

MONITORING

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FORESTRY SERVICES ~ ENVIRONMENTAL IMPACT ASSESSMENTS
WETLAND DELINEATIONS AND PERMITTING ~ E&S/SITE
WETLAND FUNCTION/VALUE ASSESSMENTS

5/12/20

KILLINGLY ENGINEERING ASSOCIATES
P.O. Box 421
DAYVILLE, CT. 06241

RE: WETLAND DELINEATION, BLB LLC. PROPERTY, SCHOOL ST., BROOKLYN, CT.

DEAR MR. GLAUDE,

AT YOUR REQUEST I HAVE DELINEATED THE INLAND WETLANDS AND WATERCOURSE ON THE SUBJECT PROPERTY.

THESE WETLANDS HAVE BEEN DELINEATED IN ACCORDANCE WITH THE STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY AND THE DEFINITIONS OF WETLANDS AND WATERCOURSES AS FOUND IN THE CONNECTICUT STATUTES, CHAPTER 440, SECTION 22A-38.

FLUORESCENT PINK FLAGS WITH A CORRESPONDING LOCATION NUMBER DELINEATE THE BOUNDARY BETWEEN THE WETLAND AND UPLAND SOILS.

FLAG SERIES WF- 1 THROUGH WF- 53 DELINEATE A PALUSTRINE FORESTED WETLAND ON THE SOUTHERN PORTION OF THE PROPERTY. AN INTERMITTENT WATERCOURSE FLOWS THROUGH THIS WETLAND AND FLOWS WERE NOTED AT THE DATE OF THE DELINEATION, (12/28/15 AND 5/4/20). HYDROLOGY INPUTS INTO THE WATERCOURSE INCLUDE AN INTERMITTENT WATERCOURSE THAT HAS FORMED FROM STORM WATER FLOWS FROM SCHOOL STREET, (WETLAND FLAGS WF-1-1 THROUGH WF-10-1), AS WELL AS GROUND WATER BREAKOUT, AND RUNOFF FROM ADJACENT TOPOGRAPHY. THIS WATERCOURSE WAS NOT FLOWING ON THE DATES OF THE DELINEATIONS, (12/28/15 AND 5/4/20).

FLAG SERIES WF-1A THROUGH WF-51A DELINEATE THE SOUTHERN BOUNDARY OF THE SAME FORESTED WETLAND AND INTERMITTENT WATERCOURSE. AN INTERMITTENT WATERCOURSE ALSO FLOWS INTO THIS WETLAND FROM THE STORM WATER DRAINAGE SYSTEM ASSOCIATED WITH FRANKLIN DRIVE, A PORTION OF WHICH IS DELINEATED BY WETLAND FLAGS WF-15A THROUGH WF-20A. THIS WATERCOURSE WAS NOT FLOWING ON THE DATES OF THE DELINEATIONS, (12/28/15 AND 5/4/20).

THESE WETLAND SOILS THAT HAVE FORMED AS A RESULT OF SHALLOW WATER TABLES CREATED FROM GROUNDWATER HYDROLOGY FROM THE ADJACENT HILLSIDES. GROUNDWATER BREAKOUT WAS NOTED AT THE TOE OF SLOPE ON THE ADJACENT HILLSIDES.

THESE WETLAND SOILS ARE CHARACTERIZED BY SHALLOW REDOXIMORPHIC FEATURES AND LOW CHROMA COLORS WITHIN 20 INCHES OF THE SOIL SURFACE.

IT SHOULD ALSO BE NOTED THAT FLOODPLAIN SOILS WERE FOUND ADJACENT TO THE LARGER WATERCOURSE FLOWING THROUGH THE WETLAND.

IN CONCLUSION, IF YOU HAVE ANY QUESTIONS CONCERNING THE DELINEATION OR THIS REPORT, PLEASE FEEL FREE TO CONTACT ME.

THANK YOU,

Joseph R. Theroux

JOSEPH R. THEROUX
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MONITORING

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FORESTRY SERVICES ~ WETLAND IMPACT ASSESSMENTS
WETLAND DELINEATIONS AND PERMITTING ~ E&S/SITE

WETLAND FUNCTION & VALUE ASSESSMENTS

9/23/20

Killingly Engineering Associates
P.O. Box 421
Dayville, CT. 06241

Re: Wetland function/value and impact assessment report for the proposed site development for Shane Pollock, Louise Berry Drive, Brooklyn, Connecticut.

Dear Mr. Thibeault,

At your request, I have reviewed the site plans entitled: PROPOSED MULTI- FAMILY DEVELOPMENT, LOUISE BERRY DRIVE BROOKLYN, CONNECTICUT. PREPARED FOR SHANE POLLOCK, dated April 23, 2020, revised to August 24, 2020 and the above referenced property for the purposes of assessing the wetland functions and values and potential impacts to the inland wetlands and watercourses in proximity to the proposed housing development.

The wetland function and value assessment was conducted on 9/22/2020.

Existing Conditions

The property is 13.497 acres in size and is located on the south side of Louise Berry Drive, in Brooklyn, CT.

The majority of the parcel is comprised of uplands, with gentle to moderate slopes and gravelly, well drained soils. The southern portion of the property is occupied by a large palustrine forested/scrub-shrub wetland & watercourse complex and adjacent forested uplands along the southern property line.

Upland Review Areas

The 125 foot upland review area around the delineated forested/scrub-shrub wetland/watercourse is vegetated in the overstory with a mix of white pine and mixed hardwoods in the sawtimber and polewood size classes. The mixed hardwoods include white, black and scarlet oaks, hickory, black birch and red maple.

The site was heavily logged several years ago resulting in the removal of the majority of the overstory. This increase in light has released the understory saplings, shrub and herbaceous species resulting in a very dense understory, especially in and adjacent to the wetlands.

This densely vegetated understory is comprised of polewood and saplings in these species as well as shrub species such as, spicebush, winterberry, Japanese barberry, multiflora rose and highbush blueberry. Herbaceous vegetation includes numerous fern species, goldenrod, black raspberry and miscellaneous grasses.

Wetlands

A palustrine forested/scrub-shrub wetland with 2 watercourses were delineated in the southern and eastern portions of the property. (See wetland delineation report).

One intermittent watercourse flows to the south along the eastern property boundary. The only source of hydrology for the watercourse is from storm water discharges from the impervious surfaces associated with the school, and from Louise Berry Drive.

The other watercourse, (Anderson Brook), flows onto the property in the southeast property corner, and joins with the eastern watercourse. It then flows to the west off the parcel along the western property line. Storm water discharges from Franklin Drive enter the wetlands and watercourse on the southern property line.

The wetlands and watercourses were inundated on the date of the delineation, (12/28/15 and 5/4/20). On the date of the assessment, (9/22/2020), the wetlands were not inundated nor were the watercourses flowing, however a few small pockets were inundated within the watercourse, due to perched water trapped in depressions.

It should also be noted that floodplain soils were found adjacent to Anderson Brook which flows to the west off the parcel.

The majority of this wetland/watercourse is densely vegetated with red maple, white oak, white ash and elm in the overstory, and in the understory saplings and typical wetland shrub species such as highbush blueberry, speckled alder, arrowwood, sweet pepperbush, winterberry and spicebush. Other species included Japanese barberry, multiflora rose, grapevines and bittersweet.

Herbaceous vegetation included sphagnum moss, sensitive, Christmas, interrupted, hay scented, lady & cinnamon ferns, black raspberry, sedges, rushes, skunk cabbage, goldenrod, jewelweed and misc. grasses.

