EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
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March 22, 2024

Lou Petrozzi
Wall Street Development Corp.
2 Warthin Circle
Norwood, MA 02062

RE: Wetland Resource Evaluation, Sewer Line along Blackmar Street and Cross Street, Bellingham, MA.

Dear Mr. Petrozzi:

On October 2, 3, and 17, 2023 EcoTec, Inc. inspected the areas within the vicinity the proposed sewer line located along Blackmar Street and Cross Street in Bellingham (see attached locus map) for the presence of wetland resources as defined by: (1) the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40; the "Act") and its implementing regulations (310 CMR 10.00 *et seq.*; the "Regulations"); (2) the Town of Bellingham Wetlands Protection Bylaw and its implementing regulations; and (3) the U.S. Clean Water Act (i.e., Section 404 and 401 wetlands). Paul J. McManus, PWS, and Kate O'Donnell, WPIT conducted the inspection.

The subject site consists of an approximately 4,200 linear feet of proposed sewer main route including Blackmar Street and Cross Street in Bellingham. The upland portions of the site consist of developed single-family house lots and undeveloped forested land. The reader should note that EcoTec observed but did not delineate wetland resource areas located outside of the roadway right-of-way on private properties. These wetland resource areas should be located via aerial imagery and should be protected during project construction. Plant species observed in the undeveloped upland areas include northern red oak (*Quercus rubra*), eastern white pine (*Pinus strobus*) trees and/or saplings; witch hazel (*Hamamelis virginiana*), sweet pepperbush (*Clethra alnifolia*) and multiflora rose (*Rosa multiflora*) shrubs; and tree clubmoss (*Lycopodium obscurum*) and teaberry (*Gaultheria procumbens*) ground cover. The wetland resources observed on the site are described below.

Methodology

The site was inspected, and areas suspected to qualify as wetland resources were identified. The boundaries of Bordering Vegetated Wetlands were delineated in the field in accordance with the definition set forth in the regulations at 310 CMR 10.55(2)(c). Section 10.55(2)(c) states that "The boundary of Bordering Vegetated Wetlands is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist." The methodology used to delineate Bordering Vegetated Wetlands is further described in the *Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands*,

Second Edition, produced by the Massachusetts Department of Environmental Protection, dated September 2022. As recommended by the Department, the plant taxonomy used in this letter is based on the *National List of Plant Species that Occur in Wetlands: Massachusetts* (Fish and Wildlife Service, U.S. Department of the Interior, 1988). Federal wetlands were presumed to have boundaries conterminous with the delineated Bordering Vegetated Wetlands. One set of DEP Bordering Vegetated Wetland Delineation Field Data Forms completed for observation plots located in the wetlands and uplands near flag KA33 is attached. The table below provides the Flag Numbers, Flag Type, and Wetland Types and Locations for the delineated wetland resources.

Flag Numbers	Flag Type	Wetland Types and Locations
Start ZA1 to ZA43 Stop	Blue Flags	Boundary of Bordering Vegetated Wetlands located near 468 Blackmar Street, that is associated with Hoag Brook, a mapped perennial stream.
Start ZB1 to ZB12 Stop	Blue Flags	Boundary of Bordering Vegetated Wetlands located near 33 Blackmar Street that is associated with Hoag Brook, a mapped perennial stream.
Start ZB1 to ZB12 Stop *accidental duplicate ZB series	Blue Flags	Boundary of Bordering Vegetated Wetlands located near 80 Cross Street that is associated with Peters River, a mapped perennial stream.
Start ZC1 to ZC12 Stop	Blue Flags	Boundary of Bordering Vegetated Wetlands located near 77 Cross Street, that is associated with the Peters River, a mapped perennial stream.
Start ZD1 to ZD8 Stop	Blue Flags	Boundary of Bordering Vegetated Wetlands located at the Silver Lake Conservation Area, that is associated with Silver Lake.
Start KA1 to KA55 Stop (KA1 connect to A1) (KA55 connect to F16)	Blue Flags	Boundary of Bordering Vegetated Wetlands located on Town of Bellingham property to the north of Blackmar St that is associated with Hoag Brook, a mapped perennial stream.
Start K-RA1 to K-RA66 Stop (K-RA1 connect to RA1) (K-RA66 connect to RR24)	Red Flags	Mean Annual High-water Line (MAHWL) of Hoag Brook on Town of Bellingham property to the north of Blackmar St.
Start RX1 to RX6 Stop (RX3+4 Connects to Bridge)	Red Flags	Mean Annual High-water Line (MAHWL) of Peters River near 80 Cross Street.
Start RY1 to RY6 Stop (RY3+4 Connects to Bridge)	Red Flags	Mean Annual High-water Line (MAHWL) of Peters River located near 85 Cross Street.
Start RZ1 to RZ21 Stop	Red Flags	Mean Annual High-water Line (MAHWL) of Hoag Brook located near 468 Blackmar Street. NOTE: The MAHWL of Hoag Brook south of the RZ flagging series was inaccessible due to private property access limitations, and should be plotted from aerial imagery.

