

TOWN OF WATERFORD
Application for Inland Wetland / Watercourse Permit



Type of Application:

Permitted Use, Section 4.1 _____

Unregulated Activities, Section 4.2 _____

Regulated Activities, Section 6 ☒ Fee: _____

Agency Use:

Date Received: 7-13-22

Received By: _____

Application Number: C-22-7

1. Applicant: Adams Builders, LLC		Phone: 860-861-1877
Address: 48 Great Neck Road Waterford		State: CT Zip: 06385
Fax: _____	E-Mail: fgad422@yahoo.com	
2. Owner: Same as applicant		Phone: _____
Address: _____		State: _____ Zip: _____
Fax: _____	E-Mail: _____	
3. Agent: Indigo Land Design - Joe Wren, PE		Phone: 860-388-9343
Address: 40 Elm Street, 2nd Floor Old Saybrook		State: CT Zip: 06475
Fax: _____	E-Mail: jwren@indigo-land.com	
4. Property Address: 48 Great Neck Road (CT Rt. 213)		
5. Abutting Property Owners – Complete Attached Form <SEE ATTACHED>		
6. Activity to be Reviewed and / or Licensed (attach sheet if necessary):		
<SEE ATTACHED>		
7. Description of Proposed Activity (attach sheet if necessary):		
<SEE ATTACHED>		
8. Purpose of Activity (attach sheet if necessary): <SEE ATTACHED>		
9a. Acreage of Property: 11.32 Acres		9b. Acreage of Wetlands: 2.25+/- Acres
10. Acreage of Wetlands Altered: 0.047 Acres		
11. Wetland Mitigation Proposed: <SEE ATTACHED>		
12. Section 7 and sections 8.1 & 8.2 of the Town of Waterford "Inland Wetlands and Watercourse Regulations" have been complied with: (Review attached check list) Yes: ☒ No: _____		
The applicant / owner hereby gives the Commission, its agent and consultants the right of free access to any part of the property under consideration. The undersigned warrants the truth of all statements contained herein and in all supporting documents according to the best of his / her knowledge, information and belief.		
Applicant: 		Date: 7/13/22
Owner: Same as applicant		Date: _____
Agent: 		Date: 7/13/22

TOWN OF WATERFORD
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48 Great Neck Road

5. Abutting Property Owners

100' Abutters to 48 Great Neck Road, Waterford						
Owner	Parcel ID	Property Address	Mailing Address	Mailing City	Mailing State	Mailing Zip
ADAMS BUILDERS LLC	145 2871	48 GREAT NECK ROAD	42 NEW SHORE RD	WATERFORD	CT	06385
DEFENDER INDUSTRIES INC	145 2868	42 GREAT NECK ROAD	42 GREAT NECK RD	WATERFORD	CT	06385
DESIDERATO CHUN HYON TRUSTEE	145 2875	4 VILLAGE DRIVE 48 GREAT NECK	4 VILLAGE DRIVE	WATERFORD	CT	06385
HENDELS FURNITURE LLC	2870	ROAD	457 W MAIN ST	NORWICH	CT	06360
OPEN SPACE	145 2872	50 GREAT NECK ROAD	OF WATERFORD CT	WATERFORD	CT	06385
PETROLEUM MARKETING INVESTMNT GRP C/O ANOOP KAMAR	145 2869	45 GREAT NECK ROAD	2900 TELSTAR COURT	FALLS CHURCH	VA	22042
SMITH ELIN M	145 2874	2 VILLAGE DRIVE 10 VILLAGE	2 VILLAGE DR 10 VILLAGE	WATERFORD	CT	06385
TIVEN KARA E TRUSTEE FOR	146 2876	DRIVE	DRIVE	WATERFORD	CT	06385
WATERFORD TOWN OF	146 4759	15 ROPE FERRY 51 MINER LANE	RD	WATERFORD	CT	06385

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6. Activity to be Reviewed and / or Licensed:

The proposed activities that need to be reviewed and/or licensed for this project are as follows.

a) General Development within the 100' Upland Review Area including clearing, grading, planting, stormwater management, roadway, and utilities. All proposed buildings are outside of the 100' URA. Minimum 50' wide fully vegetated buffers proposed.

b) A wetland crossing consisting of two wide span 3-sided concrete box culverts to span the existing farm crossing in an effort to maintain the existing upstream and downstream wetland hydrology.