Wildlife tracks/sign found and directly observed in and adjacent to the wetland/watercourse included mammals and bird species such as: white tailed deer, eastern coyote, red fox, raccoon gray & red squirrels, red tailed hawk, American crow, red wing blackbird, and numerous songbird species.

Amphibians found included green and pickerel frogs. Undoubtedly, this wetland complex serves as habitat to numerous reptile and amphibian species.

I am uncertain if a fish population exists within Anderson Brook, due to its shallow average depths and status as intermittent. I do not believe it is possible for fish to inhabit the eastern intermittent watercourse due to its steep, rocky slope, intermittent nature and poor water quality due to the untreated, non-attenuated storm water discharges that severely erode the stream channel during significant storm events.

Wetland Functions and Values

The forested/scrub-shrub wetland and watercourse(s), were inspected to determine wetland functions and values utilizing the Army Corps. Of Engineers methodology as outlined in ~~the~~ Highway Methodology Workbook Supplement+.

This methodology recognizes 8 separate wetland functions: groundwater recharge/discharge, floodflow alteration/storage, fish/shellfish habitat, sediment/toxicant/pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization and wildlife habitat. The 4 wetland values include: recreational value, educational/scientific value, uniqueness/heritage value and threatened/endangered species habitat.

For each wetland function or value to be determined, 2 to 31 different considerations/or qualifiers are considered as rationale to apply or eliminate that specific function or value.

Palustrine forested/scrub-shrub wetland & Anderson Brook functions:

The following is a list of the wetland functions exhibited by this wetland/watercourse and their descriptions:

Ground water recharge: Ground water recharge function is possible due to the perched water table being trapped in small inundated pockets within the wetlands and slowly infiltrating during dry season. Anderson Brook stream flows off the property diminishes this function.

Sediment/toxicant retention: Dense herbaceous vegetation, shrubs and flat topography in the wetlands can effectively trap sediments/toxicants from surface flows from the adjacent topography. Although with no current sources of sediments or toxicants present, this wetland has little opportunity to provide this function.

Nutrient removal/retention: Herbaceous and shrub vegetation in the wetlands can effectively trap and utilize potential nutrients before reaching watercourses. Nitrogen fixing bacteria in wetland soils also trap nitrogen. Although with no current sources of nutrients present, this wetland has little opportunity to provide this function.

Production export: numerous tree, shrub and herbaceous plant species in the wetlands provide food, berries and seeds for wildlife. Invertebrates and amphibians provide food for birds and mammals.

Sediment and shoreline stabilization: Roots from herbaceous grasses and plants, shrub species and trees found in wetlands adjacent to the watercourses help bind and stabilize soils which helps prevent erosion along steeper edges of wetlands and streambanks.

Wildlife habitat: Numerous amphibians, reptile, mammal, and bird species inhabit this wetland and watercourse complex. The wetland and upland riparian zones adjacent to the wetland serve as wildlife habitat. Wildlife habitat is the primary function of this wetland.

This wetland did not exhibit the wetland functions of fish habitat nor floodflow alteration due to the lack of significant deep-water habitat areas capable of sustaining fish or storing flood waters.

Palustrine forested scrub-shrub wetland & Anderson Brook values

The following wetland values were exhibited by this wetland/watercourse:

Recreation: This wetland/watercourse complex holds the potential for active or passive recreational opportunities such as hiking, hunting or viewing of wildlife, although with no public access on this property, this wetland has little opportunity to provide this value.

Educational/scientific value: this wetland/watercourse is relatively undisturbed, contains multiple wetland classes, and is considered as valuable wildlife habitat, although with no public access on this property, this wetland has little opportunity to provide this value.

Uniqueness/heritage value: this wetland/watercourse serves an important role in the ecological system of the area, it is a typical wetland class for the area, and serves as valuable wildlife habitat.

Visual/aesthetic value: the wetland/watercourse is visible from multiple viewing locations due to its position in the landscape, it contains a diversity of vegetation that turns vibrant colors during different seasons, it is considered valuable wildlife habitat, and is not significantly disturbed.

This wetland/watercourse did not exhibit the value of threatened/endangered species habitat as the site was not shown within the shaded areas on the current natural diversity database maps.

Potential wetland impacts

The project plans and site were reviewed to assess the potential impacts to the wetlands from the proposed parking area expansion.

On this parcel, a 51-unit development is proposed with an access road/cul de sac, utilities, water, sanitary sewer & storm water discharge/treatment systems.

Along the southern limits of the development, a 3:1 slope or less is proposed as shown on the site plan.

The clearing limits and E&S measures shown on the plans vary from approx. 120 feet in width to immediately adjacent to the wetlands.

The topsoil stockpile is shown a considerable distance from the wetlands and silt fencing is shown along its downslope perimeter.

A two-bay grassed storm water basin is proposed to remove sediments and attenuate storm water flows before discharge.

E&S Measures:

The submitted project plans show the proposed E&S measures around the perimeter of the clearing limits adjacent to the wetlands as silt fencing.

It should be noted that the proposed storm water treatment basin and swale are proposed to be utilized as a temporary sediment basin during construction to prevent potential sediment discharges from reaching the wetlands.

Jute netting is proposed to help hold and establish vegetation on steeper slopes.

It would be my recommendation that the E&S measures be installed as soon as possible after the initial timber cutting/land clearing and before the stumping and topsoil removal operation. It is during this phase where the most likely opportunity will occur for erosion and sedimentation. In the northeast area the existing slopes adjacent to the wetlands/watercourse are moderate, and the excavation, filling and grading are proposed directly adjacent to the wetlands.

Along the portions of the clearing limits within 75 feet of the wetlands, I would recommend either super silt fencing or silt fencing backed by staked hay bales should be proposed and implemented. The silt fencing will also prevent reptiles and amphibians from entering the development areas.

Silt fencing should be shown along wetland flags WF-37 to WF-39 for the excavation/installation of the rip rap level spreader and pipe.

I would also recommend that E&S inspections be conducted on a frequent basis during the land clearing/stumping/topsoil stripping phases, and prior to significant storm events.

Direct wetland impacts:

No direct wetland or watercourse disturbance is proposed.

Potential short-term impacts:

The potential short-term impacts associated with the land clearing, stumping, top soil stripping and construction would be limited to potential sediment discharges during significant storm events.

Provided that the proposed/recommended E&S measures/inspections are correctly implemented and maintained throughout the project timeframe, the disturbance directly adjacent to the wetlands will not significantly impact the wetlands or their existing functions due to erosion and sedimentation. Once the top soils are removed, the well-drained, sandy/gravelly soils will allow for good infiltration of storm water runoff both pre and post construction.

The quick and permanent establishment of vegetation in the disturbed areas is crucial to the prevention of erosion. To minimize the potential for these impacts, E&S control measures have been incorporated into the project plans on sheet 7 of 9.

Potential long-term impacts:

Wetland hydrology

I see no direct or long-term impacts to the wetland/watercourse hydrology as a result of the proposed development, or storm water treatment basin. The storm water associated with the access drives, parking areas and the impervious surfaces, (roof areas), will be a significant input to the existing hydrology, through some minor overland flow, but mostly through the storm water basin, impervious grass & rip rap swale, as ground water recharge or as direct discharge during significant storm events after treatment. It is my opinion that these inputs from the impervious surfaces will augment the existing hydrology.

Currently, the storm water associated with the school storm water system, Louise Berry Drive and Franklin Drive and ground water discharge are all inputs into the hydrology of Anderson Brook and the wetlands. These inputs will not change as a result of the construction of the development.