Findings

Wetlands ZA, ZB, ZB, ZC, and KA (i.e., flags ZA1 – ZA43, ZB1-ZB12, ZB1-ZB12, ZC1-ZC12, and KA1-KA55) consist of wooded/shrub swamps located along Blackmar Street (ZA, ZB, and KA) and along Cross Street (ZB and ZC) that are associated with mapped perennial streams,

Hoag Brook (ZA, ZB, KA) and Peters River (ZB and ZC). Plant species observed include red maple (*Acer rubrum*) and American elm (*Ulmus americana*) trees and/or saplings; highbush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillata*), and arrow-wood (*Viburnum dentatum*) shrubs; and cinnamon fern (*Osmunda cinnamomea*) ground cover. Evidence of wetland hydrology, including hydric soils, leaf staining, saturated soils, evidence of flooding, and drainage patterns, was observed within the delineated wetlands. These vegetated wetlands border perennial streams, Hoag Brook and Peters River; accordingly, the vegetated wetlands would be regulated as Bordering Vegetated Wetlands and the perennial streams, Hoag Brook and Peters River would be regulated as Bank and Land Under Water Bodies and Waterways under the Act and Bylaw. A 100-foot Buffer Zone extends horizontally outward from the edge of Bordering Vegetated Wetlands under the Act and Bylaw.

Wetland ZD (i.e., flags ZD1 - ZD8) consists of shrub swamp located in the Silver Lake Conservation Area that is associated with a mapped pond, Silver Lake. Plant species observed include red maple (*Acer rubrum*) trees and/or saplings; poison ivy (*Toxicodendron radicans*) climbing woody vines; speckled alder (*Alnus rugosa*) and sweet pepper-bush (*Clethra alnifolia*), shrubs; and broad-leaf cattail (*Typha latifolia*) ground cover. Evidence of wetland hydrology, including hydric soils, leaf staining, saturated soils, and evidence of flooding, was observed within the delineated wetland. This vegetated wetland borders a pond, Silver Lake; accordingly, the vegetated wetland would be regulated as Bordering Vegetated Wetlands and the pond would be regulated as Bank and Land Under Water Bodies and Waterways under the Act and Bylaw. A 100-foot Buffer Zone extends horizontally outward from the edge of Bordering Vegetated Wetlands under the Act and Bylaw.

Bordering Land Subject to Flooding is an area that floods due to a rise in floodwaters from a bordering waterway or water body. Where flood studies have been completed, the boundary of Bordering Land Subject to Flooding is based upon flood profile data prepared by the National Flood Insurance Program. Section 10.57(2)(a)3. states that "The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm." Based upon a review of the Flood Insurance Rate Map, Norfolk County, Massachusetts, Map Number 25021C0312E, Effective Date 7/17/2012, there is mapped Zone AE (i.e., 100-year floodplain) with a 100-year flood mapped profile of +/- 212 feet associated with Peters River. and with Hoag Brook. Additionally, there is mapped Zone A (i.e., 100-year floodplain with an unspecified flood elevation) associated with Hoag Brook. The project engineer should evaluate the most recent National Flood Insurance Program flood profile data to establish the extent of Bordering Land Subject to Flooding on the site. Bordering Land Subject to Flooding would occur in areas where the 100-year flood elevation is located outside of or upgradient of the delineated Bordering Vegetated Wetlands boundary. Bordering Land Subject to Flooding does not have a Buffer Zone under the Act.

The Massachusetts Rivers Protection Act amended the Act to establish an additional wetland resource area: Riverfront Area. Based upon a review of the current USGS Map (i.e., Franklin Quadrangle, dated 1987, attached), two streams, Hoag Brook and Peters River, that are shown as perennial are located along Cross Street (Peters River) and Blackmar Street (Hoag Brook).