7. Description of Proposed Activity:

The proposed project is comprised of the development of a 40-unit free-standing condominium village community with a loop road, a community gathering pavilion, and walking trails with benches and pet stations under PDD-2. Construction includes roadway, utilities, drainage, stormwater management, wetland crossing, buildings, etc. This project will be served by public water and sewer. The majority of the development is outside of the 100' URA. All proposed buildings are outside of the 100' URA and 50' min. width vegetated buffers are proposed along all wetland areas.

8. Purpose of Activity

The purpose of the proposed regulated activities are to support the proposed PDD development. P&Z has approved and adopted the proposed PDD-2 and its implementation on the subject property. With the adoption of PDD-2, this project has been determined to be consistent with the Town POCD and will provide alternative housing types. Several alternatives were considered including evaluating other locations for the proposed access road, proposing a wider road, positioning stormwater management basins closer to wetlands, adding a third stormwater management area, and adding more housing units ~ all of these alternatives were not pursued since they resulted in reduced wetland buffers, increased stormwater runoff rates and volumes, and undue wetland encroachment and filling.

11. Wetland Mitigation Proposed:

Generally, several bioretention areas are proposed for stormwater management that will evolve into viable wetland areas over time. Significant wooded buffers are proposed to be preserved and augmented with additional appropriate plantings and some removal of invasive species. All wetlands on site along with 50' min buffers are proposed to be protected within conservation easements as indicated on the plans. Refer to the enclosed wetland report by Cowen Ecodesign, LLC for more detailed information.

Cowen EcoDesign, LLC

Ecological Design, Wetland, Biological and Soil Sciences



July 11, 2022

Mr. Skip Adams
42 New Shore Road
Waterford, CT 06385

**RE: 48 Great Neck Road
Waterford, Connecticut**

Dear Mr. Adams;

At your request I have conducted a review of the site plan and proposed wetland crossing and have worked with Joe Wren to incorporate my recommendations. The results of my earlier investigations are described in my Wetland Report dated May 25, 2017 and my Vernal Pool Survey Report dated April 27, 2018.

Wetland Crossing

The proposed wetland crossing is located at an existing farm road crossing. The features of the crossing were examined in detail and have been surveyed as shown in the plan set.

The existing farm crossing consists of compacted fill/gravel. There is a culvert which conveys low flow. It is partially filled with sediment. The crossing and the partially blocked culvert have created a seasonally ponded area (which was determined not to be a vernal pool) on the upgradient (south) side of the crossing. The downgradient side is narrow watercourse with stone and boulders and flanking wetlands.

Seasonal high flows and storm flows are conveyed by

- a wide area of the eastern portion of the crossing which has partially washed out
- a flow path above the culvert. There is a higher area between these flow paths where culvert footings should be located.

Two mature Red Maple trees will need to be removed.

Recommendations for proposed crossing:

1. Construct the road crossing during the dry season
2. Remove invasive non-native plants from the work area
3. Use open bottom culverts located and sized to convey flows
4. Place culvert footings between flow paths
5. Do not disturb the ponded area
6. Align the road north of the ponded area
7. Stabilize disturbed soils with biodegradable erosion control mats and seed with New England Wetmix
8. Install native plants along the disturbed edge

Wetland Crossing					
	Scientific Name	Common Name	Quan.	Size	Root
Shrubs					
Ac	Amelanchier canadensis	Shadblow	6	3-4'	Cont
Am	Aronia/Photinia melanocarpa	Black Chokeberry	6	3-4'	Cont
IV	Ilex verticillata (female)	Winterberry	5	3-4'	Cont
IVM	Ilex verticillata (male)	Winterberry	1	3-4'	Cont
SC	Sambucus canadensis	Common Elderberry	6	3-4'	Cont
SD	Salix discolor	Pussy Willow	3	3-4'	Cont
Vc	Vaccinium corymbosum	Highbush Blueberry	6	3-4'	Cont
VD	Viburnum dentatum	Arrowwood	6	3-4'	Cont
Herbs				2" plugs	
	Asclepias incarnata	Swamp Milkweed	50		
	Caltha palustris	Marsh Marigold	50		
	Carex vulpinoidea	Fox Sedge	50		
	Chelone glabra	Turtleheads	50		
	Juncus effusus	Soft Rush	50		
	Iris versicolor	Blue Flag	50		
	Lobelia cardinalis	Cardinal Flower	50		
	Zizia aurea	Golden Alexanders	50		

Stormwater Management

Increases in Storm Water Runoff & Degradation of Water Quality

Impervious surfaces are materials that prevent water from percolating into the soil. Common impervious surfaces are asphalt, concrete and roofing material, all associated with development. Storm water runoff is being treated in a a biofiltration basin that meets the requirements of the CT DEP 2004 manual. The stormwater basin has been designed to maximize renovation of stormwater. The basin will be extensively vegetated to provide biofiltration of sediments, contaminants, and nutrients. Stormwater will be further polished as it passes overland through soil, leaf litter, and vegetation before it infiltrates or enters the wetland onsite.

