland community is by definition a dynamic, transitional habitat that is considered by the NYNHP to be "demonstrably secure" in New York State, no significant adverse impacts to this community type are anticipated as a result of the proposed action.

The preservation of portions of the Successional Shrubland would afford upland habitat protection for the rare herpetofauna species noted on-site, as well as potential habitat for slender pinweed.

Paved Road/Path

The existing eastern and western runways are proposed to be retained for potential aviation use. The runways will be be left intact for potential use. Therefore, no significant adverse impacts to the existing paved areas are anticipated.

As these largely unvegetated habitats are of little overall ecological significance, no significant adverse impacts are anticipated. As part of the management and maintenance of grasslands located along the runways, the party responsible for implementing the CHPP will endeavor to reduce illegal activities at and provide security of the runways (e.g., providing barriers).

Wetland and Aquatic Habitats

As detailed previously, various wetland and aquatic resources are located within or partially within the subject property boundaries, including ten NWI-designated habitats and six NYSDEC-regulated wetland areas. The CHPP has been specifically developed to avoid the loss of wetland and aquatic habitats, and to minimize development-related disturbance to these resources. Accordingly, as detailed on the *Habitat Protection Plan* (see Attachment D), a key element of the CHPP is the preservation of all on-site wetland and aquatic habitats and avoidance of development within 1,000 feet of any such on- or off-site habitat, including the NYNHP-listed Coastal Plain Pond community.

The protection afforded to wetland and aquatic habitats and surrounding upland buffers by the CHPP would also preserve all known breeding and non-breeding habitat

for the NYS Endangered eastern tiger salamander at the subject property. Pursuant to the NYSDEC *Guidance for Land Cover Set Asides for Conservation of the Eastern Tiger Salamander and Suggested Methods to Avoid, Minimize and Mitigate Impacts*, it is recommended that 100 percent of existing upland forest habitat within 535 feet of breeding ponds and a minimum of 50 percent of adjacent upland habitat within 1,000 feet of breeding ponds be preserved. In accordance with this guidance document, all future development would occur a minimum of 1,000 feet from the ten eastern tiger salamander breeding ponds identified by the NYSDEC at and adjacent to the subject property. As shown on the 8-Lot Subdivision Map (updated CHPP Exhibit "D"), as part of the CHPP, the Town of Riverhead will require that fencing be installed at the lots.

In general, the habitat closest to the wetland is given a higher priority, with a secondary priority being the preservation of intact corridors of habitat that will allow animals to move off of the subject parcel to other suitable habitat if they choose to do so. Where possible, development is encouraged within existing disturbed areas. The preferred habitat of the salamanders is mature oak-pine woodlands. In general, the preserved area should contain as much oak pine woodland as possible, with development occurring on existing footprints of previous buildings, parking areas, roadways or tilled fields. Therefore, the optimal layout for any particular site can vary depending on site specific features such as historic land use, habitat coverage, and adjacent land cover. In addition, preserved areas should remain undisturbed with no grading, excavation, clearing or similar physical activity allowed except as noted in the NYSDEC guidance document. The NYSDEC Guidance Document is cited below:

Guidance for Land Cover Set Asides for Conservation of the Eastern Tiger Salamander And Suggested Methods to Avoid, Minimize, and Mitigate Impacts

In the discharge of its authority and responsibility to protect and conserve endangered species under ECL Article 11-0535 and associated regulations 6 NYCRR § 182.6, and as a general matter, DEC urges developers to minimize adverse impacts to tiger salamanders by conforming with both of the following when designing projects that would occur on lands within 1,000 feet of known tiger salamander breeding ponds (measurements should be taken from average water level based on water marks, rack lines and vegetation):

a) Preserving 100% of the existing upland forest habitat within 535 feet of the breeding pond.

b) Preserving a minimum of 50% of the adjacent upland area within 1,000 feet of breeding ponds in contiguous blocks of suitable habitat, while allowing for the preservation of wooded corridors which provide connections to adjacent tiger salamander upland habitats. The exact configuration of this habitat is subject to the particular site history and habitat features of a project site.

In general, the habitat closest to the wetland is given a higher priority, with a secondary priority being the preservation of intact corridors of habitat that will allow animals to move off of the subject parcel to other suitable habitat if they choose to do so.

Where possible, development is encouraged within existing disturbed areas. The preferred habitat of the salamanders is mature oak-pine woodlands. In general, the preserved area should contain as much oak pine woodland as possible, with development occurring on existing footprints of previous buildings, parking areas, roadways or tilled fields. Therefore, the optimal layout for any particular site can vary depending on site specific features such as historic land use, habitat coverage, and adjacent land cover. In addition, preserved areas should remain undisturbed with no grading, excavation, clearing or similar physical activity allowed except as noted below. DEC may request that additional measures be undertaken to protect preserved upland areas including installation of fencing, signage, supplemental plantings of native woody species, and closure of existing pathways that currently provide access to such preserved areas.

Additional requirements:

Roadways: For all newly constructed roadways within 1,000 feet of known tiger ponds, at least one culvert suitable for the passage of migrating tiger salamanders must be placed under the roadway for every 100 feet of roadway within 1,000 feet of known breeding ponds. All curbing installed within 1000 feet must have a minimum height of 8" above grade on the side facing out from the roadbed to prevent tiger salamanders from inadvertently crossing the road and being killed. This curbing should also be sloped (1:3) on the side facing in from the roadbed to allow salamanders the ability to exit the road back to their natural habitat. Another approved curb design is also called Cape Cod Curbing (see Figure 1). Curbing must also be placed around leaching pools, catch basins and similar storm water drainage structures to prevent inadvertent entry of tiger salamanders into these structures.

Pools: All pools within 1,000 feet of tiger salamander breeding ponds must be surrounded by a steeply-sided curb of no less than 8" above grade and which also extends well below the surface.

Other Created Bodies of Surface Water (e.g. recharge or decorative ponds, etc.): All other created (man-made) bodies of surface water within 1,000 feet of tiger salamander breeding ponds must be surrounded by a steeply-sided curb of no less than 4" above grade and which also extends well below the surface.

Window wells: All window wells must be constructed so that either the lip of the well is a minimum of 4" above grade or else a steeply-sided curb of no less than 4" above grade is constructed around the area enclosing the window well.

Lighting: New lighting shall be directed away from Tiger Salamander ponds and should be of a spectrum that does not interfere with the biological activity of this species.

Public Water Supply Wells and Other Groundwater Wells: New groundwater wells for potable water supply, irrigation, firefighting and other purposes should be placed at a distance sufficient from any tiger salamander breeding pond so as to ensure that operation of the well does not result in significant adverse drawdown of surface water levels in the pond.

Use of the preserved area for drainage: The breeding pond must not be utilized as a catch basin for drainage. However, water may be directed into the preserved area as long as the area receiving water does not drain into the breeding pond, the area of upland habitat will not be significantly impacted or altered (e.g. covered with rip-rap), the area of upland habitat receiving storm water is sufficiently small in size so as not to represent a significant percentage of upland tiger salamander habitat and significant quantities of sediment are not introduced into the area.

Mosquito Control and Pesticides: No application of larvicides containing Methoprene shall be made to tiger salamander breeding ponds. No predatory fish such as Gambusia or other finfish may be introduced into Tiger Salamander breeding ponds. Applications of other pesticides or implementation of other mosquito control techniques may require DEC approval.

Management of Preserved Upland Habitat Areas: Appropriate and adequate management plans will be developed and implemented for the management of upland tiger salamander habitat areas preserved as a result of this policy. Said management plans will identify the owner of the preserved area and procedures undertaken to protect and preserve the area. Such measures may include but shall not be limited to frequent patrols of the preserved area; closing of access points to motorized vehicles including cars, trucks, ATVs, motorbikes as well as horses and mountain bikes; restrictive covenants; maintenance and preservation of existing vegetation; planting of supplemental vegetation in denuded areas; fencing; etc.

POTENTIAL IMPACTS OF SITE DEVELOPMENT STORMWATER MANAGEMENT AND RECOMMENDED MITIGATION

As stated in the preceding sections, development will require review and approval of Stormwater Pollution Prevention Plans (SWPP) as a component of the Town of Riverhead's site plan review process. During this site specific review period, it will be determined how each proposed land use will be classified pursuant to **State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity** (GP-0-17-004) (issued pursuant to Article 17, Titles 7, 8, and Article 70 of the Environmental Conservation Law, effective July 23, 2020) for discharges to surface waters, and whether specific permit conditions are applicable.

Additionally, in accordance with BMP outlined in Best Management Practices Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States, Calhoun, A. et al. The full BMP is identified as updated CHPP Exhibit "I"). The following select issues of site development impacts and recommended mitigating measures are proposed to address several concerns regarding habitat protection for eastern tiger salamander, other amphibians and aquatic/wetland habitats:

SITE CLEARING, GRADING, AND CONSTRUCTION ACTIVITIES CONSERVATION ISSUES

Site clearing may result in disturbance of amphibians and other animals. Site clearing and subsequent construction activities reduce terrestrial habitat available to amphibians by decreasing the extent of the habitat, compacting soil, removing downed woody debris, diminishing invertebrate food supplies, and decreasing the number of small mammal burrows used for refuge by salamanders.

