Wetland Replication Plan

1400 Hilldale Avenue
Haverhill, MA

Prepared for:

Singh Realty Group, LLC
6 Fondi Road
Haverhill, MA 01830

Prepared by:

SEEKAMP ENVIRONMENTAL CONSULTING, INC.

129 Route 125
Kingston, NH 03848

April 29, 2025

OVERVIEW:

The following Wetland Replication Plan (Plan) has been prepared by Seekamp Environmental Consulting, Inc. (SEC) on behalf of Singh Realty Group, LLC (applicant), as mitigation for impacts for a driveway crossing to an area of Bordering Vegetated Wetland (BVW) to access upland land across the wetland. The area where the access driveway is proposed is adjacent to a gravel trucking yard where truck parking is currently staged. The replication area is proposed below the crossing area in a portion of the site conducive to intercepting "groundwater" breakout, and which is primarily open meadow where a minimum of tree and shrub clearing within the Buffer Zone is possible for the construction of the replacement wetland. There is a very narrow intermittent stream channel which appears to be the **remnant of an old agriculture ditch** (approximately 1 foot wide by 6 inches deep) at the proposed crossing location. The area selected for the crossing is appropriate in our opinion as there will be a minimum of vegetation disturbance because there is only a sparse shrub and tree canopy here, the area is dominated by herbaceous cover, and is a relatively narrow crossing location with only a modest intermittent stream feature present.

EXISTING CONDITIONS:

WETLAND IMPACT AREA

The wetland at the crossing is primarily an open wet meadow with a sparse tree and shrub canopy which is dominated by wetland herbaceous cover. There is one crab apple (*Malus sp.*) present, with a sparse shrub canopy of silky dogwood (*Cornus amomum*). there is a variety of herbaceous species present and is dominated by sedges (*Carex spp.*), goldenrods (*Solidago sp.*) aster (*Aster sp.*) and typical old field grasses (*Poa sp.*). By all estimates the hydrology in the area fluctuates with seasons, with spring runoff to dry summer conditions, and in response to precipitation events. There is a very narrow intermittent stream channel (approximately 1 foot wide by 6 inches deep), remnant of an old agricultural ditch, at the crossing location. In general this remnant agricultural ditch has been observed dry, however visits in early spring 2025 we observed the channel with a minimal of flow.

Soils within the crossing area are typically a mucky loam down to 26 inches to a medium fine sandy loam at 26 inches +. These soils are **excellent for use in the Replication Area** and will be excavated prior to crossing construction and re-graded / utilized in the BVW Replication Area to a minimum depth of 12 inches. If possible, soil amendments are not recommended here as the existing crossing and upland topsoil on the site in general provides excellent soil quality. Should soil amendments be necessary however they will be consistent with the Massachusetts Inland Wetland Replication Guidelines

Permanent Impacts: A total of **1,701 sq. ft.** of BVW will be filled for the crossing.

Temporary Impacts: There will be approximately **910 sq. ft.** of temporary BVW impacts to allow for approximately 10 feet of work area disturbance at the culvert and erosion control. This

area will be restored in place back to original grades and substrate conditions and seeded with a wetland seed mix.

BVW REPLICATION AREA:

The replication area has been selected in an area adjacent to the BVW onsite but in an open upland old field meadow where a minimum of overstory tree and shrub disturbance within the Buffer Zone is possible. The Replication area will be **3,641 sq. ft.** measured from the bottom of slope within the graded area and excludes necessary side slopes in the calculation. In general this area lies close to the surface water / groundwater breakout hydrology of the adjacent wetland and serves as a suitable location for this mitigation area.

Typically, the adjacent wetland areas on the site are along the side slopes where surface water ("groundwater") break out occurs (seeps) in the near surface wetlands at the bottom of a broad drumlin. The BVW areas on this site are near surface wetlands which occur in flats and valleys associated with topography changes at the seepage face along the drumlin slopes. Typically, surface water inputs are really what drives the wetland hydrology on this site. Drumlins, with their relatively fine textured loams and often restrictive subsoil horizons provide sustained runoff following spring melt well into the growing season and support the wetland hydrology found here. The proposed Replication Area will exact this hydrologic scenario for balancing target water budgets once construction is complete. Field adjustments will be made during construction under the direction of a wetland scientists to insure the grading in the area adheres to the estimated seasonal high water ranges for this area.

Project grading design has avoided disturbance of relatively mature trees between the proposed Replication Area and the adjacent BVW while still being able to "pull" the adjacent wetland surface elevation invert into the area to ensure good surface saturation conditions which will mimic the seasonal fluctuations as in the adjacent BVW area during spring, fall, and winter periods.