It should be noted that currently the sources of hydrology for the wetlands/watercourses are ground water, off site stream and storm water flows, minor overland storm water & precipitation flows and a small measure of direct infiltration through the well-drained gravelly soils within the upland areas adjacent to the wetlands.

Water quality:

Due to the incorporation of the paved parking surfaces, rip rap and grass lined water swales, the 2-bay grassed storm water treatment basin, rain garden, and some direct infiltration of storm water in the well-drained, sandy, gravelly soils, I see no significant or adverse impacts to the existing water quality of the wetlands or Anderson Brook from storm water discharges.

Adjacent upland wildlife habitat

Potential long-term impacts to the upland habitat from the project would include the loss of a significant portion of the URA serving as riparian zones and upland wildlife habitat adjacent to the wetlands and brook corridor. This intrusion will force wildlife into the vegetated corridor in and around the wetlands and brook, during and after the construction timeframe, and into other areas where the uplands are not disturbed.

The remaining non-developed southern portion of the property below the development varies in width from 100 feet to 270 feet in width, within this area, the wetlands and adjacent upland riparian zones will still provide for all of the wetland functions/values and significant wildlife habitat.

In summary, the design of the project implements features intended to minimize or eliminate potential impacts to the wetlands such as storm water runoff, significant loss of wetland and watercourse habitats, and erosion and sedimentation associated with construction activities.

I feel these proposed measures are adequate to protect the wetlands provided that the recommended erosion and sedimentation control features are implemented and maintained throughout the development timeframe.

The existing wetlands and watercourses will still have the ability to provide the same wetland functions and values they currently provide.

If you have any questions concerning the site assessment or this report, please feel free to contact me.

Sincerely,

Joseph R. Theroux

Joseph R. Theroux
Certified Forester and Soil Scientist
Member SSSSNE, SSSA

NORTHEASTERN CONNECTICUT COUNCIL OF GOVERNMENTS

ENGINEERING PLAN REVIEW PERTAINING TO PROPOSED MULTI-FAMILY DEVELOPMENT (ASSESSOR'S MAP 38, LOT 22) LOUISE BERRY DRIVE BROOKLYN, CT

(October 5, 2020)

(Comments to Killingly Engineering Associates' [KEA] Response to my July 22, 2020 Comments and comments pertaining to revised plans are in red)

The comments contained herein pertain to my review of Killingly Engineering Associates response to my plan review comments of July 22, 2020 and their subsequently revised plans, consisting now of nine (9) sheets, entitled "Proposed Multi-Family Development, Louise Berry Drive, Brooklyn, Connecticut, Prepared for Shane Pollock," prepared by Killingly Engineering Associates, dated April 23, 2020 with revision date of August 24, 2020. My comments are meant to serve both the Inland Wetlands and Watercourses Commission and the Planning and Zoning Commission, as they apply to each commission. Most recent Town of Brooklyn Zoning, Subdivision and Wetlands Regulations, Public Improvement Specifications were researched for this review as well as the incorporation of sound engineering principles into the overall design of the project.

Sheet 2 of 8 – Property Survey (revised plan, Sheet 2 of 9)

1. The soil scientist's signature block is missing.

The signature block for the soil scientist has been added to the plan.

Sheet 3 of 8 – Site Plan (revised plan, Sheet 3 of 9)

1. Type of curbing and their radii around the islands in front of the dwelling units is not noted.

The revised plans now show the type of curbing and radii.

2. Recommend sidewalk sidewalks be 5' wide with a 2' wide grass snow shelf between the curb and edge of sidewalk. The proposed sidewalk design will have them more impacted during winter snow removal operations. There is sufficient space to push the walks back and make them wider.

The revised plans now call for a 5' wide sidewalk with 2' snow shelf.

3. If school age children will be living here, it is recommended that sidewalks be installed along Louise Berry Drive opposite the school grounds.

KEA states that no sidewalks are proposed for Louise Berry Drive. I still believe sidewalks should be constructed due to increased traffic on this road and the possibility of school age children living in the proposed condominium development.

4. There is no indication on the plans of the number of bedrooms in each dwelling unit. The number of bedrooms can be used to calculate sewage flow.

KEA states that each unit will have 2 bedrooms.

5. There appears to be one (1) exterior parking space for each dwelling unit. Is there to be a parking garage in each unit to provide at least one (1) additional space?

KEA states that each unit will have a garage for one (1) parking space.

6. In front of Units 1-3, the plan shows that a "block retaining wall" is to be constructed opposite the units. Is this to be the Versa-Lok unreinforced retaining wall depicted on Sheet 8 of 8? If so, it should be labeled as such. Also, how are vehicles going to be prevented from driving over the top of the wall because there is no railing or fence shown to be installed to prevent this?

The revised plans now indicate that the wall will be a Versa-Lok product and a guide rail has been added to the top of the wall.

7. All units except Units 1-3 show curbing around a parking area perimeter and a lawn space adjacent to the unit driveways. Why has this exception been made?

The revised plans now indicate a curbing around lawn spaces for Units 1-3.

8. The guide rail symbol opposite the end of Unit 3 should be labeled.

The revised plans now include the label.

9. A 28,000 s.f. "recreation area" is to be located to the west of Units 47-51. What constitutes a "recreation area?" Furthermore, a significant portion of it (about 50%) is impacted by a proposed temporary sedimentation basin (see Sheet 5 of 8) and an access right-of-way in favor of the Town of Brooklyn. Will the "recreation area" be impacted by the right-of-way because the right-of-way cannot be encumbered in any way? This area, too, will be partially denuded of native vegetation due to construction of the temporary sedimentation basin and subsequent restoration of the land where it was located.

KEA states that the recreation area is for passive recreation and that the temporary sedimentation basin after having served its purpose during construction will be removed and that area restored at the completion of the project. It is also stated that the access easement will not be impacted. However, the revised plans show a temporary soil stockpile where the previous plans showed the temporary sedimentation basin and due to the proposed grading it is hard to imagine that the access easement will not be impacted in some way, especially with the movement of heavy construction equipment. Additionally, the silt fence should be moved further away from the perimeter of the stockpile to allow for more efficient movement of heavy equipment, however, I believe this will require fencing installed across the easement causing some kind of impact. Has the Town of Brooklyn been notified of this and will that be allowed on a temporary basis?

10. The steepest created slopes throughout the project should be clearly identified as 3H:1V (max.) so there is no question on how they should be graded.

KEA states that slopes have been labeled in some areas. However, I recommend that every location where there is to be proposed reshaping of the land be labeled with a slope designation (H:V) so that the site contractor will have no question as to how to shape the slopes the way the designer intended them to be. Also, the revised plans include a note stating *"provide jute netting or turf reinforcement mat,"* but only in one location. This note should be placed at every location where newly constructed slopes will be steeper than 3H:1V.

Sheet 4 of 8 – Layout and Landscaping Plan (revised plan, Sheet 4 of 9)

11. There is a "Light Pole Detail" on this plan, however, there is no indication where the light poles are to be located within the project area or the routing of the electrical system needed to power them.

Streetlight poles have been added to the revised plan. However, it still remains a question as to how the underground electrical service will be installed and where its originating source is located. Additionally, if there are to be ground mounted power transformers and telephone and CATV junction boxes/pedestals, they should be shown on the plan, too.

12. A portion of the area west of Units 47-51 will be disturbed from the construction of a temporary sedimentation basin. A landscaping plan is needed for restoration of this area, too, but nothing has been shown on the plan.

