



JOSEPH R. THEROUX

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

2/3/2023

CONSERVATION COMMISSION
TOWN OF WATERFORD
15 ROPE FERRY RD.
WATERFORD, CT. 06385

ATTN: MS. MAUREEN FITZGERALD, ENVIRONMENTAL PLANNER

RE: RESPONSE TO CARYA ECOLOGICAL SERVICES, LLC AND SLR INTERNATIONAL CORPORATION REPORTS.

DEAR MS. FITZGERALD,

I HAVE REVIEWED THE ABOVE-MENTIONED REPORTS, AND THE MOST RECENT SET OF PROJECT PLANS, REVISED AS OF 12/5/2022, AND I OFFER THE FOLLOWING RESPONSES AND INFORMATION:

1.) CARYA ECOLOGICAL SERVICES REPORT DATED JANUARY 26TH, 2023:

THE REPORT ON PAGE 3 STATES THAT IN MY FUNCTION AND VALUE REPORT, I INCORRECTLY RATED THE WETLAND FUNCTION OF FLOOD STORAGE CAPACITY AS LOW. I MUST DISAGREE WITH HER OPINION ON THIS, AS THE NUMEROUS DEPRESSIONS IN THE TOPOGRAPHY DO NOT CONSTITUTE SIGNIFICANT FLOOD STORAGE CAPACITY OR FUNCTION.

THE FLOOD STORAGE CAPACITY OF THE WETLAND COMPLEX ASSOCIATED WITH FENGER BROOK IN THIS AREA IS COMPROMISED DUE TO THE NUMEROUS INTERMITTENT WATERCOURSES AND THE BROOK ITSELF TRANSPORTING ANY POTENTIAL FLOOD FLOWS DIRECTLY OFF THE SITE WITH LITTLE RETENTION.

THIS IS EVIDENCED BY THE HIGHLY ERODED, ENLARGED STREAMBANKS AND LARGE EXPOSED STONES AND BOULDERS WITHIN AND ADJACENT TO THE BANKS. THIS WAS NOTED IN MY REPORT. THE DEPRESSED AREAS WITHIN THE WETLANDS DO SEASONALLY INUNDATE FROM SURFACE RUNOFF AND GROUNDWATER DISCHARGE, AND POSSIBLY INFILTRATE DURING THE DRY SEASON, BUT THE OVERALL SLOPING TOPOGRAPHY ADJACENT TO THE BROOK WILL NOT STORE OR DETAIN POTENTIAL FLOOD FLOWS SIGNIFICANTLY.

THE REPORT ALSO STATES THAT "MR. THEROUX DID NOT ASSESS THE FUNCTIONS AND VALUES OF THE WETLAND SYSTEM AS A WHOLE."

FOR MY ASSESSMENT I INCLUDED THE FENGER BROOK WETLAND CORRIDOR, FOCUSING PRIMARILY ON THE BROOK AND THE FORESTED/SCRUB-SHRUB WETLANDS DIRECTLY ADJACENT TO THE BROOK AND THE PROPOSED DEVELOPMENT.

I DO CONCUR THAT DUE TO THE 95 ACRES OF THE BATES WOOD PARK IN NEW LONDON, WHICH IS PUBLICLY ACCESSED PROPERTY, THE ADDITIONAL WETLAND VALUES OF

RECREATIONAL AND AESTHETICS ARE EXHIBITED IN THIS PORTION OF THE WETLAND COMPLEX BUT NOT IN THE WETLANDS ON THE PROJECT SITE.

OVERALL, I THINK WE ARE ALL IN AGREEMENT THAT FENGER BROOK AND THE WETLAND SYSTEM AS A WHOLE, IS A HIGHLY FUNCTIONING WETLAND WORTHY OF PROTECTION WHICH IS WHY I SUPPORT A CONSERVATION EASEMENT OVER THE ON-SITE WETLANDS. THE PLACEMENT OF A CONSERVATION EASEMENT WILL PRESERVE THE EXISTING FUNCTIONS AND VALUES OF THE WETLANDS.

PAGE 3 OF THE REPORT MENTIONS "FOREST POOLS WHICH ARE EXPECTED TO BE PRODUCTIVE VERNAL POOLS".

