



GOVE ENVIRONMENTAL SERVICES, INC.

January 15, 2021

Craig Rennie
NH DES Wetlands Bureau
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095

**Re: Wetlands Permit Application – Additional Information
Hudson Logistics Center
NHDES File Number: 2020-00956
43 Steele Rd, Hudson, Tax Map #234, Lot #5**

Dear Mr. Rennie:

We are pleased to provide on behalf of the applicant, Hillwood Enterprises LP (“Hillwood”), the following additional information and enclosed plans as an update to our 9/8/20 submission which responded to your 6/9/20 Request for More Information. As we discussed following that submission, we requested a postponement of the public hearing originally scheduled for 10/7/20 to allow further review of the project by the Town of Hudson and to incorporate any changes to the underlying site plan. The enclosed revised plans depict the results of this process. Wetland impacts have been reduced by 3,100 square feet (“SF”) beyond what was depicted in our 9/8/20 submittal, for a total impact reduction of 16,558 SF since the project was initially proposed (114,179 SF to 97,621 SF).

We provide below a project update regarding adjustments that have been made to the Hudson Logistics Center plans to further reduce wetland impacts and preserve wildlife connectivity, Hillwood’s proposed mitigation efforts, and additional wetland documentation Hillwood has obtained regarding the site. Finally, we provide an overview of the Hudson Logistics Center proposal to define the project purpose, as contemplated within the applicable State Administrative Rules, and analysis of the project’s avoidance and minimization efforts pursuant to Env-Wt 311.07.

Project Update

Main Access Road (Green Meadow Drive)

Several adjustments were made to the main access road and traffic circle to reduce impacts. These were largely made possible by changing the development from a 3-lot subdivision to a condominium model. Under the original subdivision model Green Meadow Drive was to be a public road and the traffic circle was designed to provide frontage to the three proposed lots. Pursuant to the new condominium proposal, a portion of lot 234-34 will be consolidated with lots 234-5, and 239-1 to create one condominium parcel with frontage along Lowell Road and Green Meadow Drive will be private. This

modification eliminated the need for a 60-foot public right-of-way, which required more impacts to the resource areas. This modification also allowed the traffic circle to be repositioned and reduced in size. Green Meadow Drive was also shifted slightly north, and the northern shoulder was reduced in width to avoid impacts to forested wetland south of the road.

The site remains accessible via a secondary access on the northern part of the lot 239-1 from Walmart Blvd on adjacent property (the “Northern Access Road”).

Access Road Crossing Structures

To further study the project’s impact to the wetland areas on the property, Hillwood obtained the enclosed Wildlife Habitat Evaluation of Curtis R. Young, PWS, CWS from Lucas Environmental, LLC (the “Wildlife Report”). Though concluding that the project proposes no significant impacts to wildlife or wildlife habitat, including unique or rare wildlife habitat types, and that Hillwood’s proposed restoration of the golf course areas will fully mitigate the impacts that are caused, the Wildlife Report highlighted potential project improvements which have been fully adopted by Hillwood.¹

Specifically, structures proposed within the two primary wetland crossings, one on Green Meadow Drive and the other on the Northern Access Road (Impact Area F and Impact Area 1), have been significantly enhanced to promote stream connectivity and facilitate wildlife passage by incorporating much larger open bottom precast structures. The 60” RCP originally proposed at the stream crossing associated with the Northern Access Road (Impact Area 1) has been replaced with a 12-foot wide by 5.5-foot high open bottom precast structure. The structure will span the channel and an additional 6 feet above bank-full-width and have an openness ratio of 0.27m. This exceeds the guidelines for openness (0.25m) and span (1.2 x BFW+2’) specified in the NH Stream Crossing Guidelines and greatly exceeds requirements for a Tier 1 crossing. The crossing at Impact Area F on Green Meadow Drive is not a stream so although these standards do not technically apply it has similarly been improved to facilitate connectivity. Specifically, the originally proposed 24-inch culvert has been replaced with a 22-foot-wide by 3-foot-high open bottom structure, meeting the openness guidelines for wildlife passage. The use of wing walls at both ends of this structure has facilitated further reduction in wetland impact.

To facilitate turtle passage across road in terrestrial areas, vertical curbing will be replaced with sloped curbing in sensitive areas such as where the roadway passes close to wetland areas and through the proposed preservation areas. The commitment by Hillwood to incorporate sloped curbing was only very recently discussed with the Conservation Commission and is not yet reflected on the enclosed revised plans.

¹ See Wildlife Report, Section 5.0, pg. 12; Section 8.0, pg. 21.