Revised plan Sheet 5 of 9 indicates that there will be a temporary stockpile, not a temporary sedimentation basin, and on Sheet 4 of 9 there is a note stating *"provide New England erosion control restoration mix in this area where temporary sedimentation basin will be utilized during construction."* However, this note should be revised to read *"temporary stockpile."*

13. It would seem appropriate to soften the view of the gravel maintenance access driveway, which is located adjacent to the stormwater basin, from the housing units with landscaping consisting of trees and shrubs.

On revised plan Sheet 5 of 9, landscaping consisting of eight (8) Leatherleaf Viburnum has been added to provide a visual buffer to the stormwater basin for several of the closet dwelling units.

Sheet 5 of 8 – Drainage and Utilities Plan (revised plan, Sheet 5 of 9)

1. Catch basin information is missing, i.e. type of catch basin, top of frame elevation, pipe invert elevations (in – out), roadway centerline stationing position and offset (RT or LT) from the centerline station.

The requested catch basin data is now included in the plans and located on the new Road Profile plan, Sheet 6 of 9. Incidentally, the title of this sheet should be changed to "Road Profile," as it is not a "Drainage and Utilities Plan." Also, the profile for STA 8+50 thru 10+00 should be moved to the left and joined to the profile for STAs 4+50 – 8+00 at the appropriate elevation line.

2. Drainage system pipe information is missing, i.e. type of pipe material, diameter, length, and slope.

The requested drainage pipe data is now included in the plans and located on the new Road Profile plan, Sheet 6 of 9.

3. The type of pipe to be used for the 8" roof leaders has not been specified nor the minimum slope to the connection at a catch basin. Detectable warning tape should be used over the pipe if it is not made from a ferrous material.

On Sheet 5 of 9 a note has been included stating the roof leader size and pipe material. A minimum slope has not been noted and no construction detail has been included in the plan set showing trench width, pipe, minimum depth of bury, bedding material, detectable warning tape, etc. A detail should be included in the plan set describing this information.

4. Sanitary sewer manhole information is missing, i.e. top of frame elevation and pipe invert elevations, roadway centerline stationing position and offset (RT or LT) from the centerline station.

The requested sanitary sewer system data is now included in the plans and located on the new Road Profile plan, Sheet 6 of 9.

5. Sanitary sewer system pipe information is missing, i.e. type of pipe material, diameter, length, and slope.

The requested sanitary sewer system pipe data is now included in the plans and located on the new Road Profile plan, Sheet 6 of 9.

6. Building sewer connections should have cleanouts shown exterior of the building footprint.

KEA states that building sewer cleanouts will be provided, however, they are not shown on any plan exterior of the building units. Furthermore, the way building sewer connections (individual units) are to be connected to a sewer line manifold or trunk line need to be shown on plan Sheet 5 of 9.

7. How are Units 1, 2 & 3 connected to the sanitary sewer system? The nearest sanitary manhole (S1) is shown to be approximately 150' away. "Spaghetti" connections to this manhole should not be allowed and will require extending the sewer main to approximately STA 9+50.

On plan Sheet 5 of 9, KEA has added an additional sanitary sewer manhole (S1) at STA 8+22.87 (8.12' LT). However, if the connection of each housing unit (Nos. 1 – 3) to the sewer main is to be as depicted in the "Sewer Connection Detail" shown on Detail Sheet 3 (Sheet 9 of 9), then the sewer main needs to be extended further up the road and an additional sewer manhole constructed at STA 9+35, more or less.

8. The proposed sanitary sewer collection system is shown to be connected to the existing sanitary sewer line in an easement located on town property. What is the purpose of having this easement? What does the sewer and water line serve? Are the lines mains or building services? Who will make the connections? Who will be responsible for maintaining the sewer and water lines after they are installed?

It was understood that this is an existing easement. KEA did not answer 1) what is the purpose of the easement, 2) what does the sewer and water lines serve, 3) are the lines dedicated services or mains that anyone could connect to, 3) who will make the connections, and 4) who will be responsible for maintaining the lines to the condo development. One other important point is did anyone have to pay for the extension of the sewer and water lines from Vina Lane? If so, should that party receive some compensation for the condo tie-ins?

9. No information has been provided such as the elevations of the invert of the connections at the existing sanitary sewer manhole (what is the manhole made of—brick, cement block, precast concrete or ?), top of frame elevation, the size of the existing inflow and outflow lines, pipe material, slope, and direction of flow. Due to lack of information it is unclear if this is a sewer main or a service connection and whether

or not the calculated sewage flow from the 51 dwelling units (number of bedrooms unknown) can be accommodated by the existing sewer line, whose flow and capacity should be evaluated back to its connection to a main trunk line and the analysis presented in a report. Have test holes been dug to find out whether or not there will be a conflict between the new sewer line (new) and the existing water line that is shown to be in the same easement?

If the sanitary sewer manhole in the easement is not accessible, how did KEA know where to locate it on their plan? KEA needs to ask the Brooklyn WPCA for permission to excavate around the existing manhole to provide the particulars of this manhole, i.e. top of frame elevation, type of manhole (precast, brick or block), pipe inverts in/out, diameter and type of pipe, etc. and place this information on the plan. Additionally, the consultant needs to ask Connecticut Water for permission to locate the water line (vertically and horizontally), especially the 90° bend where the proposed sewer connection crosses it. This is important due to the fact that there should be a thrust block that should not be disturbed at this location. If the sewer line crosses this critical point then the water line must be exposed for at least two joints on either side of the bend and either friction clamps or other mechanical joint restraint devices be installed to prevent a blowout of the line. KEA needs to address this and just not leave it to Connecticut Water to do that. Information gleaned from test pits and examination of the infrastructure is to be noted on the site plan and profile plan.

10. The existing water line in the sewer easement needs to be identified by pipe material, size, static pressure, calculated from static pressure taken at the closest fire hydrant on Vina Lane or Route 205, at the proposed connection and valve/fittings/thrust block configuration to make the connection. Is this considered a water main or a service?

This information is critical to this development and should have been obtained prior to plan submission. When was Connecticut Water contacted to provide this information? The information is needed in order to complete the engineering review of this development.

11. The “sewer easement in favor of the Town of Brooklyn” also contains a water line. Does the recorded sewer easement state that a water line is also included in said easement? If not, will there be an easement for the water line?

KEA did not provide an answer to this request. This information is needed in order to complete the engineering review of this development.

12. The water system needs additional information, i.e. type of pipe (material and joint type—for example, bituminous coated Class 52, cement mortar lined, mechanical joint), RSV gate valves (open right or left?), tapping sleeve and valve, gate valve boxes (sliding type), corporations, curbstops, blowoff assembly, fire hydrants, thrust blocks (with dimensions for 150 psi thrust), description of fittings and whether mechanical joint or push-on, water services to buildings, megalugs, friction clamps, etc. How is the connection to the existing water line to be made and is the existing water line capable of serving its present use and the addition of the 51 single-family residential condominium units? How this was determined should be documented in writing.

KEA stated that when they receive this kind of information from Connecticut Water they will update their plans with it. When was this information requested and when will it be received? This information is needed in order to complete the engineering review of this development.

13. Due to the type of building structures and their close proximity to one another, has the Fire Marshal been contacted in writing to determine whether or not a separate fire service will be required for each

multi-housing building or if private fire hydrants will be required? Has a hydrant fire flow test been conducted for evaluation by the Fire Marshal?