Vernal Pool Amphibian Best Management Practices

Based on a Vernal Pool Survey in 2017 and 2018, Vernal Pool amphibian breeding was marginal (see report dated April 27, 2018). Even though amphibian breeding was marginal, several best management practices are recommended which are suitable/commensurate with their potential productivity as expansion of amphibians onto the site.

PLAN REVIEW & RECOMMENDATIONS

We have reviewed the proposed site plans for the above-referenced application and have assisted in the wetland crossing design, storm water design, wetland protection and mitigation. Wetland impacts are limited to the proposed wetland crossing. The design minimizes impacts and maintains existing wetland functions by using best management practices and suitable mitigation.

To avoid disruption of vernal pool amphibian migration/breeding we recommend that construction including silt fence installation be completed and stabilized between May 1 and October 1 with silt fence removed before March 1 of the following year. Forest habitat near the wetlands will be enhanced by providing logs and coarse woody debris for amphibian adult cover and supplemental planting of native trees. The stormwater basin has been designed to bioinfiltrate which will provide storm water quality renovation such that it will not become a decoy vernal pool.

In order to reduce secondary impacts to wetlands and vernal pool wildlife we proposed the following recommendations:

1. Erosion and sediment controls should be reinforced at the Limit of Disturbance (LOD) where in close proximity to wetlands.
2. Slopes greater than 3:1 shall be protected with Erosion Control Blankets with amphibian & reptile safe biodegradable mesh.
1. No snow storage shall be permitted in stormwater basin.
2. Maximize protection of tree canopy at the Limit of Disturbance (LOD) and adjust/reduce clearing limits where feasible to protect canopy trees along the LOD. Install orange construction fencing around trees closest to work areas.
3. Reforest the upland review area perimeter to provide wildlife and terrestrial amphibian habitat Use native trees and shrubs on the existing and newly-graded slopes.
4. Do not use any species listed as invasive per CT Invasive Plant Working Group guidance in ornamental landscaping; maximize use of natives where appropriate with long-term viability in a developed setting.
5. Use native-dominated wildlife-attractive seed mixes for disturbed upland review area, basin bottoms and side slopes, adapted to the anticipated hydrology.
6. Design mitigation plantings to provide pollinator and butterfly habitat in the upland review area, stormwater basin and enhancement plants within the wetland.
7. Use landscape management practices which support pollinator habitat.
8. Coarse woody debris shall be placed at the edge of woods, limit of disturbance and on graded slopes where feasible or stockpiled and placed when feasible; under the direction of project wetland scientist. Place logs to maximize soil contact to provide enhanced amphibian habitat.
9. Perimeter slopes shall be topsoiled from on site topsoil and seeded with New England Roadside Matrix Upland Seed Mix.

10. Prior to work in detention basin, the areas shall be surveyed for vernal pool amphibians: any found in the area shall be relocated to a safe haven on the undisturbed side of silt fence.
11. Install a continuous 3-foot tall silt fence at the Limit of Disturbance (LOD) to prevent amphibians from entering the construction area. This silt fence should be buried to a depth of 6 inches.
12. During the late-winter/spring migration period (ca. early to mid-March) the silt fence should be inspected for amphibians and any encountered should be collected and relocated to other side. The precise timing of this effort shall be determined based on observed migration of amphibians at other pools monitored by Cowen EcoDesign in southeastern Connecticut.
13. In order to facilitate amphibian passage across the pavement and minimize vehicle mortality, curbless paving is preferred. Utilize "Cape-Cod style" curbing where needed that allow salamanders to traverse the roadside face of the curb and exit the pavement.