Site clearing removes shade trees, which alters local climate, resulting in elevated vernal pool water temperatures and increased drying of the forest floor. Amphibians are sensitive to alterations in temperature and are highly subject to desiccation. Elevated temperatures in vernal pools can increase algal productivity, thereby reducing oxygen available to developing amphibian larvae and increasing the likelihood of larval die-offs.

Site clearing and grading increase erosion rates, which may result in sedimentation of vernal pools. Increased sediment loads stress and kill both amphibian eggs and developing larvae and can alter the structure and composition of in-pool vegetation.

Site clearing and grading create barriers to amphibian dispersal by stockpiling mounds of soil, altering topographic contours, and creating open areas which amphibians may be reluctant to cross because of increased vulnerability to predation and desiccation.

Use of silt fencing to control erosion creates major obstacles to movement of amphibians and other small animals. Removal of silt fencing is rarely addressed, or often overlooked in sedimentation and erosion control plans. The prevailing belief is that more fencing, for longer periods, provides better environmental protection. Therefore, fences are often left in place indefinitely, impeding the migratory patterns of tens of thousands of animals. Erosion control structures should be removed within 30 days of final site stabilization. Erosion control berms—a sediment control measure accepted in some states—are effective sediment barriers when properly installed and provide less of an obstacle for amphibians and reptiles. Installation of sediment control barriers to control erosion and sedimentation should be limited to the down-gradient edge of any disturbed area and adjacent to any drainage channels within the disturbed area.

Site clearing and grading can de-water vernal pools by altering surface-water drainage patterns associated with the pool.

Site clearing can create water-filled ruts. These ruts intercept amphibians moving toward the vernal pool and may induce egg deposition. Often the ruts do not hold water long enough to allow development of the amphibians and therefore act as “sinks” that result in population declines.

Perc test holes act as pitfall traps, collecting large numbers of amphibians, turtles, and other animals. Unable to climb the vertical walls of the perc scrape, these animals perish.

Site clearing and grading creates habitat for the establishment of invasive plants and facilitates the movement of amphibian predators (edge species) into the forest interior.

Management Recommendations:

Minimize disturbed areas and protect down-gradient buffer areas to the extent practicable. Site clearing, grading, and construction activities should be excluded from the vernal pool depression and the vernal pool envelope.

Site clearing, grading, and construction activities should be limited to less than 25% of the entire vernal pool habitat (i.e., the pool depression, envelope, and critical terrestrial habitat).

Limit the area of clearing, grading, and construction by clustering development. Minimize erosion by maintaining vegetation cover on steep slopes.

Avoid creating ruts and other artificial depressions that hold water. If ruts are created, refill to grade before leaving the site.

Refill perc test holes to grade.

Use erosion and sediment control best management practices to reduce erosion. Stagger silt fencing with 20 foot breaks to avoid disrupting amphibian movements or consider using erosion control berms. Use combinations of silt fencing and hay bales to reduce barrier effects. Re-seed and stabilize disturbed areas immediately; permanent stabilization for revegetated areas means that each area maintains at least 85% cover. Remove silt fencing as quickly as possible and no later than 30 days following final stabilization.

Minimize use of silt fencing within 750 feet of vernal pools. Erosion control berms can be leveled and used as mulch or removed upon final stabilization.

Limit forest clearing on individual house lots within the developed sections of the vernal pool management zones to no more than 50% of lots that are two or more acres in size. Encourage landscaping with natural woodland, containing native understory and groundlayer vegetation, as opposed to lawn.

Silt fencing should be used to exclude amphibians from active construction areas. At construction sites encircled by a silt fence barrier will keep salamanders away from heavy machinery, excavation, and stockpiling. However, construction activities should, ideally, occur outside of peak amphibian movement periods (which include early spring breeding and late summer dispersal).

STORMWATER MANAGEMENT

Stormwater management provides an excellent example of how addressing one set of environmental issues can result in creation of other environmental impacts, as follows.

Conservation Issues:

Systems of curbs, catch basins, and hydrodynamic separators—designed to capture and treat road runoff—intercept and trap amphibians and other small animals crossing roads. These systems can also de-water vernal pools by releasing water into another watershed, or downslope of a vernal pool. The use of hydrodynamic separators which remove particulate matter from stormwater via swirl chambers can provide problematic to sustainability of small vertebrates and amphibians.

Systems of gutters, leaders, and infiltration systems designed to capture and manage roof runoff can drain wetlands if the roof water is captured and released in another watershed, or below the vernal pool area.

Systems designed to capture road and roof runoff can alter how long pools hold water by transporting additional water into the vernal pool watershed. This is especially critical in short hydroperiod pools that support fairy shrimp.

Vernal pools and other small wetlands have been inappropriately used as stormwater detention pools and biofiltration basins. These practices create a degraded aquatic environment subject to sediment loading, pollutants, and rapid changes in water quantity, quality, and temperature.

Stormwater detention basins and biofiltration ponds can serve as decoy wetlands, intercepting breeding amphibians moving toward vernal pools. If amphibians deposit their eggs in these artificial wetlands, they rarely survive due to the sediment and pollutant loads, as well as fluctuations in water quality, quantity, and temperature.

Management Recommendations:

Vernal pool depressions should never be used, either temporarily or permanently, for stormwater detention or biofiltration.

Detention and biofiltration ponds should be located at least 750 feet from a vernal pool; they should never be sited between vernal pools or in areas that are primary amphibian overland migration routes, if known.

Treat stormwater runoff using grassy swales with less than 1:4 sloping edges. If curbing is required, use Cape Cod curbing. Maximize open drainage treatment of stormwater.

Use hydrodynamic separators only in conjunction with Cape Cod curbing or swales to avoid funneling amphibians into treatment chambers, where they are killed.

Maintain inputs to the vernal pool watershed at pre-construction levels. Avoid causing increases or decreases in water levels.

Minimize impervious surfaces (i.e., surfaces that do not absorb water) to reduce runoff problems and resulting stormwater management needs. Use of grass pavers (concrete or stone that allows grass to grow) on emergency access roads and in low use parking areas is recommended. Use of phantom parking is also recommended. Zoning formulae often require more parking spaces than are actually needed. Under a phantom parking strategy, sufficient land is reserved for projected parking requirements, but only a portion of the parking area is constructed at the outset. Additional areas are paved on an as-needed basis.

Examine the feasibility (which varies by location) of reducing the road width standard to achieve conservation goals (i.e., minimize the footprints of roads). This is often done in tandem with development clustering, to reduce impervious surfaces and disturbance areas.

LIGHTING CONSERVATION ISSUES

Light spillage in wetlands and woodlands affects a diversity of wildlife species (e.g., see www.urbanwildlands.org). Recent increases in the use of security and garden lighting have intensified problems associated with light spillage. Scientific experiments and anecdotal evidence suggest that changes in lighting may affect frog reproduction, foraging, predator avoidance, and social interactions (Buchanan 2002). Buchanan demonstrated in laboratory experiments that dark-adapted frogs exposed to rapid increases in illumination may be temporarily 'blinded', unable to see prey or predators until their eyes adapt to the new illumination. Similarly, there is evidence that salamanders are strongly attracted to light (S. Jackson, University of Massachusetts, pers. comm.). This behavioral response could divert salamanders away from breeding sites; it could also make them more vulnerable to predation or road mortality during migrations. Artificial lights that emit unusual spectra may especially disrupt these migration patterns (Wise and Buchanan 2002). Research on the effects of lighting on amphibian behavior and larval development is ongoing.

Management Recommendations:

Exterior and road lighting within 750 feet of a vernal pool should use low spillage lights—those that reflect light directly downward onto the area to be illuminated. A variety of products to accomplish this goal are now on the market. Avoid using fluorescent and mercury vapor lighting.

WETLAND CREATION AND ALTERATION CONSERVATION ISSUES

Extensive structural complexity (i.e., the arrangement of different layers of trees, shrubs, and plants in a small wetland) supports a diversity of small vertebrates and invertebrates. When wetlands are altered through clearing of vegetation, impoundment of water, or dredging, the microhabitats used by many species of wildlife are changed or lost. This results in unsuitable breeding habitat for many amphibians, including vernal pool species.

Wetland creation is another byproduct of development and landscape alteration. Created wetlands are often mandated as replacement for other wetlands lost during development; sometimes, they are also incorporated as design features in a subdivision. Similar to altered wetlands, created wetlands usually lack the structural diversity, microhabitats, and hydrology to support vernal pool breeding amphibians. 25 ¾ Altered and created wetlands often support highly adaptable, widespread, "weedy" species (e.g., bullfrogs or green frogs). These species prey upon, or successfully outcompete, vernal pool-breeding amphibians, which reduces or locally eliminates populations of these habitat specialists.