WITHIN THE WETLANDS TO THE EAST OF THE PROPOSED DEVELOPMENT THERE ARE NUMEROUS DEPRESSED AREAS THAT INUNDATE SEASONALLY, FED BY GROUNDWATER AND INTERMITTENT WATERCOURSES, HOWEVER, I DO NOT FEEL THAT IT IS CORRECT TO ASSUME THAT THESE DEPRESSIONS ARE VERNAL JUST BECAUSE THEY ARE INUNDATED DEPRESSIONS.

IN MY SITE VISITS IN MARCH, MAY, AND JULY, I NOTED NO OBLIGATE OR FACULTATIVE VERNAL POOL SPECIES IN THESE AREAS, IN FACT I SAW NO AMPHIBIANS OR REPTILE SPECIES ALTOGETHER.

I DO HOWEVER, BELIEVE THAT A SIGNIFICANT AMPHIBIAN AND REPTILE POPULATION EXISTS IN THE ON-SITE WETLANDS AND IT WARRANTS PROTECTION.

ALTHOUGH NOT DIRECTLY ADDRESSED IN THIS REPORT, MRS. GADWA TESTIFIED THAT SHE HAD CONCERNS THAT THERE WILL BE DIMINISHED FLOWS TO THE WETLANDS ALONG FENGER BROOK IN THE NORTHERN STRIP OF THE SUBDIVISION, THUS POTENTIALLY CHANGING THE HYDROLOGY OF THE WETLANDS IN THIS AREA WHICH COULD CAUSE SIGNIFICANT IMPACTS.

I BELIEVE THIS LINE OF THINKING IS DUE TO THE PROPOSED ABANDONMENT OF THE EXISTING, (UNTREATED), STORMWATER DISCHARGE FROM CLARK LANE AND ITS INCORPORATION INTO THE PROPOSED STORMWATER TREATMENT SYSTEM.

IT IS MY PROFESSIONAL OPINION THAT THIS WILL NOT BE THE CASE, DUE TO THE FACT THAT THE CURRENT STORMWATER DISCHARGE DOES NOT CONSTITUTE A SIGNIFICANT HYDROLOGIC INPUT TO THE WETLANDS AND ESPECIALLY THE BROOK, AS THE DISCHARGE POINT IS OVER 300 FEET FROM THE WETLAND BOUNDARY AND THESE DISCHARGES INFILTRATE INTO THE UPLAND SOILS.

THE VOLUMES OF STORMWATER THAT DISCHARGE FROM THE CLARK LANE DRAINAGE AREA, (2.66 ACRES), ARE NEGLIGIBLE COMPARED TO THE VAST QUANTITIES OF GROUNDWATER THAT SERVE AS THE MAIN SOURCE OF HYDROLOGY TO THE WETLANDS.

I BELIEVE THE PROPOSED GRADING AND STORMWATER DIVERSION WILL NOT SIGNIFICANTLY IMPACT THE GROUNDWATER HYDROLOGY OF THE WETLANDS DUE TO THE OVERALL DISTANCE THIS FEATURE IS PROPOSED FROM THE WETLANDS, AND THE GROUNDWATER BREAKOUTS IN AND DIRECTLY ADJACENT TO THE WETLANDS OCCUR AT A MUCH LOWER ELEVATION, (96'), THAN THE HIGHER UPLANDS 300 FEET UP THE SLOPE, ELEVATION (108").

MRS. GADWA IS ALSO CONCERNED WITH THE EFFECTS OF GREATER QUANTITIES OF WATER THAT WILL BE INTRODUCED INTO THE SOUTHERN PORTION OF WETLANDS BELOW THE DISCHARGE POINT OF THE DETENTION BASINS. SHE STATED THAT IF THE WATER TABLE WERE TO GO UP 5 OR 6 INCHES IN ELEVATION, THERE WOULD BE ADDED TREE MORTALITY.