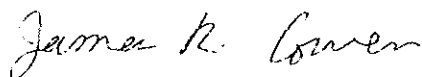
MITIGATION

As noted above, direct impacts to wetlands or watercourses will be limited to the proposed crossing. No wetlands or watercourse function will be lost. Mitigation measures will compensate for the limited wetland disturbance. The plans have been designed in a manner that provides for additional native plant habitat. These measures include implementation of the recommendations detailed above. Specifically, we have developed planting plans for the stormwater basin and areas adjacent to the development which have been incorporated into the site plans. These measures are detailed in the Appendix and have been shown on the planting plans.

SUMMARY AND CONCLUSIONS

Cowen EcoDesign delineated the wetlands at the site, we also completed a vernal pool survey and wetland crossing assessment, reviewed preliminary and final plans, and made recommendations to mitigate potential adverse impacts to wetlands and watercourses. These recommendations have been incorporated into the final site plans, which minimize direct impact to these resources. In our judgment, the grading, drainage, erosion and sediment control, and landscaping plans are appropriate for the site and compliance with their specifications will mitigate potential adverse impacts to the subject wetlands and watercourses.

Respectfully submitted,



James R. Cowen
Registered Soil Scientist
Certified Professional Wetland Scientist

WETLAND MITIGATION & STORMWATER BASIN PLANTING PLAN
48 Great Neck Road
Waterford, Connecticut
Prepared by
Cowen EcoDesign

PLANT NOTES

1. A pre-construction meeting shall be conducted including site contractor, landscape contractor, and the project wetland scientist to coordinate invasive removal, determine clearing limits, stockpiling and/or placement of wood chips and coordinate grading and construction sequence.
2. Invasive non-native plant species in upland review areas of activity shall be identified and tagged by the project wetland scientist and eradicated or removed.
3. Herbicide application shall be performed by a licensed professional.
4. Any herbicide used for invasive eradication or control in or near wetlands shall be approved for wetland use.
5. A marker dye shall be added to any herbicides used for selective invasive plant removal.
6. Disposal of invasive plant material shall comply with CT DEEP "Guidelines for Disposal of Terrestrial Invasive Plants" http://cipwg.uconn.edu/wp-content/uploads/sites/244/2014/01/InvasivePlantDisposal_2014-01-23 . Such material may be chipped and composted on site if done prior to flowering. If after flowering shall be disposed of off site by being bagged, transported securely, and incinerated.
7. At limit of disturbance protect existing native trees to the extent feasible. Use orange construction fencing or equivalent as needed. Adjust clearing limits including locations of stormwater and groundwater outlets to avoid canopy trees to the extent feasible.
8. Wood that is chipped on site shall be stockpiled to use as mulch
9. It is recommended that topsoil, compost, and mulch shall be inspected by a wetland scientist and determined to be free from Common Mugwort (*Artemisia vulgaris*), Purple Loosestrife (*Lythrum salicaria*), Common Reed (*Phragmites australis*), or Reed Canarygrass (*Phalaris arundinacea*).
10. Prior to seeding, topsoil and amendments shall be tested for fertility & Ph. Test results shall be submitted to project wetland scientist.
11. Do not add lime or fertilizer unless soil testing indicates a deficiency. Application rates shall be approved by project wetland scientist prior to placement.
12. Bio filtration soil mix shall consist of 50-60% sand, 20-30% topsoil, and 20-30% weed free leaf compost or equivalent.
13. Bio filtration soil mix shall be placed 18" deep in stormwater basin bottom.
14. Basin slopes & swale shall be amended with 6" of topsoil.