Created wetlands that do not have the appropriate habitat often attract breeding amphibians. Eggs laid in these "decoy" pools often do not survive. Such pools serve to trap breeding amphibians and might result in local population declines.

Management Recommendations:

Alteration of existing conditions within vernal pools and other small wetlands should be avoided.

Creation of ponds and similar wetlands should be avoided within 750 feet of a vernal pool.

Redirect efforts from creating low value, generalized wetlands to enhancing terrestrial habitat around vernal pools. These enhancements could include reforestation of post-agricultural lands within 750 feet of a vernal pool, restoration of forest, importing additional cover objects (e.g., logs, stumps), and removal of invasive plants and animals

POST-CONSTRUCTION ACTIVITIES

After a construction project has been completed, there are long-term development issues that continue to affect vernal pools. Even projects that are designed with ecological sensitivity can cause problems over time, due to the day-to-day activities of humans. Many of these longer-term problems can be anticipated and avoided during the overall design and approval process of the project.

Conservation Issues:

Pest animals are those species that humans encourage by subsidizing food resources and fragmenting habitats. Raccoons, foxes, and skunks fall into this category. These artificially inflated mammal populations often prey heavily on vernal pool amphibians during the breeding season.

Protected areas around wetlands, over time, are intruded upon by humans. Impacts include dumping, forest clearing, dirt biking, introduction of free-ranging dogs and cats, favoring of invasive plant species, fires, collection of native wildlife, and other activities that degrade the vernal pool and its envelope.

Increased pesticide use is usually associated with suburban landscaping. These toxins often enter into the vernal pool watershed and compromise the pool's ability to serve as a breeding site and nursery for vernal pool species.

Management Recommendations:

Discourage predators by making garbage and other supplemental food sources unavailable.

Reduce predation on a wide variety of species, ranging from pool-breeding amphibians to ground-nesting birds.

Mark the edge of a protected area (e.g. the critical terrestrial habitat) with permanent markers. Well-marked boundaries make enforcement of restricted areas clear to owners and the local wetlands enforcement agency. For example, granite monuments or stone cairns could be placed every 10 feet around a protected area. In cases where intrusion is a concern, small sections of stone wall could be erected; these walls should be discontinuous, so that they do not impede amphibian dispersal. Chain link fencing is also an option, providing installation provides for adequate ground clearance for animals to traverse.

Use covenants or deed restrictions to assure that the vernal pool and its envelope are conserved and that pesticide use, lot clearing, and other degrading activities are kept out of associated areas. Assign the operators with responsibility for ensuring that conditions of the covenant or deed restriction are met. Provisions should also be included to allow a third-party, such as the town or local land trust, with adequate notice, to enter the property and conduct appropriate management and remediation, charging the owner for these services.

In the case of another type of multiple tenant arrangement, a stewardship manual could be prepared that would educate each purchaser, or lessee, as to the unique nature of the property they are purchasing or renting, what their collective obligations to protect the resource entail, and where to obtain additional assistance or information.

A conservation easement, covering at minimum the vernal pool depression and vernal pool envelope (and, preferably, including land within the "critical terrestrial habitat"), could be held by a municipality, land trust, or other non-governmental organization.

The 8-Lot subdivision map and attendant documents include covenants and restrictions as habitat protective measures. Once proposed development and site plans are reviewed, and specific uses are identified the Town of Riverhead may require additional measures to further assure habitat protection.

RESTRICTIONS ON CLEARING OF WOODLAND HABITATS FOR THE NORTHERN LONG EAR BAT

Northern long-eared bats (NLEB), also known as Northern myotis, primarily forest-dependent insectivores, once frequently detected in the forests of every county of New York State, with the exception of the 5 counties of New York City, are now listed as "threatened" by the United States Fish and Wildlife Service (USFWS) under the federal Endangered Species Act on April 2, 2015 and as such, listed as "threatened" pursuant to New York Endangered Species Law and its implementing regulations, due to the rapid decline in population. The NLEB use a diversity of forest habitats for roosting, foraging and raising young, including, dense or loose aggregates of trees with variable amounts of canopy closure, early successional habitat with small diameter trees, and may include some adjacent and interspersed non-forested habitats, such as emergent wetlands and adjacent edges of old fields. While the dramatic population decline of the NLEB is reportedly due to the white-nose syndrome (WNS), a disease caused by an invasive fungus that ultimately causes affected hibernating bats to starve to death over the winter, and not limitation or removal of habitat unless there are potentially bats within the trees during the time they are harvested or otherwise removed from the landscape, there are recommended voluntary forest management measures to protect NLEB from unintentional harm.

The Pitch Pine-Oak Forest community and other forested portions of the subject property represent potentially suitable summer foraging and/or roosting habitat for the NYS- and federally-Threatened northern long-eared bat. Correspondence dated July 20, 2020 to the Town of Riverhead from the NYSDEC indicates that agency records currently exist for mapped summer occurrence of northern long-eared bat hibernacula or roost trees at, or within 1.5 miles of the vicinity of the site. The approximately 787 acres of Pitch Pine-Oak Forest and other forested habitat at the subject property to be preserved under the CHPP represents potentially suitable summer foraging and/or roosting habitat for this species.

While correspondence from the NYNHP indicates that no agency records currently exist for northern long-eared bat hibernacula or roost trees at or in the vicinity of the EPCAL site, the FSGEIS, Findings Statement and CHPP preserve approximately 787 acres of existing Pitch Pine-Oak forest and other forested habitat, with large contiguous blocks located to the north of the eastern runway, to the south of both runways and also within the lands comprising the CPB Core Preservation Area at the western portion of the EPCAL site, all representing potential summer roosting, breeding and foraging habitat for this species.

In addition, in its earlier letter to the Town of Riverhead, dated April 13, 2016 the NYSDEC stated, "The inclusion of correspondence from the NY Natural Heritage Program (NYNHP) indicting that no agency records currently exist for the northern long-eared bat (NLEB) hibernacula or roost trees at or near the vicinity of the EPCAL site is inadequate to determine the impacts the project might have on the northern-long eared bat" This remains applicable to the portions of the EPCAL site that are not currently mapped as being within 1.5 miles of a summer occurrence. As no updated Town or new surveys have or shall be conducted, the potential impacts to NLEB habitat loss as generated by future development is unknown. Consequently, until demonstrated otherwise, the entire EPCAL

site is considered to be located within 1.5 miles of a summer occurrence of the NLEB and as mitigation, all tree cutting shall be restricted to December 1 through February 28th of any calendar year.

Moreover, any proposed clearing of forested habitat on the individual lots proposed for development would ultimately require updated NYNHP record requests in order to determine if on site records exist for northern long-eared bat hibernacula or roosts. Should such records exist, consultations and/or permitting with the USFWS regarding the proposed clearing would be necessary if prohibited incidental take of northern long-eared bat would occur.

As defined in the USFWS final 4(d) rule, incidental take of northern long-eared bat includes tree removal activities that occur within 0.25 mile of a known, occupied hibernacula or cutting or destroying a known, occupied maternity roost tree or other trees within a 150 foot radius from a maternity roost tree during the pup season from (June 1 through July 31). Any proposed activity that would result in prohibited incidental take of northern long-eared bat, as described above, would require USFWS consultation and/or permitting.

The NYSDEC provides on its website guidelines regarding clearing of trees used as habitat by the Northern Long Eared Bat

Added to these protective guidelines, specific to the EPCAL site, in order to protect NLEB from unintentional harm, the NYSDEC has required implementation of all its standard listed forest management activities, including restricting tree cutting to December 1 through February 28 of any calendar year.

Based upon this guideline, a covenant will be placed on Lots 6 and 7 that states: "For habitat protection of the Northern Long-eared Bat all tree clearing shall be restricted to the dates between December 1 and February 28 any calendar year. Any tree clearing outside of the winter hibernation period will require a separate Part 182 permit."

Please note that planning any development or tree clearing activities within ¼ mile of a hibernation area for NLEB, applicants may be required to obtain a permit from the US Fish and Wildlife Service and the DEC.

For projects that result in changes to existing land use (most land development projects):

- **Leave uncut all known and documented roost trees, and any trees within a 150 foot radius of a documented summer occurrence.**
- **Leave uncut *all* snag and cavity trees unless their removal is necessary for protection of human life and property. For the purposes of this guidance, protection of human life and property includes removal of trees that, if not removed, could result in the loss of electric service. Snag and cavity trees are defined under DEC Program Policy ONR-DLF-2 Retention on State Forests.**

If any bats are observed flying from a tree, or on a tree that has been cut, forestry activities in the area should be suspended and DEC Wildlife staff notified as soon as possible.

Incidental take resulting from tree removal within ¼ mile of a known occupied NLEB hibernacula or within 150 feet of a known roost tree during the pup-rearing season (June 1 through July 31) is prohibited.