These design upgrades will maximize, to the greatest extent possible, the river/stream continuity and facilitate passage for wildlife and fish.²

Mitigation

The primary form of compensatory mitigation remains unchanged. A contribution to the Aquatic Resources Mitigation Fund is proposed³ to compensate for the total direct wetland and stream impacts associated with the project. In addition to this, and as outlined below, Hillwood has also offered protection and restoration of certain significant areas of the property as discussed with the Conservation Commission in detail on 11/16/20, 12/14/20 and 1/11/21.

Within the context of protection, Hillwood proposes to convey a conservation easement to the Town of Hudson which will cover approximately 120 acres of land, nearly a third of the site. Included in this area is the entire 250-foot protected Shoreland along the Merrimack River as well as the majority of the land east of the development, including Limit Brook, its associated wetlands, and upland buffers. An overview of the protection and restoration areas is depicted on a separate enclosed figure.⁴ Hillwood's proposed conservation easement will ensure permanent protection of these sensitive ecological areas.

Moreover, concerns related to habitat connectivity, sound, lighting, and specific wildlife species have been "addressed and fully mitigated."⁵

Restoration Planting

In addition to the proposed conservation easement, Hillwood proposes to restore approximately 40 acres of the future conservation area, currently consisting primarily of managed golf course turf, using native seed, shrubs and trees. The proposed restoration focuses on revegetating riparian areas, wetland buffers, and other uplands surrounding the primary wetland systems on the site, some of which have been devoid of a natural buffer for upwards of 90 years. The overall scope of the restoration effort is depicted on the enclosed mitigation and preservation areas figure.⁶ Additional details of the restoration planting are provided on the landscaping plan sheets contained in the enclosed plan set. The revised landscaping plans substantially improve upon the content and detail that was provided in the initial submission. The diversity of species has been broadened after close collaboration with the Town's Conservation Commission and more detail has been added on plant placement and intent within the three planting zones, namely the 250-foot protected shoreland, wetland buffer areas, and the remaining uplands.

² See Wildlife Report, Section 5.1, pg. 13.

³ [+/- \$609,790]

⁴ See Mitigation and Restoration Plan.

⁵ See Wildlife Report, Sections 7 and 8, pgs. 20-21.

⁶ See Mitigation and Restoration Plan; See also Wildlife Report.

Additional Wetland Documentation

Additional documentation of the wetland boundary was requested in connection with a review conducted on behalf of abutters to the project. In response, wetland delineation data forms were prepared along the wetland boundaries in all vegetated wetland impact areas. The forms and a figure showing their locations are enclosed.

Natural Heritage Bureau

During subsequent field work, a single occurrence of River Birch (*Betula nigra*), a species listed on the Natural Heritage bureau's report, was identified along the bank of the river. The tree is located outside any proposed impacts. Natural Heritage Bureau was notified and supplied with the location and species observation form as requested. Correspondence on this issue is attached.

Avoidance and Minimization

One of the foundational requirements for a standard permit from the State is ensuring that impacts have been avoided and minimized to the greatest extent "practicable"⁷ and that unavoidable impacts have been minimized. "Practicable" means "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."⁸ This section expands upon the avoidance and minimization narrative originally submitted with the Dredge & Fill Application and discusses how the Hudson Logistics Center complies with these requirements through consideration of the specific provisions of Env-Wt 311.07, with further reference to Env-Wt 313.03.

To summarize, there are no available means which are capable of being done to further reduce, avoid or minimize the proposed impacts.

Project Description

Appreciating the precise nature of the fulfillment center facilities contemplated by The Hudson Logistics Center (the "HLC") is critical in defining the purpose of the project and reviewing Hillwood's application with respect to avoidance and minimization.

The HLC proposal described below, inclusive of all three buildings and all of the design parameters and constraints pertaining to each, constitutes the project purpose in this case. The HLC will fill a critical need in the greater New England market for logistics centers, which need has been further exacerbated by COVID 19. The underlying property is uniquely suited for accommodating this use. As evidenced in the following detailed description of the project's design parameters, there is very little flexibility for further

⁷ See Env-Wt 311.01(f), Env-Wt 313.03.

⁸ See Env-Wt 101.74.

modification to the design, which already avoids and minimizes wetland impacts to the greatest extent practicable.