Streams that are shown as perennial on the current USGS map are designated perennial under the Massachusetts Wetlands Protection Act regulations. Unless this perennial designation is overcome, Riverfront Area is presumed to extend 200 feet horizontally upgradient from the mean annual high-water line of the stream. Section 10.58(2)(a)2. states that the "Mean annual high-water line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. Field indicators of bankfull conditions shall be used to determine the mean annual high-water line. Bankfull field indicators include but are not limited to: changes in slope, changes in vegetation, stain lines, top of pointbars, changes in bank materials, or bank undercuts." Section 10.58(2)(a)2.a. states that "In most rivers, the first observable break in slope is coincident with bankfull conditions and the mean annual high-water line." The mean annual high-water line of Hoag Brook was delineated in the field with flags RZ1 to RZ21 and flags K-RA1 to K-RA66 based upon the above-referenced regulation. The mean-annual high-water line (MAHWL) of Hoag Brook south of the RZ flagging series was inaccessible due to private properties at the time of inspection. Accordingly, the MAHWL of Hoag Brook in this area should be located via aerial imagery and protected during project construction. The mean annual high-water line of Peters River was delineated in the field with flags RX1 to RX6 and flags RY1 to RY6 based upon the above-referenced regulation. Furthermore, based upon a review of the current USGS Map and observations made during the site inspection, there are no other mapped or unmapped streams located within 200 feet of the site Accordingly, Riverfront Area on the site is associated only with the perennially designated streams, Hoag Brook and Peters River. Riverfront Area does not have a Buffer Zone under the Act, but may overlap other wetland resources and their Buffer Zones.

The Regulations require that no project may be permitted that will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures set forth at 310 CMR 10.59. Based upon a review of the *Massachusetts Natural Heritage Atlas*, 15th edition, Priority Habitats and Estimated Habitats from the NHESP Interactive Viewer, valid from August 1, 2021, and viewed on November 1, 2023, and Certified Vernal Pools from MassGIS, there are no Estimated Habitats [for use with the Act and Regulations (310 CMR 10.00 *et seq*.)], Priority Habitats [for use with Massachusetts Endangered Species Act (M.G.L. Ch. 131A; "MESA") and MESA Regulations (321 CMR 10.00 *et seq*.)], or Certified Vernal Pools on or in the immediate vicinity of the site. A copy of this map is attached.

The reader should be aware that the regulatory authority for determining wetland jurisdiction rests with local, state, and federal authorities. Brief descriptions of our experience and qualifications are attached. If you have any questions, please feel free to contact us at any time.

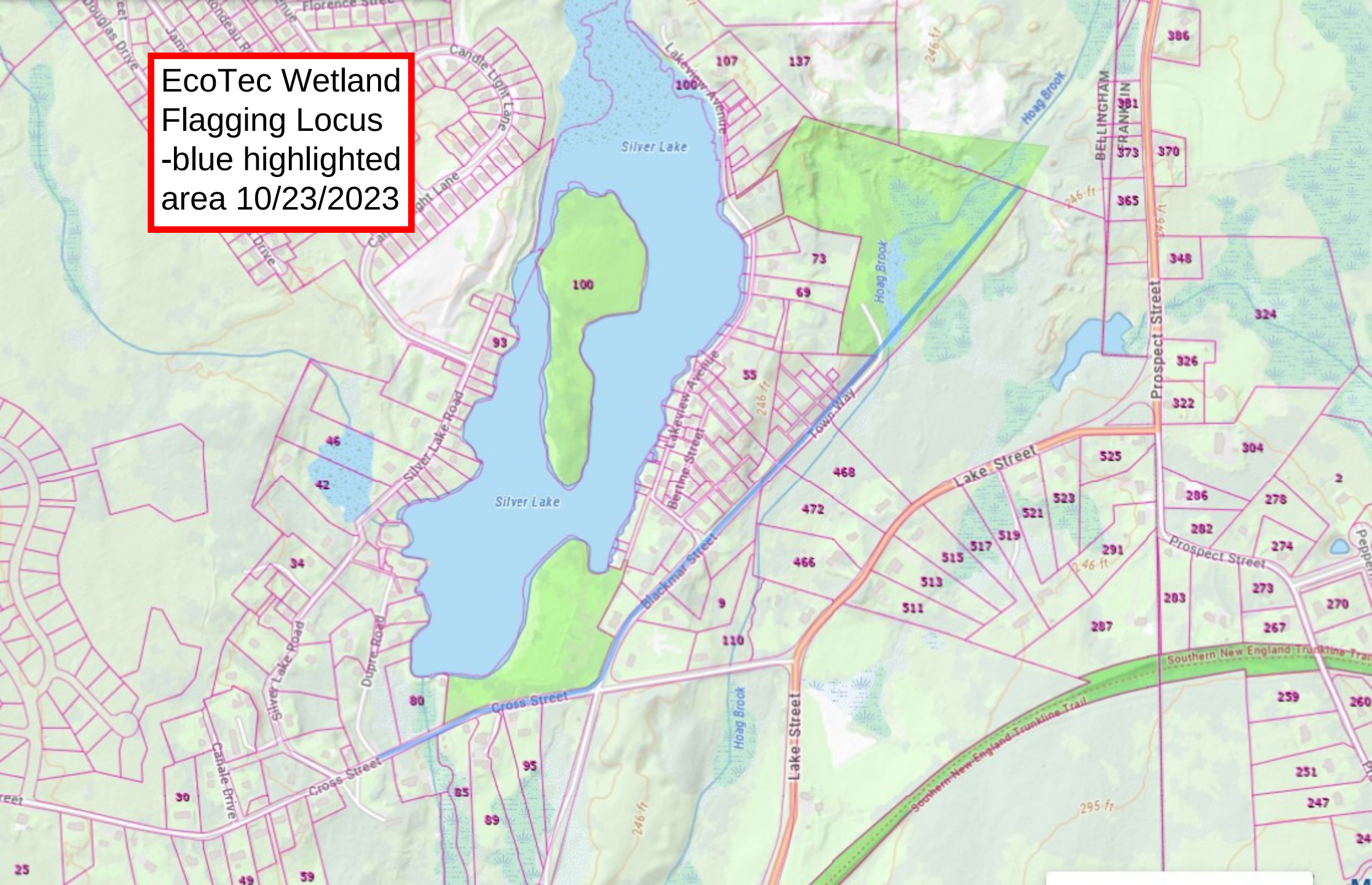
Cordially, ECOTEC, INC.