I DO NOT AGREE WITH THIS ASSUMPTION, FIRSTLY, THE TOPOGRAPHY THROUGHOUT THE DISCHARGE AREA GENTLY SLOPES TO THE EAST, THEREFORE ANY DISCHARGES FROM THE OUTLET AND LEVEL SPREADER WILL SHEET FLOW DOWNGRADIENT FROM THE LEVEL SPREADER AND THUS COULD NOT POSSIBLY FLOOD TO 5 OR 6 INCHES IN HEIGHT OR EVEN CLOSE TO THAT. THESE FLOWS WILL NOT BE ABLE TO INCREASE THE WATER TABLE THAT IS ALREADY AT OR NEAR THE SURFACE FOR THE MAJORITY OF THE YEAR. ADDITIONS OF WATER WILL ONLY INFILTRATE WHEN WATER TABLES ARE LOW, OR FLOW ACROSS THE SURFACE WHEN THEY ARE HIGH.

THE PREDOMINANT TREE SPECIES IN THIS PORTION OF THE WETLANDS ARE RED MAPLE AND WHITE ASH, WHICH ARE BOTH SPECIES THAT HAVE ADAPTED VERY WELL TO SEASONAL INUNDATION.

THE "GHOST FORESTS" MRS. GADWA DESCRIBES ARE USUALLY TIED TO OCEAN/SEA WATER LEVELS RISING AND MIXING WITH FRESH WATER ECOSYSTEMS, CAUSING TREE MORTALITY. THIS CAN ALSO BE CAUSED BY BEAVER DAMS OR ACTIVITIES THAT IMPOUND OR INUNDATE AREAS WITH SEVERAL FEET OF WATER FOR PERIODS EXTENDING FOR SEVERAL MONTHS OR YEARS. I DO NOT SEE THIS HAPPENING ON THIS SITE BECAUSE THERE IS NO BERM OR SIGNIFICANT BARRIER TO IMPOUND SIGNIFICANT QUANTITIES OF WATER BEFORE IT REACHES FINGER BROOK.

FURTHERMORE, I SEE NO SIGNIFICANT IMPACTS TO THE WETLANDS FROM THE DISCHARGE FROM THE LEVEL SPREADER AS IT IS DESIGNED TO ATTENUATE DISCHARGE VELOCITIES, (ESTIMATED BY THE DESIGN ENGINEER TO BE 28.85 CFS AT 1.78 FEET PER SECOND FOR A 100-YEAR STORM), AND THE WIDE DESIGN OF THE SPREADER BEING 60+ FEET IN WIDTH. THIS WIDE OUTLET WILL PROVIDE FOR WIDER DISPERSION OF FLOWS AND INFILTRATION WHEN THE WATER TABLE IS NOT AT THE SURFACE.

IT IS MY PROFESSIONAL OPINION THAT THE PROPOSED BIORETENTION BASIN AND DETENTION BASIN WILL FUNCTION AS DESIGNED, REMOVING SEDIMENTS, BINDING & RENOVATING NUTRIENTS, METALS AND HYDROCARBONS AND ATTENUATING FLOWS. THE WET BOTTOM DESIGN WILL MIMIC THE WETLAND SOIL CONDITIONS AND EVENTUALLY HARBOR NITROGEN FIXING BACTERIA THAT IMMOBILIZE AND UTILIZE NITROGEN.

I THINK THE REMOVAL OF SALT FROM THE SNOW PLOWING REGIMEN WILL ALSO REDUCE POTENTIAL IMPACTS, BUT THIS IS JUST AS TRUE FOR THE PAVED SURFACES OF CLARK LANE AND THE MIDDLE SCHOOL AS IT IS FOR THE DEVELOPMENT.

IF THE BASIN IS INITIALLY SEEDED WITH NEW ENGLAND WETMIX OR THE EROSION CONTROL/RESTORATION MIX WHICH IS DESIGNED FOR DETENTION BASINS AND WET SITES, IN THE PORTIONS OF THE BASINS THAT ARE NOT FULLY INUNDATED, THE RESULTING VEGETATION WILL ADD TO THE DIVERSITY OF WETLAND HABITAT AND ENHANCE NUTRIENT RETENTION.

IT SHOULD ALSO BE NOTED THAT THE EXISTING EXPANSE OF WETLANDS BETWEEN THE DISCHARGE POINT AND FINGER BROOK EXHIBIT THE WETLAND FUNCTIONS OF SEDIMENT/TOXICANT RETENTION AND NUTRIENT REMOVAL/RETENTION/TRANSFORMATION AS NOTED IN MY REPORT.