The HLC will consist of approximately 2.6 million SF of fulfillment center use spread across three buildings and associated site improvements to include paved areas, stormwater management and screening. Buildings A and B, which Amazon is considering leasing, constitute specific types of fulfillment centers which will address needs of the market in the greater New England area and they reflect the specific design parameters required by the nature of the facilities combined with applicable industry standards. These facilities are designed to fit their individual uses down to the very smallest of details. Building C has been designed to promote flexibility and safety and meet the bare minimum industry standards for cross-dock facilities to address the growing market demand.

Buildings A and B

Buildings A and B are fulfillment centers that Amazon is considering leasing. Fulfillment centers are facilities which are part of the e-commerce supply chain. Building A, which will be located on the northern side of the property, will be a non-sortable fulfillment center which is designed to store large items that cannot be sorted into a box with other items.⁹ When an order is placed for one of the items stored in Building A, employees will pick, pack and ship the same to other Amazon facilities further down the supply chain. Eventually, that item reaches the end-user, usually via a “last mile” facility. No inventory in Building A will be shipped directly to the customer.

Building B is also a fulfillment center which is designed to accommodate the storage of extra-large products, i.e., extra-large items like furniture or appliances, which are rarely purchased by a household.¹⁰ Like the operation at Building A, when an order is placed for one of the extra-large items stored in Building B, employees will collect the product by mechanical means, such as a forklift, and place into a box truck for regional delivery to customers or delivery to other Amazon facilities further down the supply chain.

Both of these facilities have been specifically requested by Amazon to address the market demand of the greater New England area.

Buildings A and B are uniquely designed by Amazon to accommodate their specific fulfillment center use down to the smallest details, for efficiency and safety. Amazon has designed these facilities based on years of operational experience and each element of these facilities is specifically integrated and are interdependent. These buildings are prototypes which have been or are being developed by Amazon for these specific fulfillment center uses and are being built across the country in substantially similar

⁹ Building A is referred to as a “TNS.”

¹⁰ Building B is referred to as an “XLFC.”

manner.¹¹ In this context, +/- 1,000,000 SF buildings are the industry standard for these types of Amazon fulfillment centers.

The specific designs for each of these facilities to include their internal configuration and exterior dimensions, is the result of painstaking and comprehensive engineering and logistical analysis processes utilized to produce building templates that maximize efficiencies of scale, accommodate the many multi-layer inter-related systems, processes and technology/equipment which are integral to their operation, and that promote the safety of employees and vendors alike. All details to include the size and orientation of the buildings themselves and their interior configurations vis-à-vis racking (storage) areas, office use, and protected staff areas, their proposed vehicle and trailer parking configurations, the number of loading docks, and the proposed traffic patterns servicing the facilities are designed to suit the specific needs and nature of the individual facilities. As a result, even minor changes to those designs and configurations could compromise the overall design and operation of the facility in light of the overlapping nature and interdependency of facility operations.

Given these design constraints, there is tolerance down to an incredibly small scale regarding the construction parameters and very little room, if any, for flexibility or significant modification to the design for Buildings A and B.

However, the same engineering and design efforts which produced the prototypes proposed as Buildings A and B in the HLC, also minimized to the extent possible the footprint of these buildings and associated site improvements in the name of efficiency. The result is a global design for the site that both accomplishes the project purpose with the smallest footprint and minimal impact to wetlands possible, and aligns itself with the letter and spirit of the State and local wetland regulations. The proposed developed area ratio is far less than a typical logistics center, which is the result of a direct effort to minimize and avoid impacts to the regulated areas.

For example, while the physical dimensions of Building A cannot be modified, every effort has been made to minimize the footprint of its corresponding pavement and site improvements. Specifically, Building A only proposes 1,008 car parking stalls. This parking stall proposal is considerably less than what is required under the Town of Hudson's Site Plan Review Regulations for industrial uses.¹² In fact, 1,798 parking spaces are required for Building A under the Town's regulations, an excess of 790 spaces (44%) above what Hillwood has proposed. Additionally, Hillwood is seeking a waiver from the Hudson Planning Board to utilize 9' x 18' parking stall dimensions across the whole site instead of the 10' x 20' dimensions required by the Town's Site Plan Review Regulations, which will further reduce impervious surface and project footprint.

¹¹ By way of example, Amazon is currently developing approximately 18-20 TNS buildings across the country and 5 XLFCs.

¹² See Hudson Site Plan Review Regulations, §275-8(C)(2)(g).

Building B, which is approximately the same size as Building A, proposes only 480 parking stalls where 1,670 stalls are required by the Town of Hudson and similarly proposes reduced-size stalls. Building B can accommodate this reduced parking footprint by virtue of its nature as a fulfillment center, which will house extra-large items which have a reduced shipping rate. The nature of Building B requires less employees and less truck trips than Building A, which is why it has been designed in a manner to limit, to the greatest extent practicable, its footprint.