Paul J. McManus, PWS
President

Kate O'Donnell, WPIT
Environmental Scientist

Attachments (14 pages)

KO/E/P/BellinghamBlackmarandCrossSt_WetlandReport


EcoTec Wetland Flagging Locus -blue highlighted area 10/23/2023
Silver Lake
Silver Lake
Hoag Brook
Hoag Brook
Hoag Brook
Lakeview Avenue
Lakeview Avenue
Berline Street
Blackmar Street
Town Way
Lake Street
Lake Street
Prospect Street
Prospect Street
Silver Lake Road
Silver Lake Road
Dupre Road
Cross Street
Cross Street
Canale Drive
Candle Light Lane
Southern New England Trunkline Trail
Southern New England Trunkline Trail
246 ft
246 ft
246 ft
246 ft
295 ft
100
107
137
100
73
69
93
55
46
42
34
468
472
466
9
110
525
523
521
519
517
515
513
511
386
381
373
370
365
348
324
326
322
304
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251
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49
59

Wetland Test Plot

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Cross Street and Blackmar Street City/Town: Bellingham Sampling Date: 10/17/2023

Applicant/Owner: _____ Sampling Point or Zone: KA33

Investigator(s): Kate O'Donnell, WPIT, and Paul McManus, PWS, EcoTec, Inc. Latitude / Longitude: _____

Soil Map Unit Name: _____ NWI or DEP Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ] , or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ] , or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [✓] No [ ]	**Is the Sampled Area within a Wetland?** **Yes [✓] No [ ]**
Hydric Soils criterion met?	Yes [✓] No [ ]	
Wetlands hydrology present?	Yes [ ] No [ ]	

Remarks, Photo Details, Flagging, etc.:

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [ ]	Depth (inches) _____
Water Table Present?	Yes [✓]	No [ ]	Depth (inches) 8.00
Saturation Present (including capillary fringe)?	Yes [✓]	No [ ]	Depth (inches) 0.00

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[✓] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[✓] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. red maple	Acer rubrum	FAC	30.0	Yes	Yes
2. white oak	Quercus alba	FACU	20.0	Yes	No
3. white pine	Pinus strobus	FACU	20.0	Yes	No
4.					
5.					
6.					
7.					
8.					
9.					

70.0 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. white pine	Pinus strobus	FACU	20.0	Yes	No
2. highbush blueberry	Vaccinium corymbosum	FACW	10.0	Yes	Yes
3. red maple	Acer rubrum	FAC	5.0	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					

35.0 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. cinnamon fern	Osmunda cinnamomea	FACW	20.0	Yes	Yes
2. sphagnum moss	Sphagnum sp.	FACW	10.0	Yes	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

30.0 = Total Cover

VEGETATION – continued.