15. Compaction of basin area and required backfill shall be minimized to the maximum extent feasible by the use of excavation hoes, light equipment with turf type tires, or wide track equipment.
16. If compaction does occur in basin & swale, the compacted zone shall be tilled to refracture at least 12" of natural soil before backfilled with soil mix.
17. When backfilling basin, place soil in lifts of 12-18" and use light equipment only when grading within the basin. Heavy equipment can be used around the perimeter of the basin.
18. Allow soil mixture to settle naturally through rain events or presoak after placement.
19. Plant trees, herbs, and shrubs as specified.
20. If soil in tree planting hole is compacted, refracture to promote drainage. Amend soil with aged compost as needed. Backfill and water to allow soil to settle.
21. Mulch trees with 2-4" of wood chips, bark mulch or equivalent to a minimum radius of 18". For tree health, keep all mulch material away from the trunk. Allow the root flare (where the trunk meets the soil) to show. The root flare is at or near the ground line and is identifiable as a marked swelling of the tree's trunk where roots begin to extend outward.
22. Mulch shall be natural, (not treated with dyes or any chemicals).
23. Mulch trees and shrubs with wood chips, bark mulch or equivalent. Do not renew unless directed by project landscape architect or wetland scientist. Do not mulch shrubs planted in the basins. Do not seed mulched trees and shrubs.
24. Install herbs in basin bottom at an average density of approx. 3' o.c. in natural groupings and in drainage swale under the direction of project wetland scientist.
25. Seed basin, outlet area, and drainage swale with New England Erosion Control/Restoration Mix (for moist sites) at 1 lb/1250 s.f.
26. Seed Upland Review Areas and disturbed upland soils with New England Roadside Matrix Upland Mix at 1 lb/1250sq ft or New England Conservation/Wildlife Mix as specified.
27. Seed disturbed soils at edge of pavement and areas to be mowed with an ecological seed mix such as No Mow Lawn Seed mix from Prairienursery.com.
28. Plants and seed mixes shall be field located by the project wetland scientist.
29. Plant at least one male Winterberry in the background of each Winterberry grouping at a ratio of approximately 1 male per 5 female.
30. No substitutions without review by the project wetland scientist.
31. Protect trees and shrubs with deer repellent or equivalent until established.
32. Plantings shall be monitored by the project wetland scientist for 3 years. Remedial measures may be required and shall be implemented as directed by the project wetland scientist.

Stormwater Basin Maintenance Protocol

1. Remove sediment greater than 1" deep in a manner to minimize damage to vegetation in March-April.
2. Remove excess leaves as necessary and cut or mow meadow grasses between November 15-April 1. Leave stem stubble 12"-18" for pollinator nesting habitat. Plant matter shall be left in place over winter months to insulate the soil and add organic matter to the soil. Removal criteria shall include when plant matter is smothering or killing vegetation and aesthetics.

3. Prune trees and shrubs as needed.
4. Add supplemental plantings or seed as needed to maintain 80% areal cover for turf areas and 50% areal cover for tree/shrub/fern areas.
5. Do not add lime, fertilizer, herbicide or pesticides. The use of herbicide is restricted to invasive non-native plant control under the direction of a qualified environmental professional

Wetland Mitigation & Stormwater Basin Plant List							
48 Great Neck Road							
Waterford, CT							
	Scientific Name	Common Name	Quan.			Size	Root
Trees			Basin	Wetland	URA		
ARA	Acer rubrum	Red Maple			6	6-8' HT	Cont
CF	Cornus florida	Flowering Dogwood			4	6-8' HT	Cont
LT	Liriodendron tulipifera	Tulip Tree			3	6'	Cont
NS	Nyssa sylvatica	Black Gum			6	6'	Cont
PT	Populus tremuloides	Quacking Aspen			3	6-8' HT	Cont
PV	Prunus virginiana	Chokecherry			6	4-6'	Cont
QB	Quercus bicolor	Swamp White Oak			6	6'	Cont
SA	Sorbus americana	Mountain Ash			3	6'	Cont
Shrubs							
Ac	Amelanchier canadensis	Shadblow	6		6	3-4'	Cont
Am	Aronia/Photinia melanocarpa	Black Chokeberry	9			3-4'	Cont
CEA	Ceanothus americana	New Jersey Tea	12			18-24"	Cont
CO	Cephalanthus occidentalis	Buttonbush	12			3-4'	Cont
CA	Cornus amomum	Silky Dogwood	9			3-4'	Cont
CR	Cornus racemosa	Gray Dogwood	6			3-4'	Cont
COR	Corylus americana	American Hazelnut			12	2-3'	Cont
DL	Diervilla lonicera	Northern Bush Honeysuckle	6			18-24"	Cont
HV	Hamamelis virginiana	Witchhazel			12	3-4'	Cont
IV	Ilex verticillata (female)	Winterberry	5		5	3-4'	Cont
IVM	Ilex verticillata (male)	Winterberry	1		1	3-4'	Cont
Mp	Morella pensylvanica	Northern Bayberry	12		6	18-24"	Cont
RT	Rhus typhina	Staghorn Sumac			6	3-4'	Cont
SC	Sambucus canadensis	Common Elderberry	6			3-4'	Cont