Building C

Building C is designed as a cross-dock building. This type of building is the most commonly desired for distribution facilities as they afford significant flexibility for multi-tenant or larger industrial tenant operations. Cross-dock buildings provide loading/staging areas adjacent to the dock doors and warehouse/racking areas in the interior of the building. Cross-dock buildings should not be confused with terminal buildings. Each building type has dock positions on either side of the building. Terminal buildings, however, are often located very close to major air, water, and land ports for the temporary housing in incoming goods until they are picked up by ground handlers and taken to regional distribution centers further inland. Terminal buildings do not provide warehouse/racking areas and are only 100' to 120' in depth.

Cross-dock facilities are better-situated to meet the existing market demand for logistics buildings, better situated to maximize flexibility, promote safety and attract the best possible tenants, and better situated to provide long-term financial stability and tax base for the municipalities in which they are located. Further, Building C is designed to meet only the bare minimum dimensional standards for a cross-dock facility so to avoid and minimize its impacts to the greatest extent practicable whilst filling a critical market need and meeting the project purpose.

Cross-dock logistics facilities are in critical demand. That demand has considerably depleted the inventory of these types of facilities in the greater New England area, particularly in the age of COVID-19 which caused widespread shortages of everyday household commodities and food supplies and which underscored the need for enhanced logistics models as a back-up to traditional brick and mortar retail options. Costar data suggests that as of the fourth quarter of 2020, the approximately 74 million SF of warehouse type industrial inventory in the Boston Consolidated Metropolitan Statistical Area is just 5.4 percent vacant, which is a near 20-year low. This figure compares with an 8.8 percent average vacancy rate over the preceding 10 years. Moreover, the demand for cross-dock logistics buildings is growing at a much faster pace than single load designed buildings.

Cross-dock facilities are designed to maximize flexibility and efficiency in the rapidly growing e-commerce industry by implementing the latest logistics science trends to include: 1) clear heights of 40+ feet, 2) more efficient loading dock configurations and column spacing/bay depths which results in more dense and efficient pallet rack position design, and 3) efficient

separation of inbound and outbound shipping traffic which promotes the highest possible operational safety for employees and vendors inside and outside the building. Because Building C’s design maximizes efficiency and promotes the highest degree of flexibility, it will appeal to the largest cross-section of top-tier potential tenants, will stay leased longer, and, if ever vacant, will stay vacant for a shorter period of time. As proposed, Building C’s design will provide the highest degree of certainty and stability for the Town and Hillwood alike.

In light of the demand for cross-dock logistics buildings, a significantly larger building than what is proposed for Building C would be more optimal. However, acknowledging the nature of the site, the value of the Limit Brook wetlands to the east and the Merrimack River to the west, rather than propose a building which would cause considerably more wetland impacts, Hillwood is proposing a facility which meets only the bare minimum dimensional standards for a cross-dock facilities. As a result, Building C avoids and minimizes its impacts to the greatest extent practicable whilst meeting a critical market need.¹³

The table below depicts the relevant industry standards for cross-dock facilities like Building C as well as Building C’s corresponding design criteria.

Standard	Provided	Notes
Minimum width of 400’ to enable enough internal space to service trailers on both sides of the building and storage between the loading areas	400’ provided	Width is the critical variable on this due to the arrangement of wetlands. Building length does not affect wetland impact. Building C’s width reflects the minimum to support the cross-dock use.
Minimum of 205’ wide shared loading bay/truck court	200’	Less than the minimum width for shared loading/truck court is proposed and proposal includes shared parking which allows 5’ reduction.
Minimum Turning Radii on site of 40’	60’	Varies depending on truck size. Greater turning radius is necessary in certain locations for safety considering shared truck and employee vehicle use of circulation areas.
Minimum drive width of 40’	40’	Building C proposes only the minimum drive width with the exception of the wetland crossing areas, which further reduces the drive width to 36’ to further minimize wetland impacts.

¹³ *NAIOP Rule of Thumb for distribution/warehouse facility design*, Second edition, NAIOP – Commercial Real Estate Dev. Group, content by HPA, Inc.

As depicted above, with regard to the industry design criteria which is most critical in the context of wetlands impacts on this site,¹⁴ Building C proposes the minimum width to accommodate the cross-dock use. Further, Building C proposes the industry minimum standards, or less, for all of the design criteria aside for the minimum turning radii on site, and the deviation in that context is related exclusively to safety considerations in light of the shared nature of the accessways by trucks and employee vehicles.