KEA states that fire hydrants will be installed required by code. What code? They also state that they will determine whether the units will have a built in fire suppression system (sprinklers) or firewall separation. I thought the Brooklyn Fire Marshal was the expert who makes this kind of decision. The Fire Marshal should submit a written review of the plans with recommendations for the file.

14. I calculate, by physics, that the static pressure drop of the water service from the connection in the easement on Town of Brooklyn property (elev. = 238) to the top end of the system (elev. = 312) to be 32 pounds per square inch (there is a 1 psi loss for every 2.31 feet of elevation change). If it is found that the static pressure at the connection is less than adequate, a pump station would become necessary for the domestic supply and the fire supply to overcome the deficiency in water pressure—this should be found out now rather than later. Also, the engineer must take into account additional pressure friction losses due to reduced pressure zone backflow preventers, which is typically a 12 pound per square inch loss, thus making the potential pressure loss close to 45 pounds per square inch. Water meters, service piping, bends and isolation valves also introduce their own friction losses, depending on state of flow. As can be seen from this, a thorough analysis of the water system is necessary to determine if there will be safe and adequate water delivery at acceptable operating pressure to all housing units, all the way up to the intersection of Louise Berry Drive. This is especially important for firefighting where hydrants may be expected to flow at approximately 1,000-1,500 gallons per minute under residual pressure or meeting this rate via assistance with a pumper truck, if the supply main has the delivery capacity for that. The complete analysis of the water system should be presented for review in report form as soon as possible to see if it will be adequate.

KEA did not answer this question. The line may be looped, as they stated, however, this is a dead-end line that functions according to the laws of physics. The requested information is needed to complete the engineering review for this development.

15. How is water consumption metering to be accomplished along with backflow prevention? Will there be a “Hotbox[®]” or similar all-weather environmentally controlled enclosure (needs electricity) protecting a master meter and backflow device or will units be individually metered with their own backflow preventers? If fire hydrants are installed in the development, how will Connecticut Water handle billing that if a master meter at the connection to the existing main is not installed?

KEA is correct, this is not a wetlands issue – it is an engineering issue that needs to be addressed to provide adequate and safe water supply to this development. Additionally, future condo association members do not need any surprises on the cost of maintenance and how they will be billed for water consumption. KEA needs to provide the requested information.

16. The water system needed for a development of this scope needs to be designed by a professional engineer. It is not as simple as connecting a single house to a water main. The system design should be accompanied by numerous construction details in the plan set in order for a contractor and construction inspector is sure the system is being installed properly.

KEA stated that when they receive this kind of information from Connecticut Water they didn't say they will update their plans with it. When was this information requested and when will it be received? This information is needed on the plans in order to complete the engineering review of this development.

17. The water main installation is shown following a curved course in some places. Upon closer examination, it may be found that the radius of the curve is greater than the maximum pipe deflection (by size) recommended by American Water Works Association (AWWA) standards and, in fact, bends (fittings with thrust blocks) may have to be utilized in the design to route it around the curve.

The revised plans now show bends in the proposed water line. However, no details have been included in the plans for construction of thrust blocks for various types of water main fittings (tees, wyes, bends, end caps, etc.) for, say, 150 psi line pressure.

18. For improved quality of water for Units 1, 2 & 3, the proposed water main should be extended to approximately STA 9+50 and a blowoff assembly, friction clamp and thrust block installed there.

KEA's revised plan now shows the full extent of the existing water main in Louise Berry Drive and the condominium development is now connected to it. Also, see Comment No. 14 above.

19. The drainage outlet from the stormwater basin will direct water onto the Baker property. Will this require a drainage easement on the Baker property in favor of the condominium association to allow this flow? It is unknown as to what volume of water will discharge in more or less a point source to the receiving wetlands.

KEA states that the post-development drainage pattern to the wetlands is unchanged. This is not true since the pre-development (existing) drainage pattern is that of sheet flow from the entire property from Louise Berry Drive, ultimately flowing into the wetland across the perimeter of the wetland located on the subject property. In post-development, the runoff from the pre-development area will be collected in an engineered drainage system and a swale all of which will empty into a stormwater retention basin that will point discharge into a discreet location in the wetland practically on the adjacent Baker property. I recommend that the configuration of the proposed drainage design be revisited to determine whether an alternate drainage system discharging stormwater runoff to the wetland at several points on the subject property, rather than one, will provide a greater benefit in maintaining the health of that portion of the wetland system.

20. It is recommended that the riprap outfall at the terminus of the stormwater basin outlet pipe be constructed as a plunge pool. This will further reduce discharge velocity and provide additional sediment transport reduction.

KEA's drainage report, which was not available initially, indicates the discharge from the basin for the 100-year design storm will have a low velocity at less than 3 fps. Accordingly, a plunge pool is unnecessary.

21. The level spreader at the terminus of the stormwater basin discharge pipe is not labeled as such and its minimum length should be shown. Also, there needs to be an erosion and sediment control system installed below the disturbance caused by constructing the discharge pipeline and the level spreader.

The level spreader has been dimensioned on the plan and additional erosion and sediment control system has been shown downstream of the level spreader.

22. It is recommended that an additional erosion and sediment control system be installed along the north side of the main road from the cul-de-sac turnaround continuously, save for driveway openings, to opposite centerline STA 8+00.

Additional erosion and sediment control (E&S) has been added to the plan. However, the E&S to the west of the stockpile shown on Sheet 5 of 9 should be moved to a line that is 20' from the west boundary of the stockpile to allow for movement of heavy equipment. As shown, the E&S line is too restrictive for that kind of maneuvering.

23. As shown on the plan, the temporary sedimentation basin will be constructed in an area where there is a six (6) foot difference in elevation across its width (west to east). According to the "Temporary Sediment Trap Embankment Cross Section" located on Sheet 7 of 8, a 3' (max.) deep level bottom excavation, starting on the west side of the basin will require about an 8' deep excavation on the east side of the basin. If this is not the way the basin is to be constructed and instead will be a combination of berm construction on the low (west side) and 3' deep excavation on the east side, that should be shown in the detail on Sheet 7 of 8. In any case, no deep test holes have been dug here to show where groundwater may lie or where an average seasonal high water table may exist, which would be evidenced by soil mottles, to see if there would be an impact on the basin. Constructing the basin with a earthen berm should be shown on the plans because of the large area of tree removal that will occur. How would accumulated water be managed for this basin? What would be the likelihood of an embankment failure if not built with an emergency spillway protected with at least riprap armoring? Furthermore, there is no sediment control system (silt fence or haybales) surrounding the proposed temporary sedimentation basin, because any sediment laden water that rises to the point where it would flow through the stone dike, the dike will not necessarily trap fine particles of sediment with much efficiency. Also, the aforementioned sediment trap detail incorporates a weir of unknown length at the crest of the stone dike. An explanation of how the weir will function, knowing the pervious stone dike will allow the passage of water, is needed. Drainage calculations are also needed.

This comment is moot because this temporary sedimentation basin was eliminated on the revised plan and a stockpile location is now in its place.

24. The "rain garden" south of Unit 7 is a nice feature, especially for a single-family home site, however, for this project, why aren't more rain gardens proposed? What is to be planted in the rain garden? If this is the only one to be constructed and because of its location behind a building it will be hidden from most people's view and possibly not taken care of for very long – keep in mind, it is on "common land."

The rain garden has been eliminated in the revised plans. However, the consultant has to remove the note that reads "provide rain garden for roof drainage."

Sheet 6 of 8 – Detail Sheet (revised plan, Sheet 7 of 9)

1. Note 9 under "Construction Notes/General Provisions" should be more specific and state that the materials shall be disposed of off the development site.