If a project cannot follow the restrictions above, a permit from DEC under Part 182 would be required. Applications for incidental take permits are handled by regional Division of Environmental Permits offices. To be eligible for a permit, the project proponent must be able to demonstrate a net conservation benefit to NLEB as a result of their action. For information on how to apply, contact your regional DEC permit administrator.

UPDATED FIELD STUDY FOR PRESENCE OF PLANT SPECIES PROVIDING FOOD FOR THE FROSTED ELFIN BUTTERFLY

In New York State the Frosted Elfin is listed as Threatened. There are two varieties of Frosted Elfins, one that feeds mostly on the flowers or seed pods of Wild Blue Lupine (*Lupinus perennis*), and another that feeds on leaves and stems of Wild Indigo (*Baptisia spp.*), primarily the native *Baptisia tinctoria* in New York. (updated CHPP Exhibit "E")

The key habitat feature is an abundance of the food plant or, perhaps, many moderate-sized patches of the food plant within a few hundred acres or more, and associated with remnant pine barrens, oak savannas, or dry oak forest.

The grassland/herbaceous checkoff refers only to right of ways and airports not natural grasslands. There are two varieties of Frosted Elfins, one that feeds mostly on the flowers or seed pods of Wild Blue Lupine (*Lupinus perennis*), and another that feeds on leaves and stems of Wild Indigo (*Baptisia spp.*), primarily the native *Baptisia tinctoria* in New York.

Populations will feed on only of these plants or the other, even when both types of plants are present. Lupine feeders occur in the Albany area, western New York, and on Long Island, while Wild Indigo feeders occur on Long Island. Frosted elfins are not likely to be found in stands of foodplants that have been isolated for a long period of time. This species nearly always occurs in clusters of populations that function as meta-populations and small habitat patches may be unoccupied in some years.

The females disperse within the habitat and larvae can turn up in appropriate habitat where adults are not usually seen. The most typical habitats are utility right-of-ways and, at least in neighboring states, airport approach zones. A few populations of the lupine feeders occur partially in more natural settings in the Albany Pine Bush and the Rome Sand Plains.

No populations of the Wild Indigo (*Baptisia spp.*) feeders are known to occur in natural settings in New York. Typical habitat features include a shrubby or partially open aspect and a high density of the food plant, although the observations of Albanese et al. (2006) may not apply fully to the lupine feeders which seem more capable of using open grassland with no tall shrubs or trees. Nectar might also be an important habitat feature.

Associated Ecological Communities
Coastal oak-heath forest
Hempstead Plains grassland
Pitch pine-heath barrens
Pitch pine-oak forest
Pitch pine-oak-heath woodland
Pitch pine-scrub oak barrens

On July 12, 2016 representatives from the NYSDEC (Robert Marsh, Biologist) and Town of Riverhead (Jeffrey Seeman, CEP) conducted field surveys to assess habitat conditions that would identify and or support host plants. The survey found suitable conditions but did not confirm presence of Wild Indigo or Wild Blue Lupine. The 2016 NYSDEC letter prepared by Robert Marsh, NYSDEC is included in the **"Frosted Elfin Fact Sheet" as Updated CHPP Exhibit "E").**

Although not within the recommended months to conduct field inspections for Wild Indigo and Wild Blue Lupine (generally late May through August), Jeffrey Seeman recently conducted a field survey on February 18, 2020 to verify existing conditions, and document physical changes since the July 12, 2016 survey. No significant changes were noted beyond the natural transition from grassland to shrubland. One area of particular interest, which demonstrated environmental conditions could support Wild Blue Lupine and Wild Indigo was located during the July 12, 2016 survey. This area is located along the northern portions of a shrub edge habitat at the south side of the 7,000-ft. taxiway, and south of its adjacent grassland. This area has remained largely unchanged.

As was recommended after the July 12, 2016 survey, it is further recommended that field surveys be conducted by qualified persons to inspect presence or absence of Wild Blue Lupine and Wild Indigo prior to any physical land development activity. The 2016 recommendation also included that if present within developable lot areas, transplanting Wild Indigo and/or Wild Blue Lupine to "Non-Disturbed Areas" (providing such areas have suitable conditions to support successful transplanting efforts) would serve as mitigating measures. The 2016 recommendation for mitigation continues to be recommended as mitigation in order to support and encourage protection of the Frosted Elfin.

The NYS-Threatened plant slender pinweed was identified as occurring on-site in NYNHP records and is known to colonize disturbed areas within this community type. The large contiguous blocks of Pitch Pine-Oak Forest to be preserved under the CHPP represent significant potential habitat area for this plant species.

It is further suggested that the large White Tail Deer population at EPCAL may have significant adverse impacts on long term establishment of Wild Indigo and Wild Blue Lupine. One future consideration for restoration of Frosted Elfin habitat is the construction of a "sanctuary" enclosed in "deer fencing" and planted with Wild Indigo. A pilot program with along with field surveys and monitoring may offer opportunities to expand restoration efforts.

POTENTIAL IMPACTS ON EPCAL GRASSLAND BIRDS DUE TO CHANGES IN THE POTENTIAL USE OF THE EASTERN AND WESTERN RUNWAYS ON THE PROPERTY FOR NON-COMMERCIAL AVIATION

Grassland and grassland birds did not exist on the EPCAL site in the 1800's through and until the mid-1950. Instead, as reflected and more fully detailed in the analysis Grassland Birds and Aviation Use made part of Consistency Analysis Update, the EPCAL site was densely wooded (or referred to in the 1998 NEPA/FEIS study as "forested"). While there was evidence of dramatic decline in grassland bird species throughout the northeast during the 1950's through 1980's, with some species such as upland sandpiper, bobolink, dickissel, grasshopper sparrow, savannah sparrow, and Henslow's sparrow each declining by 94 to 98 percent with New York, upland sandpiper, grasshopper sparrow, vesper sparrow, and Henslow's sparrow listed as Species of Special Concern , the removal of the forest to make way for construction of the NWIRP, including, buildings and runways, created a new potential habitat for grassland birds. During operations, manufacturing of aircraft, testing of military aircraft manufactured on-site, together with testing of military aircraft manufactured off-site and testing of commercial aircraft at EPCAL, the newly created grasslands along the runways and taxiways with thousands of flights per year did attract a variety of grassland birds, including bobolink, grasshopper sparrows, meadowlark, vesper, and upland sandpiper.

While there exists some natural (i.e. Montauk Downs: Lee Kopplemen Nature Preserve and Montauk County Park;) and manmade grasslands (i.e. East Hampton Airport) on Long Island that boast large expansive tracts of grassland that serve as habitat for grassland birds, EPCAL has been identified by the NYSDEC and the Nature Conservancy (TNC) as the one of the last remaining potential habitats for grasslands birds offering large non-fragmented grasses with diversity of habitat (grassland, woodlands mature and young, wetlands) necessary to support a diversity of grassland birds, including eight avian species that are listed as Endangered, Threatened or Special Concern species in New York State. The disturbance that has maintained these grasslands and prevented succession to later ecological stages has been historic maintenance of the runway areas in the form of periodic mowing by Grumman as part of its effort to maintain "clear zones" or flight safety zones along the runways.

Currently, however, the grasslands are not actively managed, and there is no long-term management plan in place. In the absence of periodic management, colonization by shrub and tree species from surrounding wooded communities would result in succession to later ecological stages (i.e., shrubland and forest) and the incremental loss of grasslands from the subject property, thus rendering the site unsuitable as habitat for grassland specialist birds.

The existing CHPP provides for a 583.0 acres of grassland habitat to be preserved on the area of EPCAL that now constitutes Lots 6, 7, and 8 of the 8-Lot Subdivision. If future development causes the loss of existing grassland habitat, new grassland habitat would have to created so that at least 583.0 of grassland habitat will be ultimately preserved on what is now Lots 6, 7 and 8.[4] To preserve this acreage as grassland habitat, the CHPP requires that these grassland habitats be actively maintained, as opposed to developing into shrublands and ultimately woodlands through the process of ecological succession that would occur in the absence of a maintenance plan.

Exhibit "D" (three map sections) of the updated CHPP highlights (pale green overlay) existing grassland habitats onto the proposed 8-Lot Subdivision. As can be seen from the Exhibit, the eastern and western runways and their associated taxi ways are adjacent to existing grassland habitats. As noted above, the 50-Lot subdivision plan provided for the western runway and the southern 3,000 feet of the eastern runway to be converted to grassland. During the review process of the 50-Lot subdivision, the FSGEIS revised the 50-Lot subdivision map by eliminating the proposed conversion of these runways, leaving them both available for noncommercial aviation use. The 8-Lot Subdivision likewise retains the two runways for potential future noncommercial aviation use.