SD	Salix discolor	Pussy Willow	6			3-4'	Cont
SL	Spiraea latifolia	Meadowsweet	12			3-4'	Cont
ST	Spiraea tomentosa	Steeplebush	12			3-4'	Cont
Vc	Vaccinium corymbosum	Highbush Blueberry	6		6	3-4'	Cont
VA	Viburnum acerifolium	Maple-leaved Viburnum			18	3-4'	Cont
VD	Viburnum dentatum	Arrowwood	6			3-4'	Cont
VL	Viburnum lentago	Nannyberry	6			3-4'	Cont
Vines							
	Parthenocissus quinquefolia	Virginia Creeper			6	1 Gal.	
CV	Clematis virginiana	Virgins Bower			6		
LS	Lonicera sempervirens	Trumpet Honeysuckle			6		
Herbs						2" plugs	
	Achillea millefolium	Common Yarrow			50		
	Aquilegia canadensis	Wild Columbine			50		
	Asclepias incarnata	Swamp Milkweed	50				
	Asclepias syriaca	Common Milkweed			50		
	Asclepias tuberosa	Butterfly Weed	50		50		
	Aster cordifolius	Blue Wood Aster			50		
	Aster laevis	Smooth Aster	50				
	Aster novae-angliae	New England Aster	50				
	Aster puniceus	Swamp Aster	50				
	Caltha palustris	Marsh Marigold		50			
	Carex vulpinoidea	Fox Sedge	50				
	Cinna arundinacea	Stout Wood-Reedgrass	50		50		
	Chelone glabra	Turtleheads		50			
	Eupatorium maculatum	Spotted Joe-pye Weed	50				
	Eupatorium perfoliatum	Boneset	50				
	Eurybia divaricata	White Wood Aster			50		
	Juncus effusus	Soft Rush	100				
	Iris versicolor	Blue Flag	50				
	Lobelia cardinalis	Cardinal Flower	50				
	Lupinus perennis	Lupine	50				

	Monarda fistulosa	Wild Bergamot	50				
	Rudbeckia laciniata	Cut-leaf Coneflower	50				
	Packera aurea	Golden Ragwort	50		50		
	Penstemon digitalis	Foxglove Beardtonge	50				
	Rudbeckia hirta	Black-eyed Susan			50		
	Solidago speciosa	Showy Goldenrod			50		
	Vernonia noveboracensis	New York Ironweed	50				
	Zizia aurea	Golden Alexanders	50		50		
Seed Mixes							
	New England Roadside Matrix Upland Mix						
		Application Rate: 1 LB/1250 sq. ft.					
	New England Erosion Control/Restoration Mix for Moist Sites						
		Application Rate: 1 LB/1250 sq. ft.					
	New England Semi-Shade Grass and Forbs Mix						
		Application Rate: 1 LB/1450 sq. ft.					
	Seed mixes are available from New England Wetland Plants, Inc (newp.com)						
	"No Mow" Lawn Mix (areas to be mowed)						
	6 Festuca spp.	fine fescues					
		Application Rate: 5 LB./100sq.ft.					
	available from PrairieNursery.com						
Wetland Crossing							
	Scientific Name	Common Name	Quan.	Size	Root		
Shrubs							
Ac	Amelanchier canadensis	Shadblow	6	3-4'	Cont		
Am	Aronia/Photinia melanocarpa	Black Chokeberry	6	3-4'	Cont		
IV	Ilex verticillata (female)	Winterberry	5	3-4'	Cont		
IVM	Ilex verticillata (male)	Winterberry	1	3-4'	Cont		
SC	Sambucus canadensis	Common Elderberry	6	3-4'	Cont		
SD	Salix discolor	Pussy Willow	3	3-4'	Cont		
Vc	Vaccinium corymbosum	Highbush Blueberry	6	3-4'	Cont		

VD	Viburnum dentatum	Arrowwood	6	3-4'	Cont		
Herbs				2" plugs			
	Asclepias incarnata	Swamp Milkweed	50				
	Caltha palustris	Marsh Marigold	50				
	Carex vulpinoidea	Fox Sedge	50				
	Chelone glabra	Turtleheads	50				
	Juncus effusus	Soft Rush	50				
	Iris versicolor	Blue Flag	50				
	Lobelia cardinalis	Cardinal Flower	50				
	Zizia aurea	Golden Alexanders	50				

Cowen EcoDesign, LLC

Ecological Design, Wetland, Biological and Soil Sciences

May 25, 2017

Mr. Skip Adams
42 New Shore Road
Waterford, CT 06385

RECEIVED

JUL 13 2022

Planning & Development
Town of Waterford, CT

**RE: 48 Great Neck Road
Waterford, Connecticut**

Dear Mr. Adams;

I am writing to report the results of a wetland investigation conducted at the referenced site on March 8, May 11, 16, 2017. The work was conducted according to the requirements of the CT Inland Wetlands and Watercourses Acts. Inland Wetlands are defined as areas of poorly drained, very poorly drained, floodplain, and alluvial soils, as delineated by a soil scientist. Watercourses are defined as bogs, swamps, or marshes, as well as lakes, ponds, rivers, streams, etc., whether natural or man-made, permanent or intermittent. Watercourses may be delineated by any competent professional.