Further, like Buildings A and B, Building C proposes significantly less parking stalls, and smaller parking stalls, than what is required under the Town's Site Plan Review Regulations. Specifically, where 870 10' x 20' parking stalls are required by the Town, only 418 9' x 18' parking stalls, less than half of what is required, are proposed by Hillwood.

Project Purpose (Env-Wt 311.07(b)(1))

As discussed above, the primary purpose of the proposed project is to utilize the large contiguous area of uplands on the central and western portion of the site to accommodate the HLC, which consists of 2.6 million SF of fulfillment center use spread across three buildings, two of which (Buildings A and B) have been specifically designed in accordance with Amazon requirements, and all of which reflect industry standards and significant market demand. Each of the three proposed buildings constitute core components of the HLC proposal which make the project feasible. The HLC development is proposed for property uniquely situated to accommodate such use and specifically zoned for same, and care has been taken to, among other things, reduce impervious surface area where possible.

The vast majority of proposed impacts pertain to providing primary access, required secondary access, and internal driveways required to serve Buildings A and C. Specifically, the project contemplates 97,621 SF of total impact on a site which is approaching 400 acres in size. Of that impact, approximately 77,499 SF (79%), pertains to primary access (Impacts Areas A, B, C, D, F, G, H), necessary secondary access (Impact Area 1), and driveway impacts (Impacts 2, 3, 4). In fact, only one proposed wetland impact, Impact Area 6 on the west side of Building B, relates to lot development, and even then, the impact pertains to the facility's loading area.

Site Selection (Env-Wt 311.07(b)(2))

Avoidance and minimization for this project began with the selection of the site itself. In New England, considering property values, construction costs and disperse population centers, there are precious few sites that can reasonably accommodate a fulfillment center use in an economically practical way, despite the increasing market demand for same. The Green Meadow Golf Club property is unique in its ability to meet the critical requirements for a development like the HLC.

¹⁴ Wetland Impact Area 4 is affected by the driveway servicing Building C, as depicted on the Wetland Impact Plan.

First, the property has been zoned to accommodate the proposed use for decades and was very recently, in 2018, the subject of a Zoning Ordinance amendment adopted by the Town Meeting to permit building heights up to 50-feet on the property, where the building height was previously limited to 38 feet, all to accommodate industrial uses and attract quality economic development opportunities to Hudson. Additionally, the property is in very close proximity to major roads and highways and, as a result, there will be a minimal traffic impact to the local community. Finally, a significant potential workforce exists nearby which Hillwood anticipates will support the Hudson Logistics Center.

Perhaps most significant in terms of avoidance and minimization is the unique physical nature of the property, its insulation from surrounding uses, its ability to accommodate the proposed HLC, and the extent and arrangement of wetlands on the site. Specifically, the nature of the proposed use requires a very large site with adequate contiguous upland area to construct the fulfillment centers. By themselves, these buildings occupy approximately 60 acres and, as described above, are no bigger than what they have to be in order to adequately function as fulfillment centers. Collectively, the property is uniquely large at nearly 400 acres in size, over 200 acres of which is contiguous uplands in the central and western areas of the parcel. Significantly, this area is interspersed only with manmade water features and areas of golf course fairway that meet the technical criteria of wetlands but otherwise have minimal wetland function.¹⁵ The vast majority of the site is proposed to be either “open space”¹⁶ and/or permanently protected conservation areas, much of which will be restored by Hillwood. These unique qualities and existing conditions of the site allow the project to avoid impacts to Priority Resource Areas (PRA) and other high value wetlands entirely. Further, the impacts that are proposed pertain primarily to unavoidable impacts to lower value wetlands and those related to accessing the property’s uplands, as discussed above.

Considering the unique scale and nature of the project purpose and its related requirements, there are no other sites reasonably available which could be used to achieve the project’s purpose with less impact to wetlands or wetland function and value.

Alternative Designs and Techniques (Env-Wt 311.07(b)(3))

The project incorporates a number of important design choices intended to avoid and minimize impacts to wetland and wetland function and value. Foundationally, the development has been configured to utilize the existing open area of the golf course in the center of the property and limit impacts within the 250-foot Protected Shoreland of the Merrimack River to minor grading at the outer edge of the Protected Shoreland. No new impervious surface is proposed within the Protected Shoreland, and existing impervious surface (golf course paths) will be removed resulting in a net decrease in impervious surface in the Protected Shoreland. Impacts to the large

¹⁵ See Wildlife Report.