Woody Vine Stratum	Plot size				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
			0.0 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☐ No ☑
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	7	4		Yes ☑ No ☐
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species		X 1	= 0.00
	FACW species		X 2	= 0.00
	FAC species		X 3	= 0.00
	FACU species		X 4	= 0.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 0		(B) 0
Prevalence Index		B/A = 0.00		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☐
Wetland vegetation criterion met?		**Yes** ☑	**No** ☐	

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point KA33

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
A: 0-10	10YR 2/1	100.00						
Bg: 10-14+	10YR 5/1	100.00						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☑ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? **Yes** ☑ **No** ☐

Upland Test Plot

BORDERING VEGETATED WETLAND DETERMINATION FORM

Project/Site: Cross Street and Blackmar Street City/Town: Bellingham Sampling Date: 10/17/2023

Applicant/Owner: _____ Sampling Point or Zone: KA33

Investigator(s): Kate O'Donnell, WPIT, and Paul McManus, PWS, EcoTec, Inc. Latitude / Longitude: _____

Soil Map Unit Name: _____ NWI or DEP Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks)

Are Vegetation [ ], Soil [ ] , or Hydrology [ ] significantly disturbed? (If yes, explain in Remarks)

Are Vegetation [ ], Soil [ ] , or Hydrology [ ] naturally problematic? (If yes, explain in Remarks)

SUMMARY OF FINDINGS – Attach site map and photograph log showing sampling locations, transects, etc.

Wetland vegetation criterion met?	Yes [ ] No [✓]	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soils criterion met?	Yes [ ] No [✓]	
Wetlands hydrology present?	Yes [ ] No [✓]	

Remarks, Photo Details, Flagging, etc.:

HYDROLOGY

Field Observations:			
Surface Water Present?	Yes [ ]	No [ ]	Depth (inches)_____
Water Table Present?	Yes [ ]	No [ ]	Depth (inches)_____
Saturation Present (including capillary fringe)?	Yes [ ]	No [ ]	Depth (inches)_____

Wetland Hydrology Indicators

Reliable Indicators of Wetlands Hydrology	Indicators that can be Reliable with Proper Interpretation	Indicators of the Influence of Water
[ ] Water-stained leaves	[ ] Hydrological records	[ ] Direct observation of inundation
[ ] Evidence of aquatic fauna	[ ] Free water in a soil test hole	[ ] Drainage patterns
[ ] Iron deposits	[ ] Saturated soil	[ ] Drift lines
[ ] Algal mats or crusts	[ ] Water marks	[ ] Scoured areas
[ ] Oxidized rhizospheres/pore linings	[ ] Moss trim lines	[ ] Sediment deposits
[ ] Thin muck surfaces	[ ] Presence of reduced iron	[ ] Surface soil cracks
[ ] Plants with air-filled tissue (aerenchyma)	[ ] Woody plants with adventitious roots	[ ] Sparsely vegetated concave surface
[ ] Plants with polymorphic leaves	[ ] Trees with shallow root systems	[ ] Microtopographic relief
[ ] Plants with floating leaves	[ ] Woody plants with enlarged lenticels	[ ] Geographic position (depression, toe of slope, fringing lowland
[ ] Hydrogen sulfide odor		

Remarks (describe recorded data from stream gauge, monitoring well, aerial photos, previous inspections, if available):

This form is only for BVW delineations. Other wetland resource areas may be present and should be delineated according to the applicable regulatory provisions.

Form Revised July 2023

VEGETATION – Use both common and scientific names of plants.

Tree Stratum Plot size 30

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. white pine	Pinus strobus	FACU	30.0	Yes	No
2. red maple	Acer rubrum	FAC	5.0	No	Yes
3.					
4.					
5.					
6.					
7.					
8.					
9.					

35.0 = Total Cover

Shrub/Sapling Stratum Plot size 15

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. white pine	Pinus strobus	FACU	50.0	Yes	No
2. highbush blueberry	Vaccinium corymbosum	FACW	10.0	Yes	Yes
3. common winterberry	Ilex verticillata	FACW	5.0	No	Yes
4.					
5.					
6.					
7.					
8.					
9.					

65.0 = Total Cover

Herb Stratum Plot size 5

Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1. tree clubmoss	Lycopodium obscurum	FACU	40.0	Yes	No
2. cinnamon fern	Osmunda cinnamomea	FACW	20.0	Yes	Yes
3. wintergreen/teaberry	Gaultheria procumbens	FACU	10.0	No	No
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					

70.0 = Total Cover

VEGETATION – continued.