Due to the runways and taxiways close proximity to grassland habitats, at the NYDEC's request, the applicant has undertaken a detailed study of the potential impacts on EPCAL grassland birds due to changes in the potential use of the runways on the property for non-commercial aviation. The study labeled "Grassland Birds and Aviation Use" examines and details the literature on this subject which has examined the potential impacts from noise and other disruptive factors on roosting, mating and The CDA's full study is contained in the SEQRA Consistency Analysis Update submitted herewith as Exhibit 13 at pages __ through __. This study details the literature on this subject matter that examined whether potential noise and other possible disruptive activities of at major airports have adversely impacted grassland birds populations.

As detailed in the CDA's study, as grassland habitats have been disappearing due to natural succession, airports have and continue to be a major provider of grassland habitats. As was the case when the runways at EPCAL when Grumman was in operation, airports maintain grassland to prevent growth of shrubs and trees that would interfere with their operations. There is evidence and ample studies that demonstrate the importance and key role grasslands at high traffic airports play in preservation, even population increases, in grassland birds. That these habitats continue to sustain grassland bird populations to flourish lead to the conclusion that these populations are not adversely affected by the noise associated with aircraft take-offs and landings. Indeed, the prior studies show that grassland habitats adjacent to runways support grassland bird's foraging, nesting and breeding are enabling population increases of the grassland birds designated as threatened, endangered and species of special concern.

[4] This requirement is also incorporated in the SEQRA Supplemental Finding Statement (see page 48). The Findings Statement is Exhibit 4 to the Application submittals.

These findings will apply equally, if not more so, to the grassland habitats adjacent to the eastern and western runaways since it is beyond any doubt that that aviation use of the EPCAL property will never rise to the level of the major commercial airports or to the level when the property was owned by the Navy and operated by Grumman. Nor will the potential aviation at the EPCAL property that would be allowed once subdivided ever rise to the level contemplated in the post-Grumman reuse plans adopted by the Department of the Navy in conjunction with the transfer of the EPCAL property to the Town of Riverhead CDA. In addition and as recited below, any potential aviation use will adhere to the stormwater management and deicing procedures set forth herein.

In conclusion, to the extent that the 583 acres of grassland habitat required to be preserved on lots 6, 7, and 8 are located adjacent to the runways and taxi-ways, they will still provide a suitable habitat for the grassland birds.

As noted above, the CHPP's detailed requirements for maintaining the grassland habitat remain in full force and effect with respect to the 8-Lot Subdivision. As part of the approval process for any proposed development of Lots 6 and 7, the future developer will be required to provide suitable security to ensure that the grassland management plan will be maintained into perpetuity.

STORMWATER MANAGEMENT FUELING, MAINTENANCE AND AQUATIC HABITATS

All proposed development will require review and approval of Stormwater Pollution Prevention Plans (SWPP) as a component of the Town of Riverhead's site plan review process. During this site specific review period, it will be determined how each proposed land use will be classified pursuant to **State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity** (GP-0-17-004) (issued pursuant to Article 17, Titles 7, 8,and Article 70 of the Environmental Conservation Law, effective July 23, 2020) for discharges to surface waters, and whether specific permit conditions are applicable. For aviation the applicable SPDES requirements are classified under Operations of Air Transportation and described under Sector S in Part III of GP-0-17-007 (Updated CHPP Exhibit "H") (See also updated CHPP Exhibit "F" and "G").

As per Riverhead Town Code for EPCAL's adopted zoning under the Planned Industrial Park zoning use district (PIP) (Updated CHPP Exhibit "J") 301-185 Uses- there are limitations placed on aviation use and operation. The PIP area of the site (Camelot Subdivision area) cannot be used as a passenger or commercial aviation facility where aircraft fuel is available. Typical aircraft requirements including fuel and maintenance are only permitted on aircraft that is owned or leased and customarily incidental and subordinate to a permitted use of property within the PIP District:

Section 301-185 (10) Operation, fueling, storage and maintenance of aircraft which are owned, leased or operated by an owner, lessee or operator in furtherance of and customarily incidental and subordinate to a permitted use of property within the PIP

District, and further provided that such aircraft are stored or maintained within enclosed buildings, and, when not within enclosed buildings, are suitably screened to an extent that provides adequate sound and visual buffers as may be determined to be necessary by the Town Board as part of site plan approval and, when necessary, subject to the grant of a runway use agreement and consistent with the rules and regulations on the use of the runway as adopted and/or amended from time to time. Except when accessory to a principal aviation use set forth hereinabove at Subsection A (6) and (7), this accessory use shall not in its operation constitute or function primarily as an aviation activity.

Section 301-185 (11) Testing of aircraft, provided said testing is done in furtherance of and customarily incidental and subordinate to a permitted use within enclosed buildings or on the ten-thousand-foot runway and, when necessary, subject to the grant of a runway use agreement and consistent with the rules and regulations on the use of the runway as adopted and/or amended from time to time. Except when accessory to a principal aviation use set forth hereinabove at Subsection A(6) and (7), this accessory use shall not in its operation constitute or function primarily as an aviation activity.

Within the Planned Development (PD) **(updated CHPP Exhibit "K")** zoning use district Section 301-341 Use Regulation:

Although this article has been established to emphasize building form more than use, the following use regulations shall apply to uses in the PD District:

A.

Principal uses. All uses that promote economic development shall be permitted in the PD District, including, but not limited to, industrial; institutional; educational; governmental; recreational; conservation; manufacturing; renewable and alternative energy resources (including generation and distribution of such energy resources, storage and demand response resources); commercial, except for those commercial uses described as retail, personal service and restaurant and deemed supportive pursuant to § 301-341B(2) below, and the development of public facilities, utilities, and infrastructure necessary to support those uses. Notwithstanding the above, the following industrial, manufacturing and commercial uses shall be prohibited: garbage disposal dumps, landfills, incinerators or transfer stations; gas stations and gas manufacture from coal, coke, or petroleum; **petroleum and/or kerosene distillations or refining and storage facilities,** sand, gravel, mineral quarrying and mining; motor vehicle, boat, and equipment dismantling, wrecking, and compacting; outdoor sale or storage of motor vehicles, boats, and equipment except by special permit of the Town Board and subject to the following minimum standards: Outdoor storage must be incidental and supportive to the principal use and building(s); outdoor storage may not exceed one third the size of the principal building(s); outdoor storage must be located on the same lot as the building(s) for principal use; outdoor storage areas shall be visually screened and landscaped from public view, roadways, and adjacent properties; manufacture, warehousing, wholesaling, sale and storage of hazardous, dangerous, explosive material, including ammunition, acids, and any use which generates offensive noise, vibration, dust, smoke, gas or other nuisances shall be prohibited.

As per Town Code, fuel storage and fueling of aircraft is limited because these operations are only permitted as an accessory activity to the primary use. Fuel storage shall comply with Article 12 of the Suffolk County Department of Health Services, and NYSDEC petroleum storage tank and spill response requirements. Applications for aviation related operations shall require the developer(s) submit an Emergency Response Plan (ERP) describing fuel storage and fueling operations inclusive of spill prevention and spill response procedures. The Town of Riverhead Office of the Fire Marshall, **NYSDEC Region One** and Suffolk County Health Department Services shall coordinate the review of the ERP.

Offsite storage of fuels will be encouraged unless onsite storage of fuels is necessary. The following inspection form will provide daily fuel storage monitoring.

Daily Fuel Farm Inspection

Quality Control Items	Condition	Initials
1. Check storage tank sumps or low points for water as per the "clear and bright" test. If water is present, drain tank to remove water and check again for "clear and bright." Record observations.		
2. Check sumps of filters under pressure, filter/separators for water as per the "clear and bright" test. If water is present, drain tank to remove water and check again for "clear and bright." Record observations.		

Equipment Inspection	Condition	Initials
1. Hoses and fittings		
2. Nozzles and couplings		
3. Bonding/grounding cables		
4. Fire extinguishers		
5. Leaks		
6. Cleanliness of equipment		
7. Credit card transaction machine: cover on		

Inventory	Numbers	Initials
1. Opening stick height		
2. Pump l begin meter		
3. Pump 2 begin meter		

Date:_____ Time: _____

Employee Signature: _____

Training of fuel operations is an important requirement to minimize adverse impacts. According to the FAA Advisory Circular (AC) No. 150/5230-B:

Subject: Aircraft Fuel Storage, Handling, Training, and Dispensing on Airports	Date: 9/28/2012 Initiated by: AAS-300	AC No: 150/5230-4B Change:

Application. This AC provides an acceptable means of complying with Title 14 Code of Federal Regulations (CFR) part 139 (hereinafter referred to as Part 139) for all Part 139 airport operators. Although non-certificated airports are not required to develop fuel standards, the FAA recommends these airports use the guidance contained in this AC to develop such standards for the continued enhancement of aviation safety.