¹⁶ Defined by the Hudson Land Use Regulations as “grassed, treed, landscaped, or natural growth areas designated for no activity associated with the nonresidential use proposed.”

eastern area of the property are limited to access impacts. As such, the project's design avoids impacts to the Limit Brook wetland complex, and PRA.

Unavoidable impacts fall into two general categories: 1) those necessary to gain access to the site and navigate the site via driveways once developed, and 2) lot development impacts necessary to construct Building B. Lot development accounts for a single impact to a manmade pond (Impact Area 6). The remaining impacts are associated with the Northern Access Road, primary access road, cul-de-sac, and driveways.

The need to impact some wetlands for access to the site is well established since wetland spans the entire eastern side of the property from which access is provided to the uplands. The only current access to the site via Steele Road is not suitable to provide primary access for the HLC for a variety of reasons including traffic consideration at its intersection with Lowell Road, its route through a residential neighborhood, the nature of the traffic that will enter the site including truck traffic, and the fact that Steele Road crosses Limit Brook and a PRA.

Given the project purpose and the size of the site, two access points are proposed. These have been located to align with two existing signaled intersections on Lowell Road and to utilize existing easements created specifically for this purpose on adjacent properties. Avoidance and minimization of impacts in these areas has been carried out to the maximum extent practicable as described in the following sections.

Northern Access Road

Impact Area 1 is 9,366 SF (9.6% of total impact) and facilitates secondary access to the HLC on the northern portion of the site. The northern access road utilizes an existing easement along Sam's Club driveway to gain access to the property at the northeast corner. Here, the road utilizes uplands and a straight alignment to the narrowest portion of the wetland where a single crossing is proposed (Impact Area 1). This crossing will utilize 11-foot high retaining walls for the length of the proposed impact to avoid additional impacts due to slope grading. A very large 12-foot wide by 5.5-foot high open bottom precast structure is also proposed for the crossing to minimize any potential impacts to stream and wetland connectivity.¹⁷

Primary Access Road

The main access road, depicted as Green Meadow Drive on the plans and inclusive of the proposed cul-de-sac, incorporates Impact Areas A, B, C, D, F, G and H which, together, constitute 45,574 SF (46.7% of total impact). Green Meadow Drive utilizes only a short portion of the existing Mercury Systems driveway over an easement to limit interference with the private driveway and parking areas for Mercury Systems. The road then follows the existing developed Mercury Systems site as closely as possible while maintaining road width and configuration for safe line-of-site and turning radius. Impacts in this location are thereby minimized by locating

¹⁷ See Wildlife Report, Section 5 and 5.1.

impacts at the wetland edge along existing development, avoiding greater impact to wetland function and values through segmentation. Steeper grading has also been incorporated along this section of the roadway. Green Meadow Drive then utilizes uplands and is aligned to cross the narrowest point of the main wetland (Impact Area F) avoiding a much more substantial impact that would be incurred by crossing the main wetland just to the north. A 22-foot wide by 3-foot high, open bottom precast structure is being utilized at Impact Area F to facilitate wildlife movement between wetlands to the north and the ponds associated with Limit Brook to the south.¹⁸ The use of wing walls at either end of the structure has also allowed the width of the crossing to be further reduced.

Cul-de-Sac

The traffic circle (or cul-de-sac) at the end of Green Meadow Drive has been the focus of extensive design review and analysis. This format was chosen as it provides the most efficient and safe way for both trucks and cars to navigate the 4-way intersection. Impacts at this location have been further minimized beyond Hillwood's first proposal, by shifting the cul-de-sac north and by reducing its size.

Flexibility to alter the design of the cul-de-sac is further constrained by a number of factors. As discussed in great detail above, the size of the buildings and their associated paved areas have been carefully designed to the specifications of Amazon and industry standards (Buildings A and B) and to accepted and minimum industry standards for a cross-dock facility (Building C). Further changes to the buildings or their supporting parking and loading docks is not feasible as it would not achieve the project purpose and would compromise the fulfillment center use. The buildings have already been carefully placed on the site to avoid wetland impacts to valuable resource areas both east and west of the development area as well as to provide adequate buffer and screening to the residential properties to the south. Further, significantly less parking than what is required by the Town's Land Use Regulations for industrial uses is proposed and Hillwood is proposing use of 9' x 18' parking stalls instead of the required 10' x 20' stalls as an additional measure to reduce impervious surfaces. Altering the location of the buildings any more would result in greater impacts to wetlands and wetland function and values elsewhere on the site.