Woody Vine Stratum	Plot size				
Common name	Scientific name	Indicator Status	Absolute % Cover	Dominant? (yes/no)	Wetland Indictor? (yes/no)
1.					
2.					
3.					
4.					
			0.0 = Total Cover		

Rapid Test: Do all dominant species have an indicator status of OBL or FACW?				Yes ☐ No ☑
Dominance Test:	Number of dominant species	Number of dominant species that are wetland indicator plants		Do wetland indicator plants make up ≥ 50% of dominant plant species?
	5	2		Yes ☐ No ☑
Prevalence Index:		Total % Cover (all strata)	Multiply by:	Result
	OBL species	0	X 1	= 0.00
	FACW species	35	X 2	= 70.00
	FAC species	5	X 3	= 15.00
	FACU species	130	X 4	= 520.00
	UPL species		X 5	= 0.00
	Column Totals	(A) 170		(B) 605
Prevalence Index		B/A = 3.56		Is the Prevalence Index ≤ 3.0? Yes ☐ No ☑
Wetland vegetation criterion met?		**Yes** ☐	**No** ☑	

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.62 cm) or more in diameter at breast height (DBH), regardless of height

Shrub / Sapling - Woody plants less than 3 in. (7.62 cm) DBH and greater than or equal to 3.3 ft. (1 m) tall

Herb - All herbaceous (non-woody plants, regardless of size, and woody plants less than 3.3 ft. (1 m) tall

Woody vines - All woody vines greater than 3.3 ft. (1 m) in height

Cover Ranges	
Range	Midpoint
1-5 %	3.0 %
6-15 %	10.5 %
15-25 %	20.5 %
26-50 %	38.0 %
51-75 %	63.0 %
76-95 %	85.5 %
96-100 %	98.0 %

Sampling Point KA33

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Location[2]		
A: 0-10	10YR 2/1	100.00						
Bw: 10-14+	2.5Y 5/3	95.00	10YR 5/8	5.00	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators (Check all that apply)		**Indicators for Problematic Hydric Soils**
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8)	☐ 2 cm Muck (A10)
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9)	☐ 5 cm Mucky Peat or Peat (S3)
☐ Black Histic (A3)	☐ Loamy Gleyed Matrix (F2)	☐ Iron-Manganese Masses (F12)
☐ Hydrogen Sulfide (A4)	☑ Depleted Matrix (F3)	☐ Mesic Spodic (A17)
☐ Stratified Layers (A5)	☐ Redox Dark Surface (F6)	☐ Red Parent Material (F21)
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)	☐ Very Shallow Dark Surface (F22)
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)	
☐ Sandy Mucky Mineral (S1)		
☐ Sandy Gleyed Matrix (S4)		
☐ Sandy Redox (S5)		☐ Other (Include Explanation in Remarks)
☐ Stripped Matrix (S6)		
☐ Dark Surface (S7)		

Restrictive Layer (if observed) Type: _____ Depth (inches): _____

Remarks:

Hydric Soils criterion met? **Yes** ☐ **No** ☑

National Flood Hazard Layer FIRMette

FEMA

71°28'7"W 42°3'50"N

71°27'30"W 42°3'23"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

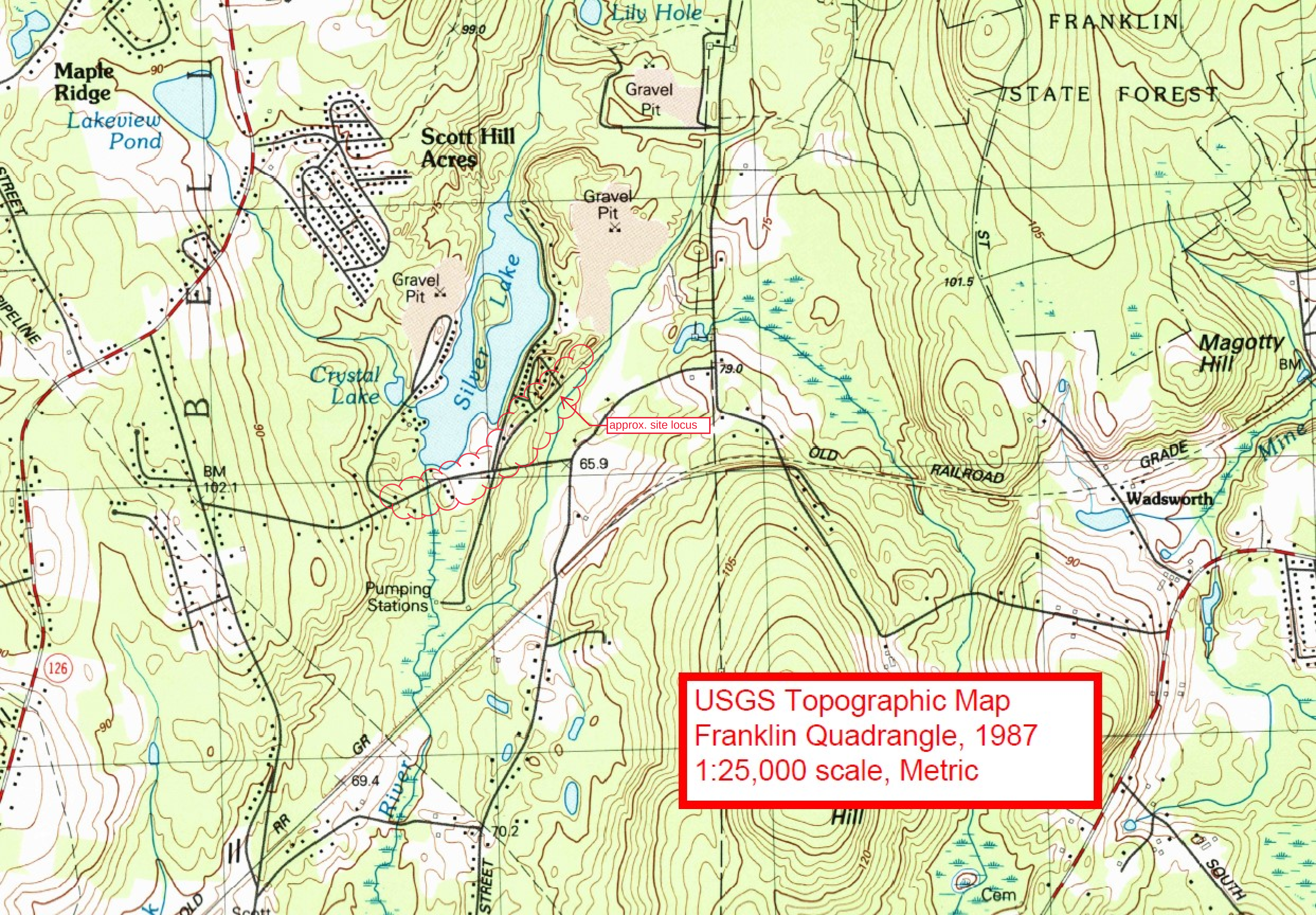
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/1/2023 at 11:36 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



USGS Topographic Map
Franklin Quadrangle, 1987
1:25,000 scale, Metric
approx. site locus
Maple Ridge
Lakeview Pond
Scott Hill Acres
Gravel Pit
Lily Hole
FRANKLIN
STATE FOREST
Silver Lake
Crystal Lake
Magotty Hill
BM
Wadsworth
OLD
RAILROAD
GRADE
Mine
Pumping Stations
BM 102.1
65.9
79.0
101.5
99.0
69.4
70.2
126
PIPELINE
STREET
ST
GR
RR
River
Hill
Cem
SOUTH
OLD

Blackmar St. and Cross St., Bellingham, NHESP

NHESP Estimated Habitats of Rare Wildlife

NHESP Priority Habitats of Rare Species

NHESP Certified Vernal Pools

Natural Heritage Atlas Online Data Viewer, 15th edition, valid August 1, 2023
Blackmar St. and Cross St., Bellingham