KEA stated in its response that the note was modified to state what materials shall be removed from the site. It is true that they did modify the note in the revised plan to state the type of materials that should be removed, however, they did not state that the materials should be removed to an approved offsite disposal area. Offsite disposal language needs to be included in the note.

2. In Note 7 under "Development Schedule/Sequence of Operations" it is stated that topsoil stripped from driveway locations will be stockpiled in locations shown on the plans. However, none of the plans show any stockpile locations. Stockpile locations should be shown on the plans.

The revised plan now shows a stockpile area to the west of Unit Nos. 47 – 51. Also, there is only one (1) stockpile location shown on the plan so the word “locations” in Note 7 should be changed to “the location.”

3. In Note 8 under “Development Schedule/Sequence of Operations” it is stated that utility companies are to be contacted to coordinate connections to the water and sewer mains. If it is determined that the existing water and sewer mains are privately owned, the utility companies may not be the entity to contact for the proposed connections. An explanation of who will make the connections needs to be clarified.

KEA states that Connecticut Water will be the owner of the new water main serving the development. If this is the case, since the development’s road will be privately owned and maintained by a condominium association or similar entity, it is likely an easement in favor of Connecticut Water will be required in order to maintain/repair/improve the utilities water infrastructure. It is incumbent upon the Applicant’s consultant to present proof in the form of a written memorandum of understanding that Connecticut Water is willing to do this. The memorandum should also address particulars concerning the water services (domestic and fire), meters, meter pits and fire hydrants.

KEA also stated in their response that the sanitary sewer main will be owned and maintained by the Condominium Association. Therefore, an easement is not necessary for them to do work on what they will own.

KEA did not explain who will make connections to the existing water and sewer lines.

4. In Note 9 under “Development Schedule/Sequence of Operations,” it is stated that the stormwater basin will be used as a temporary sedimentation basin and that drainage structures and pipe are to be installed with inlet protection to catch basins. In light of this, an explanation is needed on how sediment laden water will be prevented from discharging through the stormwater basin outlet structure and into the wetlands.

KEA states that the stormwater retention basin forebay will also serve as a temporary sediment trap during construction with the utilization of a crushed stone berm with a low-level outlet encased in crushed stone and filter fabric to discharge accumulated water into the wetland, to be used during site construction. A detail of the low-level outlet as described by KEA must be shown as a construction detail in order to be sure it is constructed as described, because I am not sure how this would be configured without such a detail. Additionally, there is no sediment transport preventative for runoff from the swale flowing into the stormwater retention basin area during construction. This must be addressed, too, as it does not flow into the basin’s forebay. A complete lateral cross-section of the entire retention basin when used as a temporary sediment trap and then used as a retention basin must be detailed on the plan to provide more understanding of its construction and inspection after it is constructed. The partial cross-section depicted on the plan is unsatisfactory and I believe it was only pertinent to the temporary sediment trap that was eliminated and converted to a stockpile area to the west of Unit Nos 47 – 51.

Recommend installing a silt sock arrangement rather than a crushed stone berm when the stormwater retention basin is first used as a temporary sedimentation basin. The crushed stone berm with filter fabric is difficult to construct and will not prevent sediment transport as desired. The silt sock is much more effective in preventing silt transport.

5. In Note 15 “Development Schedule/Sequence of Operations” it is stated that utilities will be installed to the edge of the right-of-way. This note should be deleted as there is no right-of-way.

KEA stated in their response to my previous comments that they modified this note, but that is not true. The note is still present and must be eliminated because there is no defined road right-of-way.

6. In the “Development Schedule/Sequence of Operations” there is no mention of constructing a temporary sedimentation basin that is shown on Sheet 5 of 8 to the west of Units 47-51.

KEA does not need a note for this as there is no longer a need for a temporary sedimentation basin at this location.

Sheet 7 of 8 – Detail Sheet 2 (revised plan, Sheet 8 of 9)

1. A riprap “Plunge Pool” detail should be added to this sheet for the stormwater basin outlet discharging to the level spreader. The detail should be designed in accordance with the CT DOT drainage design specs handbook.

KEA’s drainage calculations received after the initial plan review indicates a 100-year design storm flow having low velocity from the retention basin outlet piper. Therefore, a plunge pool is not deemed necessary.

2. A grass swale and riprap swale detail should be added to this sheet.

KEA has added the requested swale detail to the revised plan.

3. A cross section of the stormwater basin through the stormwater basin outlet structure should be provided to show the different elevations of stored water for the various design storms, 5- thru 100-year frequency. The “Stormwater Basin Outlet Structure Detail” and basin itself may have to be modified for this range of design storms.

KEA has not added the full stormwater retention basin cross-section as requested. A full cross-section is required with all basin associated construction details and elevations for each design storm water level, including the emergency spillway, outlet structure and basin freeboard above the spillway elevation.

4. There are no deep test pits in the area of the proposed stormwater basin to determine the level of the average high water level (soil mottles), if there is any groundwater present at shallow (<5’) depths and the percolation rate of the soil.

KEA states in their response that deep test pits will be performed prior to plan submission to the Brooklyn Planning and Zoning Commission. This path is fraught with danger because any major changes to the design of the basin caused by information gleaned from test pit data will cause the need for another review by the Brooklyn Inland Wetlands and Watercourses Commission. Again, this is a basic task that should have been undertaken prior to the design and determination of the location of the retention basin.

5. The “Flared End Section” detail and table is for a precast concrete end section. The material and size of drainage pipe is not labeled anywhere on the plans. However, if the pipe used in the engineered drainage system is not Class III precast concrete pipe, and, for example, will be high density polyethylene (HDPE) pipe, it is highly unusual not to use a flared end section manufactured with the same material as the pipe. This needs to be explained or corrected.

KEA states in their response that they corrected the flared end detail for HDPE pipe. This is not true. The entire detail they continue to show is not for HDPE pipe but, rather, for reinforced concrete pipe. The detail still needs to be corrected.

6. In the "Type 'C' Catch Basin Detail" the sump below the lowest pipe invert is called out as 2'-0" min. It is recommended that the sump be specified as 4'-0".

As stated by KEA, the catch basin detail on this plan has been modified to show a 4'-0" sump. However, the elevations of the catch basin on the new Road Profile plan (Sheet 6 of 9) reflect elevations of catch basins with 2'-0" sumps. This needs to be corrected.

7. In Note 2 under "Notes" in the "Turf Reinforcement Mat Installation" detail, it states that the turf reinforcement mat shall be North American Green P-300[®] or approved equivalent. This particular mat is not biodegradable. A biodegradable mat would be a more preferable choice.

KEA states that the turf reinforcement mat selection has been modified to a biodegradable product. The revised plan still indicates the use of North American Green P-300. This must be changed to a biodegradable product, many of which North American Green manufactures. See Note 2 under "Notes" above the "Turf Reinforcement Mat Installation" detail title.

8. The Neenah R-3705 (product ID is incomplete and must be further specified by pipe outlet size) in the "Hooded Catch Basin Detail" appears to be a high maintenance item, according to what appears in the manufacturer's catalog cut. Furthermore, this product is manufactured using cast iron, which is very heavy. If it is installed without any support within the catch basin, special care must be exercised when anchoring this item in a cored precast concrete wall, if it is not cast in place at the precastor's facility, to prevent displacement (drooping) over time. Also, the sump is shown as 2'-0" min. and it is recommended that the sump be no less than 4'-0" deep.