Addendum of Authorized Fuel Safety Training Courses. The Federal Aviation Administration (FAA) regards instructional programs that provide line service and supervisory training, as required by 14 CFR §139.321 (e) (1) and (2), as critical to safety on airports.
To ensure this training is complete and effective, the FAA has determined that:

a. Third-party training providers who provide line service training and/or supervisory training of line service personnel must submit their training syllabus to the Administrator for review and a determination of its acceptability.

b. Airport and Tenant Fueling Agents who provide line service training for other than their own airport employees and/or supervisory training of line service personnel must submit their training syllabus to the Administrator for review and a determination of its acceptability.

c. Training syllabus (syllabi) should be submitted to:

Federal Aviation Administration
Manager, Airport Safety and Operations
Attn: Fuel Safety Training

800 Independence Ave SW
AAS-300, Room 618
Washington DC 20591

Aircraft owners must be permitted to fuel, wash, repair, and otherwise take care of their own aircraft with their own personnel, equipment, and supplies. At the same time, the sponsor is federally obligated to operate the airport in a safe and efficient manner. **(updated CHPP Exhibits "M, "N" and "O").**

The EPCAL site is intentionally not mapped on aeronautical charts as a fueling facility for aircraft. Requests for aircraft fueling (other than aircraft as accessory use) will be directed to other area airports for fuel.

Emergency response requirements include the Town of Riverhead's future location of fire and ambulance services at the "Grumman" aerospace museum parcel on NYS Route. 25. The proposed plans will provide for emergency responders to address the needs at EPCAL for aviation related and general industrial use needs. As stated in the Town of Riverhead's GEIS, the area is served by the Manorville and Wading River Fire Districts, Riverhead Town Police Department and Riverhead Volunteer Ambulance services. During site plan review of proposed development each application will be assessed with respect to its potential impact on emergency services, and mitigating measures applied when needed. In addition, site specific emergency response plans must be submitted by the applicant to assure onsite personnel are trained, emergency spill equipment (booms, stormwater drain dams, etc.) is adequate for the intended land use. The Town of Riverhead will coordinate review of EMS plans with the NYSDEC, SCDOH and other involved agencies. All applicants shall comply with Section 301-339 of the Riverhead Town Code (**bold** sections is relevant to protection of natural resources and mitigation of emergencies associated with fueling):

§ 301-339. Development procedures and process.
Recognizing the importance of comprehensive redevelopment of the lands in the EPCAL Property in accordance with the aforesaid Reuse and Revitalization Plan, which may be updated from time to time, the provisions of this article and "An Act in relation to a plan for the development of the Enterprise Park at Calverton," signed into law October 23, 2013:

A. The development of any lands within the PD District shall require the submission of a site plan application that conforms to the requirements of the Reuse and Revitalization Plan and is subject to Town Board site plan approval pursuant to Town Code of the Town of Riverhead, Chapter 301, § 301-303A. Notwithstanding anything to the contrary set forth in Chapter 301 and pursuant to Municipal Home Rule Law and consistent with General Municipal Law Articles 15 and 15A and "An Act in relation to a plan for the development of the Enterprise Park at Calverton," signed into law October 23, 2013, as permitted principal uses require site plan approval and residential use must be supportive of a permitted principal use, the Town Board shall be vested with review and approval jurisdiction for all principal and supportive uses, including residential.

B. As part of site plan review and approval process by the Town Board, the Town shall refer the application to all relevant state and local agencies within 10 days of a complete application as required pursuant to § 5(2) of "An Act in relation to a plan for the development of the Enterprise Park at Calverton," signed into law October 23, 2013. In addition, at any time after submission of an application, the Town Board may refer the application to the Planning Department or Planning Board for report and recommendation.

C. Prior to the submission of a site plan application, the applicant shall meet with the Town Board or Planning Department to determine Zoning Code compliance, general engineering suitability and aesthetic compatibility. The plan shall be prepared by a New York State licensed landscape architect, land surveyor, architect or engineer and shall include such drawings as shall clearly present those structural, topographical and design features that the Town would require to evaluate the proposed construction, addition, reconstruction or alteration. The goal of the pre-submission conference shall be a site plan acceptable and complete for formal application pursuant to § 301-306 and review pursuant to § 301-305C. Note: Section 301-305B shall not be applicable and as such, no preliminary site plan application and/ or approval shall be required.

D. Any resolution of approval or conditional approval issued by the Town Board shall be subject to § 5(2) and (3) of "An Act in relation to a plan for the development of the Enterprise Park at Calverton." **To the extent required, the applicant shall obtain all approvals, licenses, and/or permits required from other governmental agencies having jurisdiction over the proposed development.**

E. Notwithstanding anything to the contrary above, the Town Board may adopt by resolution such other guidelines or procedures deemed necessary and appropriate to effectively and efficiently initiate, review and complete site plan process.

EPCAL PROPOSED RUNWAY/TAXIWAY DEICING PROCEDURES

The NYSDEC also requested that this Update address mitigating potential impacts deicing could have on the grassland and other habitats at EPCAL. The SEQRA Consistency Analysis Update submitted herewith provides a detailed analysis of potential impacts on the habitats from deicing and requires that any plan for development which includes an aviation use requiring or even potentially requiring use of deicing, shall require applicant to undertake supplemental environmental review to incorporate appropriate mitigating measures to avoid or minimize adverse impacts on habitats.

With regard to aviation deicing activities, the Administrator of the U.S. Environmental Protection Agency (EPA) has signed for publication in the Federal Register technology-based effluent limitations guidelines and new source performance standards to control discharges of pollutants from airport deicing operations. The requirements generally apply to wastewater associated with the deicing of airfield pavement at primary airports. The rule also establishes new source performance standards for wastewater discharges associated with aircraft deicing for a subset of new airports. EPA expects this

regulation to reduce pollutant discharges by at least 16 million pounds per year, at an annual cost of about $3.5 million.

Airlines and airports conduct deicing operations on aircraft and airfield pavement to ensure the safety of passenger and cargo flights. In the absence of controls, deicing chemicals are widely dispersed causing pollutants to enter nearby rivers, lakes, streams, and bays.

Effluent guidelines are national regulations that control the discharge of pollutants to surface waters and to publicly owned treatment works. EPA issues effluent guidelines for categories of existing sources and new sources under Title III of the Clean Water Act to control pollution from these sources. The guidelines are based on the performance of treatment and control technologies. These guidelines are implemented in discharge permits issued by states and EPA regional offices under the National Pollutant Discharge Elimination System. Existing and new primary airports with 1,000 or more annual jet departures ("non-propeller aircraft") (i.e. 1,000 departures equals four (4) departing flights per day/per (5) five-weekdays per year) that generate wastewater associated with airfield pavement deicing are to use non-urea-containing deicers, or alternatively, meet a numeric effluent limitation for ammonia.

New airports with 10,000 annual departures located in cold climate zones are required to collect 60 percent of aircraft deicing fluid after deicing.

Airports that discharge the collected aircraft deicing fluid directly to waters of the U.S. must also meet numeric discharge requirements for chemical oxygen demand. The rule does not establish uniform, national requirements for aircraft deicing discharges at existing airports.

(Source: United States Office of Water EPA-821-F-12-002 Environmental Protection Agency 4303T April 2012).

Aviation use operators will comply with the **State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity** (GP-0-17-004) (issued pursuant to Article 17, Titles 7,8,and Article 70 of the Environmental Conservation Law, effective July 23, 2020) for discharges to surface waters.

Water quality necessary to avoid disruption of eastern tiger salamander populations as well as other amphibians sensitive to changes in surface water chemistry will be determined during the permit application and review process. Operations of air transportation is described under Sector S in Part III of GP-0-17-007 **(updated CHPP Exhibit "H").** As required, water quality effluent limits will conform to Sector S "Air Transportation" for specific SPDES permit requirements.

EPCAL PROPOSED AIRCRAFT DEICING PROCEDURES

The proposed aviation use will include a diked deicing pad, where aircraft will undergo deicing procedures. These procedures typically involve a tanker truck with a discharge pump and spray equipment to apply the deicing fluids. The deicing fluids are applied to the aircraft with overspray and runoff collected within the diked pad and discharged through a closed system designed for stormwater/deicing product wastewater collection.

The diked deicing containment pad directs surface flow to stormwater collection inlets that discharge (by gravity or a force main) to underground (UST) or above ground storage tanks (AGST). For example this would include a series of three (3) interconnected 20,000 gallon AGST, where Tank-1 includes an overflow device to Tank-2 and Tank-2 can overflow to Tank-3. The collection system includes double walled tanks and piping similar to UST systems approved for Suffolk County gas stations. The actual engineering designs will be prepared by the developer/aviation operator and shall require review by the Town of Riverhead and likely the Suffolk County Department of Health Services. In 2011, the Town of Islip Mac Arthur Airport, Ronkonkoma, NY upgraded its UST fuel storage system to above ground storage tanks. The former fuel storage USTs were cleaned, coated with epoxy and used as stormwater control devices. In much the same way aircraft deicing effluents will be collected and stored in tanks, then removed and disposed of at an approved recycling facility.

A vacuum truck is used to empty the tanks and transport the effluent to an approved industrial waste water disposal facility, or to a recycling facility where the mixture is refined and typically resold as windshield washing fluid.