Alternatives for the location and configuration of the cul-de-sac are therefore limited. The enclosed figures provide an analysis of several alternative configurations, including a four-way intersection with a stop in all directions, shifting the cul-de-sac west, and shifting the cul-de-sac north.¹⁹ The figures illustrate the reduction in wetland impacts that could be achieved with each option and the design issues that each would introduce. The context of the cul-de-sac within the development is a critical aspect of the analysis. This intersection will connect all three of the primary internal circulation roads to the main access. The intersection will also be utilized by both large trucks and employee vehicles alike, making considerations such as traffic flow,

¹⁸ See Wildlife Report, Section 5 and 5.1.

¹⁹ See enclosed cul-de-sac configuration sketches.

turning radius, driveway approach angles and separation, and line-of-site particularly important for safe and efficient operation. Because the connector roads must meet at an intersection by definition, the location of the cul-de-sac does not necessarily reduce wetland impact associated with roadway alignment, particularly at the southern branch of the intersection. The feasibility of each option analyzed is discussed below.

Four Way Stop Intersection Alternative

A four-way intersection with stop in every direction is far less efficient and safe than the roundabout configuration proposed. Furthermore, this configuration does not reduce State jurisdictional wetland impact and only reduces buffer impact by approximately 150 SF. The intersection also creates more impervious area that would have to be treated, placing additional demands on the stormwater design. For all these reasons, a four-way stop intersection is not a practicable option because, among other things, it does not further reduce, avoid or minimize the proposed impacts.

Cul-De-Sac Shifted West Alternative

Shifting the cul-de-sac west could theoretically avoid approximately 900 SF of direct wetland impact but creates several design deficiencies that are unworkable. The efficiency and safety of the roundabout would be affected by shorter approach angles, lengths and tighter turning radii. This is of particular concern due to the shared use of the road by trucks and employee vehicles. Shifting the cul-de-sac west also severely impacts several stormwater management features. For these reasons, while shifting the cul-de-sac west avoids some direct wetland impact, it compromises and prohibits the project purpose and is therefore, not practicable.

Cul-De-Sac Shifted North Alternative

Shifting the cul-de-sac north would increase wetland impacts, primarily due to the main wetland crossing being pushed into a wider portion of the wetland. The efficiency and safety of the resulting intersection is also severally affected by approach angles and several very tight turning radii. Stormwater management and parking would also be impacted. For these reasons, a northern shift is not a feasible option because it does not further reduce, avoid or minimize the proposed impacts.

Cul-De-Sac Shift South Alternative

Shifting the cul-de-sac to the south cannot both further avoid and minimize wetland impact and provide legitimate access to serve the project purpose. As described above, Green Meadow Drive utilizes an existing easement to access the uplands on the property. As designed, on the far eastern portion of the property, Green Meadow Drive crosses the wetlands at their narrowest area (Impact Areas B and C). Green Meadow Drive then bends to the south slightly before heading northwest through additional wetlands at Impact Areas F and G, again, specifically designed to occur at the narrowest points of the wetlands. While redesigning Green Meadow Drive to curve south from the southern side of Impact Areas F and G may help avoid what is currently depicted as Impact Area H, the area of the proposed cul-de-sac, it would create similar wetland impacts to the south, and would also create turning radii that are too tight and

impractical approach lines. This approach would not be adequate for the project purpose. There simply is not a practical way to cross the wetlands on the eastern portion of the property at their narrowest points and simultaneously relocate the cul-de-sac to the south in a manner that further avoids and minimizes wetland impact and provides access that can serve the project's purpose.

Proposed Cul-De-Sac Design

The proposed cul-de-sac layout is the best design to facilitate the efficient and safe circulation within the site in a manner that avoids and minimizes wetland impacts to the maximum extent practicable. The design facilitates long, straight approach drives, adequate separation of approaches, large turning radii, functional stormwater management and appropriate parking. Considering the project purpose, significant changes to the size of the development is not possible. Alternative configurations that utilize existing space can only achieve minimal, if any, reduction in impact but also create unacceptable traffic flow problems and/or compromise the project purpose, and are therefore not feasible options. Unavoidable wetland impacts have been minimized to the greatest extent practicable considering cost, logistics and the overall project purpose.

Driveway Impacts (Impact Areas 2, 3 and 4)

Impact Areas 2, 3 and 4 are caused by the primary driveways from the cul-de-sac to Buildings A and C, respectively. The driveways serving Building A causes Impact Areas 2 and 3, which, collectively, account for 585 SF (0.06% of total impact). Impact Area 4 is a manmade golf course water feature which is caused by one of the primary driveways serving Building C. Impact Area 4 constitutes 21,974 SF (22.5% of total impact).