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES

102 Grove Street

Worcester, MA 01605-2629

508-752-9666 – Fax: 508-752-9494

Paul J. McManus, LSP, PWS
President

Paul McManus is the President and owner of EcoTec, Inc., which he founded in 1990. He has received certification as a Professional Wetlands Scientist (PWS) from the International Society of Wetlands Scientists (SWS), the leading professional organization in the field. He was elected President of the New England Chapter of SWS, and represented the Chapter on the International Board of Directors for several years, and currently serves as Chapter Past President and Treasurer. Mr. McManus is also a Massachusetts-certified Licensed Site Professional with experience that has included a wide range of site assessment and remediation projects, focused on the field of ecological risk assessment at contaminated sites. Prior to the founding of EcoTec, Mr. McManus was employed as the Senior Scientist at Harborline Engineering Inc. of New Bedford, MA and served for several years as a project manager at the Gulf of Maine Research Center Inc. in Salem, MA. His experience also includes employment as an aquatic ecologist at the Massachusetts Division of Water Pollution Control. Mr. McManus brings a wide variety of environmental consulting experience to EcoTec, including wetland evaluation and delineation, lake and stream assessment, wildlife habitat evaluation, oil and hazardous materials assessment and ecological risk assessment, as well as a variety of other types of environmental impact assessment. Included among the major wetland projects he has completed are detailed wetland community surveys and impact restoration specifications for lengthy pipeline crossings of the Fowl Meadow "Area of Critical Environmental Concern" (ACEC). At the MWRA's Norumbega Reservoir property in Weston, he conducted the state and federal wetland delineations, was project manager for the related town-wide off-site vernal pool mitigation evaluation, and authored the project's wetland mitigation program, including vernal pool replication in support of a Wetlands Protection Act Variance and other environmental permits. He has directed hundreds of other wetlands projects at sites including large and small residential and commercial developments. He has completed all phases of environmental permitting work, including wetland delineation, replication and mitigation design, implementation, and monitoring in freshwater wetlands and salt marsh, as well as general wildlife and rare species assessments and trapping, including marbled salamander, 4-toed salamander, spotted turtle, and eastern box turtle, under the MA Wetlands and Endangered Species Act Regulations. Permitting efforts regularly include federal, local and state permitting, including filings under the Massachusetts Environmental Policy Act (MEPA) regulations. Additional projects he has directed include major biological and chemical marine sampling programs; he has been involved in a variety of freshwater system evaluations, and conducted evaluations and sampling for proposed fresh water and marine dredging projects. He has conducted ecological risk assessments for aquatic and terrestrial biota, including state-listed species, at numerous locations of contamination by oil and hazardous materials. Mr. McManus serves as a consultant on behalf of government, business, major utility companies, the development community, conservation commissions, and concerned citizens' groups. He presently serves on a regular basis as technical wetlands consultant for the Town of Dover Conservation Commission, and works regularly for other Commissions providing peer review expertise on a wide variety of projects.

Education: Master of Science: Applied Marine Ecology - University of Massachusetts/Boston, 1988
Bachelor of Arts: Biology (Ecology emphasis) – College of the Holy Cross, Worcester, MA, 1984
U.S. Fish and Wildlife Service: Habitat Evaluation Procedure (HEP) Certification
Massachusetts Division of Water Pollution Control: Algal Assay (eutrophication) Short Course

Professional Affiliations: Massachusetts Association of Conservation Commissioners
(Partial list) Society of Wetland Scientists (Past President of the New England Chapter)
Association of Massachusetts Wetlands Scientists
Society of Environmental Toxicology and Chemistry

Certifications: Society of Wetlands Scientists Professional Wetlands Scientist # 962
Commonwealth of Massachusetts Licensed Site Professional # 5711
OSHA Health & Safety Hazardous Waste Safety Training, 29 CFR 1910.120 (40 hr & refresher)

EcoTec, Inc.

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Kate O'Donnell, WPIT
Environmental Scientist

Kate O'Donnell is an Environmental Scientist at EcoTec, Inc. Since joining EcoTec in June of 2021, her project experience includes wetland resource evaluation and delineation, as well as environmental permitting at the local, state, and federal level. She received certification as a Wetland Professional In Training (WPIT) from the International Society of Wetland Scientists (SWS) in September of 2021. Additionally, Ms. O'Donnell has experience in turbidity and erosion control monitoring, salinity sampling, wildlife habitat evaluation, stream evaluation, vernal pool evaluation and certification, preconstruction sweeps for rare species including the eastern box turtle, Stormwater Pollution Prevention Plan (SWPPP) preparation, Turtle Protection Plan preparation, Massachusetts Endangered Species Act (MESA) Project Review Checklists, and Massachusetts Environmental Policy Act (MEPA) documentation. Prior to starting at EcoTec, Ms. O'Donnell was a student at the College of the Holy Cross, where she received degrees in Biology and Environmental Studies. Her educational background includes with extensive coursework in ecology and environmental science, as well as courses in geoscience, biology, chemistry, and environmental law. During her time at Holy Cross, she conducted hydrologic and water quality research to investigate the impacts of road salt on the salinity of the Middle River in Worcester, MA.

Education:

Bachelor of Arts in Biology (Ecology emphasis) and Bachelor of Arts in Environmental Studies, College of the Holy Cross, 2021

Professional Affiliations:

Society of Wetland Scientists
Massachusetts Association of Conservation Commissioners

Certifications:

Society of Wetland Scientists Wetland Professional In Training
EPA Construction General Permit Site Inspector Certification