The wetlands were delineated by walking across the parcel in question and examining the upper 20" of the soil profile with a spade and auger. Those areas meeting the requirements noted above were marked with pink plastic flagging tape numbered WL1-11,12-30, 31-61, 62-68.

SOILS

The wetlands consist of:

3—Ridgebury, Leicester, and Whitman soils, extremely stony

Ridgebury Soils

This component occurs on upland drainageway and depression landforms. The parent material consists of lodgement till derived from granite, schist, and gneiss. The slope ranges from 0 to 5 percent and the runoff class is very low. The depth to a restrictive feature is 20 to 30 inches to densic material. The drainage class is poorly drained.

Leicester Soils

This component occurs on upland drainageway and depression landforms. The parent material consists of melt-out till derived from granite, schist, and gneiss. The slope ranges from 0 to 5

percent and the runoff class is very low. The depth to a restrictive feature is greater than 60 inches. The drainage class is poorly drained.

Whitman Soils

This component occurs on upland drainageway and depression landforms. The parent material consists of lodgement till derived from gneiss, schist, and granite. The slope ranges from 0 to 2 percent and the runoff class is very low. The depth to a restrictive feature is 12 to 20 inches to densic material. The drainage class is very poorly drained.

The non-wetland soils were not examined in detail, except as was necessary to determine the presence or absence of wetlands.

Non-wetland Soils

The non-wetland soils consist primarily of:

61B--Canton and Charlton fine sandy loams, 0 to 8 percent slopes, very stony

73C--Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

The Canton soil is on hills on uplands. Slopes are 3 to 8 percent. The parent material consists of coarse-loamy over sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained.

The Charlton soil is on hills, uplands. Slopes are 3 to 8 percent. The parent material consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained.

The Chatfield component is on hills, ridges, uplands. Slopes are 3 to 15 percent. The parent material consists of coarse-loamy melt-out till derived from granite and/or schist and/or gneiss. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained.

Respectfully submitted,



submitted electronically

James R. Cowen
Registered Soil Scientist
Certified Professional Wetland Scientist

Cowen EcoDesign, LLC

Ecological Design, Wetland, Biological and Soil Sciences

April 27, 2018

Mr. Skip Adams
42 New Shore Road
Waterford, CT 06385

**RE: 48 Great Neck Road
Waterford, Connecticut**

Dear Mr. Adams;

I am writing to report the results of a vernal pool survey conducted at the referenced site on March 8, April 17 and 27, 2017 and April 24, 2018. Methods utilized were audible, visual observation and dipnetting.

Two potential vernal pools/ponded areas were surveyed:

PVP 1--An isolated depression approx 30" deep with no outlet WL1-11. Wood frogs were heard chorusing in the distance off site to the south on March 8 but none on site. No egg masses were observed in 2017. One spotted salamander egg mass was observed in 2018. Abundant mosquito larvae and adults were present. Visibility was excellent. Water was clear with no algae present. Based on two years of sampling, this pool is of marginal use even though the physical characteristics and hydrology are suitable. There is wooded habitat off site to the south which could support migration and adult amphibian habitat.

PVP 2--A ponded area immediately upstream of an existing crossing which is at the confluence of two watercourses. There is a seasonal broad channel on the easterly end of the crossing which had partially washed out; and a culvert outlet which is partially blocked by sediment and debris. The bottom consisted of at least 2 feet of sediment at the culvert outlet. Water depth was generally less than one foot. Water was clear with visibility to the bottom. Eventhough there is a permanent culvert outlet, there were 7 spotted salamander egg masses present on April 17. After a rain event there were only 3 spotted salamander egg masses remaining on April 27. Two spotted salamander egg masses were observed in 2018. The hydrology is not suitable for a vernal pool because of the permanent outlet and instream hydrology subject to high flows. The amphibian breeding attempt would be considered biological sink from off site vernal pools.