These internal driveways are self-evidently vital for the operation of the individual fulfillment centers which are the project purpose, which centers cannot be achieved without these accessways. As indicated above, Building A has been designed in a manner consistent with the TNS prototype that is being built and operated by Amazon across the country in addition to industry standards. Building C is the minimal width required to accommodate a cross-dock facility like the one proposed and is considerably smaller than what the market is currently demanding. Every effort has been taken to minimize the parking requirement and the size of parking stalls for HLC buildings to reduce, to the greatest extent practicable, additional impervious footprint and wetland impacts.

Pushing Buildings A and C to the west to avoid Impact Areas 2, 3 and 4 would result in unacceptable impacts to the Merrimack River and corresponding Protected Shoreland. Additionally, minor adjustment cannot further minimize impacts, due to the extensive slope grading needed to create a level building pad.

Under these circumstances, there are no means available or capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes, to avoid or further minimize Impact Areas 2, 3 and 4.

Lot Development Impact

By avoiding impacts to the Merrimack River, the PRA, and other more ecologically intact wetlands in the eastern part of the property, further avoidance of the manmade ponds becomes extremely difficult in light of the fulfillment center project purpose, though we note that impact to the manmade pond in the northeast portion of the site has been avoided altogether. This pond will be incorporated into a proposed preservation area and naturalized to enhance wetland functions and values. This effort will also serve to enhance the habitat surrounding the vernal pool identified just south of this area. Additionally, impact to the southernmost pond (formerly Impact Area 5) has also been totally avoided by shifting the entire project layout as far north as possible. This pond will also be enhanced with landscaping to provide screening for abutting residential property, enhancing aesthetic value among other wetland functions. Impact to the PRA has been avoided by incorporating a retaining wall to eliminate grading impacts.

After accounting for Impact Areas 2, 3, and 4, which are related to primary driveways serving Buildings A and C, the lone remaining lot development impact is Impact Area 6, which constitutes 20,122 SF (20.6%) of impact necessitated by development of Building B. Like its sister facility in Building A, Building B, known as the XLFC, has been designed consistent with a prototype being developed by Amazon which is being utilized across the country, which prototype has little flexibility for further modification. Proposed parking for Building B is 75% less than what is required by the Town of Hudson's Land Use Regulations.²⁰ Further, as with Buildings A and C, smaller parking spaces than required by the Town's regulations are proposed.

Shifting the buildings east in attempt to avoid impacting Impact Area 6 would result in substantial and unacceptable impacts to Limit Brook. Additionally, minor adjustment cannot further minimize impacts, due to the extensive slope grading needed to create a level building pad.

In light of these realities and the modifications already employed to further avoid impacts onsite, there are no means available or capable of being done to avoid Impact Area 6.

Conclusion

Impacts have been avoided and minimized to the greatest extent practicable considering cost, existing technology, logistics, and project purpose. Avoidance and minimization of impacts has not been limited by cost considerations. More costly measures were implemented by utilizing the latest technology in the design of the stormwater system and by incorporating large pre-cast crossing structures and retaining walls at the main access roads. The decision to locate the

²⁰ 417 parking spaces are proposed where 1,670 are required.

project so that 120 acres to the east and west could be protected and restored represents significant avoidance with a significant associated cost. The buildings, access roads and internal paved areas of the development have been specifically and meticulously designed to support the complex operations of a fulfillment center such as the HLC. Regardless of cost, there are no alternative designs, layouts, technologies, or different construction sequencing that could be used to further avoid or minimize the proposed impacts while also achieving the project purpose.

We believe this information and the enclosed plans provide a complete package to continue with your review of the project. We look forward to scheduling the required public hearing. If you have any questions, please don't hesitate to contact me.

Sincerely,



Brendan Quigley
Gove Environmental Services, Inc.

cc: Hudson Municipal Clerk/Conservation Commission (plans under separate cover)

ec: Lower Merrimack River LAC
Ridge Mauck, NHDES
Amy Lamb, NHB
Melissa Doperalski, NHFG
David Trubey, DHR
Lindsey Lefebvre, ACOE
Beth Alafat, EPA

Attachments: Revised Project Plans
Revised Wetland Impact Plan
Revised Shoreland Impact Plan and Shoreland Worksheet
Onsite preservation figure
Wildlife Report
ACOE wetland delineation data forms
Cul-de-sac alternatives figures
Natural Heritage Bureau correspondence