2). SLR INTERNATIONAL CORPORATION REPORT DATED JANUARY 26TH, 2023:

ITEM # 1 ON PAGE 6 CONCERNS THE WETLAND DELINEATION LINE IS NOT CONTIGUOUS.

THIS IS BECAUSE IN THE AREAS WHERE THE DELINEATION LINE STOPS, THE WETLAND BOUNDARIES EXTEND TO THE EAST, AND IN SOME AREAS, A SIGNIFICANT DISTANCE FROM THE

PROJECT, OR ARE LOCATED A SIGNIFICANT DISTANCE OFF THE SUBJECT PARCEL. I THINK THE REGULATED AREAS ARE CLEARLY AND ACCURATELY DEFINED.

ITEM #2 CONCERNS AMPHIBIAN AND REPTILE HABITAT AND VERNAL POOL ACTIVITY.

NO REPTILES, AMPHIBIANS OR VERNAL POOLS WERE NOTED IN THE WETLANDS THAT WERE DELINEATED, MOST LIKELY DUE TO THE TIME OF YEAR, HOWEVER, UNDOUBTEDLY, THERE IS A SIGNIFICANT AMPHIBIAN/REPTILE POPULATION UTILIZING THE WETLANDS AS HABITAT. THIS HABITAT WILL NOT BE DISTURBED OR IMPACTED BECAUSE NO DIRECT IMPACTS OR DISTURBANCE IS PROPOSED IN THE WETLANDS. THE PLANS DEPICT A SIGNIFICANT 50-FOOT OR MORE SET BACK FROM THE WETLANDS WHERE NO DISTURBANCE IS PROPOSED, EXCEPT FOR THE BIO-RETENTION LEVEL SPREADER. I SEE NO IMPACTS TO THE REPTILE OR AMPHIBIAN POPULATIONS OR HABITAT FROM THE BIO-RETENTION BASIN OR LEVEL SPREADER CONSTRUCTION, IN FACT, IT WILL BECOME HABITAT AS WELL.

I CONCUR THAT THERE IS A POTENTIAL FOR TURTLE HABITAT, AND A CONSERVATION PROTECTION PLAN IS WARRANTED. THE TYPICAL CONSTRUCTION PHASE MEASURE FOR TURTLE AND AMPHIBIAN PROTECTION IS A PROPERLY INSTALLED AND MAINTAINED SILT FENCE. THE PLAN SHOULD BE REVISED TO SHOW A CONTINUOUS LINE OF FENCING FOR THE ENTIRE EASTERN PERIMETER.

ITEM #3 CONCERNS VERNAL POOLS.

I DID NOT OBSERVE ANY VERNAL POOLS, NOR WERE ANY MENTIONED IN THE CARYA REPORT.

ITEM #4 CONCERNS A NATIVE SPECIES PLANTING PLAN.

I CONCUR, THE PLANTING PLAN SHOWN ON SHEET #17 PROPOSES NATIVE WETLAND AND UPLAND HERBACEOUS AND SHRUB SPECIES IN THE DETENTION BASINS.

I ALSO NOTED THAT SLR SUGGESTED RAISING THE ELEVATION OF THE BIO-RETENTION BASIN TO CREATE A SEPARATION FROM THE EXISTING WATER TABLES. FROM MY STANDPOINT, I WOULD PREFER THAT IT BE CONSTRUCTED AT AN ELEVATION SO AS TO CAUSE A WET BOTTOM FOR A SHORT PORTION OF THE GROWING SEASON, TO HELP CREATE AND MAINTAIN PROPER CONDITIONS FOR THE PROPOSED NATIVE WETLAND HERBACEOUS AND SHRUB VEGETATION.

IF YOU HAVE ANY QUESTIONS REGARDING THESE CONCERNS OR RESPONSES, PLEASE FEEL FREE TO CONTACT ME,

THANK YOU,

Joseph R. Theroux

JOSEPH R. THEROUX
CERTIFIED SOIL SCIENTIST
MEMBER SSSSNE, NSCSS, SSSA.