KEA states the hood has been more clearly specified. That is all well and good, however, for an 18" pipe, the hood shown on the detail is not anywhere representative of what a Neenah R-3701-18 Catch Basin Trap looks like and how it is attached to a catch basin. The detail must be corrected to show the proper mounting of the Neenah product, if it is used. I believe it will be highly problematic installing this device correctly which may lead to earlier than expected maintenance problems, which could lead to unwanted substances being discharged into the wetland. Another type of device with a much less complicated mounting should be used. The catch basin sump dimension was changed to 4'-0" on the revised plan.

9. It is unclear where the "Hooded Catch Basin Detail" is to be applied. Is this to be used on every catch basin?

This has been clarified by KEA as only being used on the catch basin preceding discharge into the stormwater retention basin.

Sheet 8 of 8 – Detail Sheet 3 (revised plan, Sheet 9 of 9)

1. In the "Slip Form Concrete Curbing" detail the curbing should be identified as "Bituminous Concrete Curbing" and it would be preferable to have the curbing placed on the binder course for improved resistance to displacement. Placing it on the wearing course makes it more vulnerable to severe damage by a snow plow. In my opinion an even better treatment with respect to snow plows and ease of construction would be to utilize a 12" wide Cape Cod Berm because, experience proves when a snow plow impacts it the plow blade will tend to ride up and over the berm, thus causing less damage and displacement.

In the revised plan KEA has eliminated the “Slip Form Concrete Curbing” detail and replaced it with a “Cape Cod Curbing” detail, which is satisfactory.

2. The type of brick forming the channel and the table is not specified in the “Typical Sanitary Manhole Cross Section” detail. Additionally, the type of frame and cover is not specified (size, weight, vent hole, no vent holes, locking, etc.)

KEA has now specified an acceptable type of brick in the manhole detail. However, information on the frame and cover have not been specified as requested. The frame and cover should be that which is acceptable to the Town of Killingly WPCA and should at least be noted as such in the detail. Incidentally, it is not known whether or not the overall manhole design or other sewer details is acceptable to the WPCA. Has that approval been given in writing by the WPCA?

3. The sanitary “Sanitary Sewer Pipe in Trench Detail” is missing a dimension for the depth of sand to be placed in a level plane above the crown of the pipe, the width of the trench, and detectable warning tape placed over non-ferrous pipe.

The detail has been modified to show the additional information that was requested.

4. In the “Sewer Connection at Manhole” there is no information on how the penetration of existing manhole wall is to be properly sealed around the “residential sewer lateral” to prevent exfiltration/infiltration, i.e. Core ‘N Seal, Link Seal, cement mortar, etc. Additionally, the size of the proposed sewer connection and type of pipe has not been specified in the detail.

The detail has been modified to indicate the type of seal where the pipe will penetrate the manhole and the pipe type/size has been added to the detail.

5. In the “Wood Guide Rail” detail, the lag bolts should be countersunk to minimize a snag point to pedestrian traffic. Also, for best longevity of the guide rail, the number of pounds per square foot of preservative retention and species of wood (Southern Yellow Pine ?) should be specified.

The detail has been modified with the additional information that was requested except for the species of wood. The APWA Category UC4C is satisfactory. However, species of wood and type of wood preservative compound must be specified in the detail.

6. There is no indication on the plans where a wood guide rail is to be installed.

This has been clarified on the revised plans.

7. For the “Speed Limit Sign Detail,” due to the numerous parking spaces proposed along the main access drive, it seems more reasonable that the speed limit be posted at no more than 15 miles per hour.

The detail has been modified on the plan to reflect a 15 mph speed limit.

8. The “Sign Detail” for “No Outlet” should have the CT DOT “W14-2 (41-4605)” designation and spell out the manufacturer’s product number, “Seton #44851,” if that is the desired product to be installed.

The detail has been modified on the plan to reflect a 15 mph speed limit.

9. The “Stop Sign” detail should be called out by the CT DOT designation “R1-1 (31-0552)” and measure 30” x 30”.

The detail has been modified on the plan to reflect a 15 mph speed limit.

10. The “Typical Section – Unreinforced Retaining Wall” detail should include the additional information:

- The batter of the wall or the step back of each ascending row of blocks. Also, in the drawing it is unclear if there is to be deformed rebar included with each course.
- The type of the 4” diameter drain pipe behind the wall is not specified, i.e. Schedule 40, SDR 35, etc., and if it is to be perforated (holes up or down?). Should it be wrapped with filter cloth?
- The composition of the “drainage aggregate” should be stated by “percent passing” or with a CT DOT material specification.
- The minimum depth of the “drainage aggregate” above the pipe.
- The depth below finish grade of the top of the “granular leveling pad” and its composition (structural fill).

Is it necessary to utilize a filter fabric at the rear of the Versa-Lok wall to minimize migration of fine aggregate through the dry joints in the wall?

The detail has been modified on the plan to incorporate additional information requested in the bulleted comments. KEA stated that the detail is what is recommended by Versa-Lok for an unreinforced wall and no filter fabric is needed along the rear of the segmented wall units.

11. In the “Roadway Cross Section” it is noted that a 50’ wide right-of-way is in this project. Since there is no right-of-way lines associated with the road in this project, that designation should be removed. Additionally, it is believed that the sidewalk should be 5’ wide with a 2’ wide grassed snow shelf, not 4’ wide snug to the curb as shown and specified as Portland cement concrete not just concrete. Another concern is that the grade of bituminous concrete to be used in the roadway base course and surface course is not specified. Also, the inclusion of a 6” curb — a 12” wide Cape Cod Berm would be more maintenance friendly and have a more pleasing aesthetic appearance after several snowplow impacts.

The cross-section detail has been modified to show it without a right-of-way.

12. In the “Concrete Sidewalk Detail” the width of the sidewalk is shown to be 4’-0” wide and 4” thick. It is recommended that these dimensions be changed to 5’-0” and 5”, respectively, in accordance with the Brooklyn Public Improvement Specifications. It is also recommended that the sidewalk material be called out as “Portland cement concrete” with a 2’-0” (min.) snow shelf depicted at the edge of pavement.

The sidewalk detail has been modified to show it 5’-0” wide with a 2’-0” snow shelf. The thickness was not increased to 5”.

General Comments

1. The scale of the plans at 1”= 40’ appears to be inadequate in order to include numerous notes without cluttering the drawing. A better scale would be 1” = 20’ for viewing the information and avoiding a lot of clutter.

The 40-scale plans are acceptable by town regulations, however, 20-scale would provide a less crowded view of the plans and less likely for the observer to overlook a detail.

2. Detailed drainage calculations for the 5- thru 100-year design storms have not been submitted for review with the plans. The calculations are necessary to evaluate the engineered drainage system and any impact to the receiving wetlands. A gutter analysis should be included in the report evaluating the effectiveness of the catch basin grates in catching and treating gutter flow for spread and grate blowby.

Drainage calculations have since been submitted for review. However, they have not been fully reviewed at this time.

3. Due to its steep slope (10%±), length, width and critical role in providing access to the residential units, a separate plan and profile of the main access road will be required (scale: Horiz. 1" = 20' and Vert. 1"= 5') for evaluation and demonstrate its relationship to connected parking lots and elevations of adjacent residential units with stepped construction, and to see how well their parking spaces integrate with the design. Underground utilities (drainage, sewer, water, and gas) with appropriate inverts and frame elevations, and vertical geometry (PVC, PVT, PVI, Tangents, slopes, side parking intersections by station, etc.), should be included in the profile. This important information was not included in the plan set under review. This needs to be treated like a road project in order to be constructed properly.