Common liquid aircraft deicing products include mixtures of methylene glycol or propylene glycol (anti-freeze). Each of these compounds contain 1,4-Dioxane, an emerging groundwater contaminant.

The USEPA has determined 1,4-Dioxane is a likely human carcinogen and has been found in groundwater at sites throughout the United States. The physical and chemical properties and behavior of 1,4-dioxane create challenges for its characterization and treatment. It is highly mobile and does not readily biodegrade in the environment.

The US Navy has been conducting groundwater monitoring and remediation programs at the 2,900-acre former Grumman facility for two decades at parcels it retains.

Recently, test wells have detected the presence of emerging contaminants: 1,4 dioxane and PFAS in proximity to several Navy remediation sites. The Navy remediation sites are located west of the eastern runway identified on the subdivision map as Navy Parcels A & B. Each of these parcels are excluded from the 8-Lot Subdivision Map. The subject lots are described as Parcel A (SCTM # 600-135-01-007.1) comprised of 30.559 acres and Parcel B (SCTM # 600 135-01-007.2) comprised of 168.902 acres. Each of these lots are retained by the US Navy.

Therefore it is essential that aircraft deicing products be properly managed and controlled. It is recommended that deicing products be stored indoors, in a secured facility

that is designed for spill containment. Application to aircraft must avoid sensitive habitat areas located along the 10,000 foot taxiway/runway. Emergency spill containment kits, proper personnel training, and installation of groundwater monitoring wells along a diked aircraft deicing pad will provide both emergency response and long term monitoring.

EPCAL PROPOSED RUNWAY/TAXIWAY DEICING PROCEDURES

Formate salt-based deicers are used in areas where strict controls are in place to minimize negative impacts on the environment. It is presumed, runway and taxiway areas will be deiced using formate salt (potassium formate KHCO2) based deicers, beet juice and brine. The runway and taxiway sheet runoff generated during de-icing, snow melt and rainfall events will be conveyed to the Drainage Reserve Areas. The concentration of salts in this stormwater may have minor impact on the grasses located immediately adjacent to the paved areas. Within these existing grass areas, phyto-toxicity is expected to be a temporary impact. Minor impacts are expected because the dominant grass plants (big bluestem, little bluestem, panicum, and fescue) are dormant during the winter months, have deep roots that aid in protection from salts concentrated in the runoff, and will likely recover in the mid-to-late spring as increased precipitation "flushes" the salt through the sandy and sandy-loam soil profile. Therefore no long term adverse impact to local vegetation is expected.

In the past, urea was used as a deicing agent for airport tarmacs. Because urea has a significant negative impact on the environment, it was replaced with chloride and acetate deicers. Now formate based deicers are considered better for the environment and have become the deicer of choice for many airports globally.

Advantages of formic acid for runway deicing:

- Readily biodegradable
- Lower Chemical Oxygen Demand (COD) compared to acetates
- Ice-melting even at very low temperatures
- Can be formulated to meet the AMS 1435 for runways

10,000 LF RUNWAY/TAXIWAY: POTENTIAL IMPACTS OF DE-ICING ON EASTERN TIGER SALAMANDER PONDS AND FRESHWATER WETLANDS

There are four (4) known freshwater wetlands are located in the Camelot II Subdivision (filed map no. 11500 dated March 9, 2007). The wetlands are inclusive of eastern tiger salamander habitat protection areas that lie within Lot 7 and are located along the west side of the 10,000 LF taxiway. At least one of these wetlands is a small breeding pond for eastern tiger salamander. The habitat protection areas (Non-disturbance Buffer Areas A and B) overlap the 10,000 LF taxiway/runway area and may be impacted by taxiway/runway deicing programs.

Field inspections of the wetlands had been conducted previously by this environmental analyst and others including NYSDEC staff biologists. During March 5-11, 2020 multiple field inspections were conducted by Jeffrey Seeman, CEP to record existing

conditions and record observations relevant to potential deicing impacts on freshwater wetlands and known eastern tiger salamander habitat areas. (One of the previously identified freshwater wetlands was not accessible due to construction activities and fencing). Surface water was observed in three wetlands, and photographs were taken of each. The wetlands are receiving areas for stormwater runoff generated by the existing onsite conveyance system. The drainage areas include the paved runway and taxiway, along with grassland areas that separate the runway from the taxiway.

Field observations noted that ground surface elevations of the paved taxiway/runway are higher than the ground elevation of the median area grassland and higher than the ground elevation grassland area located east of the runway. It is expected that sheet flow from the crowned runway is distributed towards the east grassland, the median grassland and conveyed toward the wetlands via discharge outlets. This discharged stormwater flows along manmade (now naturalized) vegetated swales (approximately 15-foot wide), with final discharge to the freshwater wetlands.

Groundwater elevations in the area recorded from soil borings indicate these wetlands are also supported by groundwater. Seasonal variations in wetland/surface water elevations (ecologically defined as seasonally flooded freshwater emergent wetlands and freshwater forested wetlands) are attributed to groundwater and stormwater discharge. The conditions observed are indicative of eastern tiger salamander habitats and breeding areas. These freshwater wetlands are typical of coastal plain ponds and vernal pools.

According to studies **(updated CHPP Exhibit "F")** amphibians are sensitive to water body salinity variation, particularly sensitive to acetate based de-icing agents, and to variations in water pH. The deicing agents can damage adult amphibians, and severely damage egg masses and young development stages of offspring (tadpoles). In addition to deicing for runway/taxiway areas, an expected increase in the EPCAL's impervious surface areas from post development (buildings, internal roadways and parking fields) infrastructure will increase surface runoff, decrease existing natural vegetated detention areas and potentially generate greater stormwater volumes and flow rates.

During engineering reviews of any proposed development for EPCAL, the stormwater control designs must account for the existing freshwater wetland systems (i.e. stormwater receiving areas), and mitigation must be employed to avoid impacts from stormwater discharges containing sediments, urban generated pollutants, maintenance and industrial products.

The actual influence on the wetlands and eastern tiger salamanders generated by runway/taxiway deicing can, at this time only be theoretical. There is significant natural vegetation within the drainage ways to detain and remediate stormwater quality. The existing drainage system behaves as a large bio-swale or rain garden, and may result in its own from of deicing agent mitigating measures.

10,000 LF RUNWAY/TAXIWAY: MITIGATING MEASURES FOR POTENTIAL DEICING AND STORMWATER MANAGEMENT IMPACTS ON EASTERN TIGER SALAMANDER PONDS AND FRESHWATER WETLANDS

The mitigating measures are recommended to avoid or minimize impacts to stormwater discharge receiving waters that support EPCAL's freshwater wetlands and or support eastern tiger salamander habitat and breeding areas. The proposed mitigation is offered in order of hierarchy with the most intensive method listed as item 6. The key component of this mitigation is water quality monitoring. The monitoring shall include establishing a baseline for existing conditions for specific chemical compounds and physical components at each of EPCAL's surface water resources. Albeit generic in nature these mitigating measures will require aviation use operators comply with the **State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity** (GP-0-17-004) (issued pursuant to Article 17, Titles 7,8,and Article 70 of the Environmental Conservation Law, effective July 23, 2020) for discharges to surface waters. Water quality necessary to avoid disruption of eastern tiger salamander populations as well as other amphibians sensitive to changes in surface water chemistry will be determined during the permit application and review process. Operations of air transportation is described under Sector S in Part III of GP-0-17-007 (updated CHPP Exhibit "H"). As required, water quality effluent limits will conform to Sector S Air Transportation as cited below and to specific SPDES permit requirements:

Industrial Activity	Parameter	Effluent Limit
Urea as deicing from airfield:	Ammonia as Nitrogen	14.7 mg/L
100,000 gal. gycol based & outfalls: Deicing/anti-icing chemicals:	Benchmark Monitoring Requirements (deicing Table VII S-12)	
	BOD	30.0 mg/L
	COD	120.0 mg/L
	Total N	6.0 mg/L
	pH	6.0-9.0 s.u.

The Water Quality Monitoring Program will include sample points within the stormwater collection system which to date is undefined, with no formal engineered design plan. Sample collection locations are recommended to include upstream leaching pools and lysimeters for "first flush" samples, and downstream stormwater sample collection points (swales, diversion channels, rain gardens, culverts, etc.) to assess water quality. Groundwater monitoring wells are located throughout the EPCAL site and may provide additional information regarding water quality, however the focus of monitoring must be on the discharge of stormwater. Once water quality thresholds are established; if a parameter exceeds the threshold, protocols will define required action. Examples of responses may include additional water sampling to qualify laboratory results, continued

monitoring, re-direction of stormwater discharge to avoid adverse impacts to receiving waters. In lieu of a more detailed and comprehensive plan based on specific stormwater control designs and a CAT "engineered site plan" the following are listed as actions that will be undertaken if deicing compounds in stormwater runoff exceed an established threshold or by design, discharge to receiving waters can be shown to avoid the potential for impact. If no actions taken result in protecting water quality from deicing applications to an acceptable level, then use of the eastern runway/taxiway (10,000 LF) will be temporarily suspended due to ice. This procedure will protect aircraft, aircraft crew, and water quality. Once the runway is determined safe for use and no deicing is required, the runway will be reopened.