As requested, KEA has added a detailed Road Profile plan (Sheet 6 of 9) to the plan set. This plan depicts roadway slope; vertical curves; existing and proposed elevations; drainage, water and sanitary sewer lines; at a scale of Horiz: 1" = 40', Vert: 1" = 4', which is a standard 10:1 vertical exaggeration. The title block of this plan is incorrect and needs correcting.

4. The proposed site design is very tight. Parking may become an issue for owners who have guests and no place to park them except along edges of some "off-street" (the main road is referred to for clarity as a "street") parking lots or along the "street." This has the potential of introducing a safety hazard, especially for any responding emergency service vehicles, and certainly an inconvenience for some residents—this is especially true for residents of Units 40-44 and 47-51.

KEA is willing to discuss additional parking with town staff. I still feel that because the site design is so compact. The way housing units are situated along most of the length of one side of the the main roadway would force overflow parking to park on the opposite side of the road. This has a great potential for creating an undesirable and unsafe condition by causing traffic congestion and sight distance obstruction for vehicles exiting the off-street parking areas. For these reasons additional parking is warranted for the safety and convenience of all the residents, visitors and operation of large commercial vehicles.

5. It should be noted that a large area of wetlands runs across the length of the southern portion of the property to be developed. Presently, the existing topography shows that this wetland receives water from a good portion of the land (acreage) along a portion of land at the northern boundary of the property and possibly beyond, from the school property. The proposed site development with its buildings and street will block a good portion of this flow from the wetlands-at-large and collect it in a drainage system that will only feed the wetlands at the sole discharge of the stormwater basin outlet. I am not sure if this impact has been studied by a wetlands biologist—not a soil scientist—to see if this is something to be concerned about and how it may affect the ecology of the area. However, runoff starvation of the wetland may be reduced if the drainage system were redesigned and broken up into segments with collected runoff discharged from various locations along the road, toward the wetland across "common land." This may also reduce the amount of pipe shown in the current design and reduce the size of the stormwater retention basin.

I have reviewed the soil scientist's wetlands report. I am concerned that the report makes statements and conclusions by the soil scientist about impacts to hydrology and water quality, unless the he has the

credentials to do this, of which I am not aware of. I believe a certified hydrologist should be doing this. Furthermore, the report states that the *“potential long-term impacts to the upland habitat from the project would include the loss of a significant portion of upland review area serving as riparian zones and upland wildlife habitat adjacent to the wetlands and brook corridor. This intrusion will force wildlife into the vegetated corridor in and around the wetlands and brook, during and after the construction timeframe, and into other areas where the uplands are not disturbed.”* Then, after making these statements a conclusion is reached stating *“the existing wetlands and watercourses will still have the ability to provide the same wetland functions and values they currently provide.”* How can this be? Is it wise to eliminate upland review area to cause such a significant loss of area to the detriment of the riparian zone and wildlife habitat?

Also, the wetlands report states that two watercourses were located on the property. However, the watercourses are not shown on the plans and they require a 175' regulated wetland area, which is not shown.

6. It is unclear whether or not the Applicant's engineer has calculated the amount of sewage that may be produced by 51 units (number of bedrooms unknown at this time) and if the Brooklyn Water Pollution Control Authority has been contacted about this and approved a connection.

According to KEA, they have not formally discussed sewage disposal with the Town of Killingly WPCA. This should be done before filing an application and plan submission with a commission to try and avoid changes to the scope of the project after the submission is made.

7. After all is said and done, the drainage system, sanitary sewer system, water system and access roads cannot be constructed, without a lot of guess work, using these plans. The lack of information relegates them to “schematic plan” status.

Much of the missing water, sanitary sewer and drainage system is now included in the revised plans. What is left to include in a subsequent plan revision is information that KEA expects to receive from Connecticut Water, Town of Killingly WPCA and the Brooklyn Fire Marshal. Without this additional information, the plans are considered incomplete. Additionally, the soil scientist's wetland report contains conclusions that may only be made by an engineer or hydrogeologist. If this is found to be true, then the plans are incomplete until opinions on water quality and are received from one of these professionals.

8. If this is to be a condominium as stated in the Applicant's application, when will the paperwork on the bylaws of the condominium association be drafted and finalized? How will this be coordinated with any approval this project may receive from the Planning and Zoning Commission?

KEA provided an acceptable response to these questions.

9. Who will track the surveying of the interior of each condominium unit to ensure that they are filed with the appropriate office (Town Clerk Land Evidence Records and Building Official)? How may this affect issuing a Certificate of Occupancy for any individual unit?

KEA has addressed the first question but not the one pertaining to the Certificate of Occupancy (unit by unit?).

10. In a condominium development there is common space that is governed by the Condominium Association, with each owner having a vote in decision making. Should the land around the buildings be labeled on the plans as “common space?” Any common space within the buildings would be surveyed

and noted as such in land evidence records. However, this may be unlikely according to the building footprints shown on the plans.

KEA provided a response to this question. However, there is nothing in the plans that says this is a condominium project. If this is a condominium project, then a reference to "condominiums" should be clearly stated in the plans.

11. A typical floor plan and building rendering would be helpful in visualizing the Applicant's project.

A typical floor plan should be included in the plan set being reviewed. This should be included in the next plan review.

12. Who will be the responsible party for maintenance and repair of the water main and sewer main and any extensions or modifications to the same?

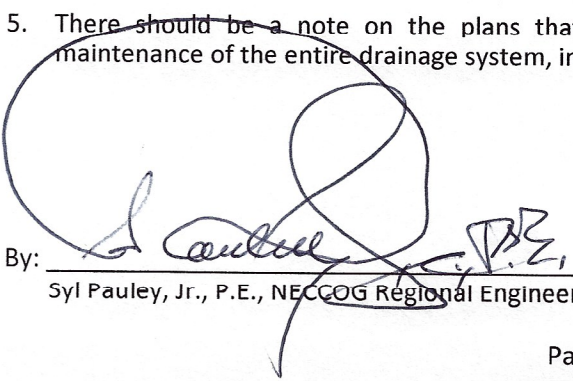
KEA has stated that Connecticut Water will assume ownership of the water main and be responsible for its maintenance. However, the Condominium Association will be responsible for ownership and maintenance of the sanitary sewer line.

13. All references in the plan set to State of Connecticut Department of Transportation Form 817 or any other previous Form should be updated to read the current Form 818.

The revised plans continue to refer to Form 817. This should be changed to Form 818.

THE FOLLOWING ARE NEW COMMENTS, AS OF OCTOBER 5, 2020, PERTAINING TO REVISED PLANS OF AUGUST 24, 2020

1. A note should added to "Construction Notes/General Provisions" that states upon completion of construction, accumulated sediment and other deleterious material shall be thoroughly removed from all catch basins, manholes, pipes and swales and disposed of off-site. Additionally, the stormwater retention basin bottom and appurtenant structures shall be cleaned and restored to "like new" condition.
2. Plan sets submitted to Inland Wetlands and Watercourses Commission and Planning and Zoning Commission shall be identical in content.
3. Plans shall be considered incomplete until all staff comments are addressed.
4. A minimum of three (3) deep test pits are to be dug in the area of the proposed stormwater detention basin and shall be witnessed by Brooklyn Wetlands Enforcement Officer during the time they are dug.
5. There should be a note on the plans that the Condominium Association shall be responsible for maintenance of the entire drainage system, including the Stormwater Detention Basin.

By: 
Syl Pauley, Jr., P.E., NECCOG Regional Engineer