1. Water Quality Monitoring Program: It is recommended that water samples be collected from the wetland areas to establish existing water quality. As a minimum, laboratory analyses should include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, electric conductivity, turbidity, ammonia as nitrogen, total nitrogen, BOD, COD and pH. This information can be used to establish a pre-development water quality baseline. Additional water quality samples should be collected and analyzed quarterly as a long term stormwater/freshwater wetland water quality monitoring program. The monitoring program will provide necessary information on what impacts general development and deicing may or may not have on the freshwater wetlands and eastern tiger salamander habitats, and mitigating measures introduced to minimize or avoid adverse impacts. Guidance thresholds, action levels and required responses will be determined for specific EPCAL development, use(s) and locations within the site to avoid and or minimize impacts to receiving water that support freshwater wetlands and eastern tiger salamander breeding. Discharges to all surface water shall conform to specific requirements under the **State Pollution Discharge Elimination System (SPDES) Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity** (GP-0-17-004) and for aviation related uses as specified under Section S-Air Transportation.

2. Prepare and Implement Best Management Plan: The operator/owner of the site shall develop a plan of best management practices including to the maximum extent practicable prescribed recommendations of the Best Management Practices Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States, Calhoun, A. et al. The BMP shall be submitted to the Town of Riverhead to demonstrate how surface water quality and aquatic habitat protection will be implemented. The BMP shall be reviewed by the Town with coordinated review by NYSDEC prior to site plan approval and construction permit procurement by the applicant for proposed development activities.

3. Infrastructure Design: Infrastructure design shall comply with the NYSDEC guidance document for protection of eastern tiger salamander, especially engineered stormwater control and management systems along with parking field and roadway designs and their attendant drainage systems. These drainage designs

require mitigating measures to control water quality that is discharged via the existing EPCAL infrastructure to surface waters and freshwater wetlands. Additional Best Management and House Keeping programs listed in the SPDES MSGP (GP-0-17-004) and Sector S-Air Transportaion, control structures including sediment basins and diversion channels are anticipated along with bioengineered drainage swales and rain gardens. Emergency response plans must be included with engineered stormwater control/stormwater quality management plans to address potential for spills of industrial/commercially used compounds that may result in water quality impairment. Spill containment and diversion of stormwater to prevent conveyance to freshwater wetland habitats must be required.

4. **Emergency Response Plans (ERP) must be included with engineered stormwater control/stormwater quality management plans to address potential for fuel spills and industrial/commercially used compounds that may result in water quality impairment. Spill containment and diversion of stormwater to prevent conveyance to freshwater wetland habitats must be required. The ERP shall be included with all site plan applications proposed at EPCAL with coordinated reviews conducted by the Town of Riverhead Fire Marshall, Planning Department, Suffolk County Department of Health Services and NYSDEC.**

5. Infrastructure Maintenance: During future stages of EPCAL's proposed development related stormwater control systems, an infrastructure maintenance plan must be implemented. The plan shall describe inspection and maintenance of the site's stormwater control system.

6. Runway/Taxiway Winter Maintenance: Snow removal and placement of sand (for traction) at the 10,000 LF runway/taxiway areas would be permitted, but deicing by chemical treatments would cease.

7. Alfalfa Pellets: Alfalfa pellets can be used as deicing agents. It provides low concentrations of nitrogen, (similar to use of urea), with less environmental impact.

8. Runway/Taxiway Closure: To minimize and/or avoid adverse impacts to freshwater wetland and amphibians, especially tiger salamander breeding periods, protection of eggs and young offspring development: restrict use of the 10,000 LF runway and taxiways during ice events. The airport manager would provide a notice to aircraft that the runway is closed.

If a future developer intends to use deicing, but none of the above actions (or other actions adopted by the developer during the approval process) result in protecting water quality from deicing applications to an acceptable level, then use of the eastern runway/taxiway (10,000 LF) would be temporarily suspended due to ice. This procedure will protect aircraft, aircraft crew, and water quality. Once the runway is determined safe for use and no deicing is required, the runway would be reopened.

IMPACTS OF DEICING ON BIRDS AND GENERAL WILDLIFE

Birds tend to confuse deicing pellets with seeds and through ingestion can suffer sever impacts of toxicity. General wildlife at the site active during the winter (deer, fox, rabbit, etc.) may also ingest the deicing pellets or more frequently ingest water from puddles that contain deicing chemicals. Alternatives to de-icing pellets include spreading sand along the runways to increase friction, and the use of liquid based deicing applications.

The aforementioned mitigating measures for eastern tiger salamander and freshwater wetland protection can be employed throughout the EPCAL site for general protection of bird species together with general wildlife. The site's development will include undisturbed areas where onsite and offsite water resources will not be impacted by development. These water resources will provide opportunities for birds and general wildlife to access undisturbed surface water.

New York State Department of Environmental Conservation. 2010 Guidance for Land Cover Set Aside for Conservation of the Eastern Tiger Salamander that infringe upon or abut 1,000-foot eastern tiger salamander breeding pond buffer zones. Covenants and restrictions for the fencing will be required during the site plan review process. Based upon the foregoing no loss of, or physical disturbance to, the ten aforementioned breeding ponds would occur under the CHPP, and surrounding upland habitat for eastern tiger salamander would be preserved as well.

As the CHPP provides for the preservation of all wetland and aquatic habitats and adjacent upland areas located at the site, protection of breeding and non-breeding habitat for the five NYS Special Concern amphibian or reptile species documented at the subject property (marbled salamander, eastern spadefoot toad eastern box turtle, spotted turtle and eastern hognose snake) would also be accomplished. Additionally, the NYS Special Concern snake species eastern worm snake has been documented in the vicinity of the subject property and may also occur on-site, particularly within moist forested areas near water features. If present at the site, potential on-site habitat protection for this species would also be afforded by the CHPP through the preservation of wetlands and adjacent habitats.

Finally, by preserving all on-site wetland/aquatic habitats, the CHPP would also preserve any potential habitat for the seven NYS-listed wetland-adapted plants for which on-site records exist (coppery St. John's-wort, comb-leaved mermaid-weed, small floating bladderwort, short-beaked beakrush, rose coreopsis, Nuttall's lobelia and Wright's panic grass).

Conclusions

The EPCAL site supports six distinct upland communities and ten National Wetland inventory (NWI) wetland/aquatic habitat categories. A total of 16 wildlife species and eight plant species listed by New York State as "Endangered," "Threatened," "Special Concern" or "Rare" have been documented as occurring at or in the vicinity of the subject

property. Based upon consultations with the NYSDEC, this revised CHPP has been prepared in order to mitigate impacts to the six aforementioned habitats related to the proposed 8 Lot subdivision of land.

The CHPP provides for 583 acres of grasslands, all of which would be maintained as a grassland preserve. The grasslands would be managed under NY Audubon/NYSDEC BMPS as a habitat for grassland birds and other wildlife species, including the NYS-Endangered short-eared owl, the NYS Threatened northern harrier and six other grassland specialist bird species that have been documented at the subject property. Potential habitat for NYS-Threatened plant slender pinweed also occurs within the grasslands to be preserved.

Combined with the grassland preserve, the preservation of large contiguous blocks of the Pitch Pine-Oak Forest, Pitch Pine-Oak-Heath Woodland, Pine/Spruce/Conifer Plantation and Successional Shrubland communities as described in the CHPP would also preserve habitat for six NYS-Special Concern herpetofauna species that have been noted at or in the vicinity of the site, as well as potential larval and adult habitat for the NYS-Special Concern coastal barrens buckmoth and the NYS-Threatened frosted elfin. Potential habitat for NYS-Threatened plant slender pinweed also occurs within these preserved habitat areas.

The protection afforded to on-site wetland and aquatic habitats by the CHPP would also preserve the four documented eastern tiger salamander breeding ponds located at the subject property, including the surrounding 1,000 buffer zones associated with each pond. In addition, on-site upland habitat located with 1,000 feet of the six documented off-site breeding ponds would also be preserved.

Habitat preservation for seven NYS-listed wetland plant species that have been documented at or in the vicinity of the subject property would also occur as a result. Based upon the foregoing, the CHPP provides for protection of significant habitat area for 24 NYS-listed wildlife and plant species through the preservation of large, contiguous blocks of all existing upland and wetland/aquatic habitats at the subject property.

The CHPP further provides for the management and ongoing monitoring of much of the site as a habitat preserve for grassland bird species. Accordingly, it is anticipated that management of the on-site grasslands under the New York Audubon and NYSDEC BMPs detailed in this CHPP would improve the overall quality of the grasslands as a habitat for avian species, including the NYS Endangered, -Threatened and Special Concern grassland bird species that have been documented on the subject property.

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