The area of wetland restoration will be staked out and grades will be established that blend with the immediate adjacent BVW elevations. Limits of the replication area will be staked out prior to construction and fill overburden will be removed from the area down to the desired subgrade. As necessary, field adjustment to grading within the restoration area will be done utilizing evidence of wetland hydrology such as seasonal high water table elevations and biological indicators from the immediate adjacent non-disturbed wetland. Fine tuning of the grades in the restoration area will ensure wetland surface elevations, topsoil quality and depth, and grading using the natural benchmarks from the adjacent wetland surface during construction will create proper hydrology in the restoration area.

Wetland soils **excavated from the crossing area** will be utilized in the replication area and only amended if necessary with soils excavated from the upland portion of the site where proposed driveway or parking lot will occur. This is so as to avoid unnecessary contamination of invasive or otherwise unwanted species from soil amendments from an offsite location. These soils are **excellent for use in the Replication Area** and will be excavated prior to crossing construction and re-graded / utilized in the BVW Replication Area to a **minimum depth of 12 inches**. If possible, soil amendments are not recommended here as the existing crossing and upland topsoil

on the site in general provides excellent soil quality. Should soil amendments be necessary however they will be consistent with the Massachusetts Inland Wetland Replication Guidelines

Once final grading is complete, the surface will be scarified and prepped for seeding and planting of native wetland species. Wetland replication will focus on restoring groundwater recharge, flood control storage, water quality improvement, and sediment control, as well as wildlife habitat considerations currently provided by the crossing area. An approximate 2 to 1 side slope will be established along the restoration area boundary at the existing stonewall so as to avoid unnecessarily disturbing several upland trees along the wall currently existing here.

Work will be overseen by a **qualified wetland scientist** who will work with the contractor during excavation and final grading of the restoration area. Biological benchmarks such as evidence of seasonal surface water elevations within the adjacent wetland vegetation rooting patterns, observed standing water, and other evidence of hydrology will guide grading elevations so that hydrologic conditions within the replication area are consistent with a slope / groundwater breakout type wetland with a hydrologic regime similar to that found in the adjacent wetland.

The wetland replication area will be seeded throughout with a wetland seed mix to promote a dense herbaceous cover, which will set the foundation for additional wetland species seeding from the adjacent wetland area. In addition to seeding, the area will be planted with shrubs to ensure a natural area is established with some native wildlife shrubs for bird and small mammal habitat creation as well. Shrub plantings will be in a random, clump fashion to create habitat structure within the old field meadow herbaceous canopy. The goal of this plan is to initially create an early succession / old field habitat which provides similar habitat structure and support for a variety of wildlife species as the adjacent meadow / shrub community in this area.

The area will be planted with the following species at the densities listed below:

Common Name	Scientific Name	Size	Number	Density
Shrubs*:*				
Silky dogwood	(*Cornus amomum)*	2 – 3’	20	~ 10’ centers throughout restoration area
Chokeberry	(*Aronia sp.)*	2 – 3’	20	~ 10’ centers throughout restoration area
Speckeld alder	(*Alnus incana)*	2 – 3’	20	~ 10’ centers throughout restoration area

Herbaceous Material:

Wetland seed mix / Conservation Mix - seed entire area including side slopes with total of 3.0 lbs seed mix / 1,000 sq. ft. (approx. 15 lbs).

Shrubs have been chosen so that they quickly establish the cover within the replication area, are appropriate for the expected hydrology, and allow a foundation for other native species to seed in. The area will be planted in a random, cluster fashion to better mimic natural plant communities. All exposed soils outside of the actual replication area shall be loamed and seeded

with a conservation seed mix, and mulched as needed. In the event that deviations from the specified planting plan are necessary due to availability of plant material, species selection will be accomplished under the direction of a qualified wetland scientist. Substitutions will be presented to the Haverhill Conservation Commission agent for approval (HCC).

Woody Amendments:

Where encountered within the work area either at the crossing or within the specified Replication Area, any natural woody material including hollow logs, downed limbs, rotting logs, etc. will be set aside for placement into the replication area upon final grading of wetland soils from the crossing but prior to planting so that a diverse surface habitat of woody material is established in the area. This will add a biological loading feature which as the woody material decays will be conducive to attracting macro invertebrates and small mammals that feed on them over time to the replication area.

***Erosion Control Installation*:**

Erosion and siltation control measures consisting of a silt sock style roll **free of plastic mesh** will be installed between the existing wetland area and the replication area, and will remain until a stable seedling and herbaceous cover is established.

Buffer Zone Disturbance Restoration: Peripheral areas adjacent to the proposed parking and roadways will be restored to a rough meadow condition and seeded with a mix of upland conservation seed mix and pollinator seed mix to promote areas of upland meadow with forbs and grasses beneficial to pollinators and insectivorous birds and small mammals. These areas will not be maintained and will be allowed to remain in a meadow condition.

Once grading is complete the areas will be seeded within seasonal germination windows for firm establishment prior to winter conditions as follows:

"New England Conservation / Wildlife Mix" or "Low - Growing Wildflower and Grass Mix".
Seed all bare soil areas with mix at recommended ratios from supplier.

MONITORING AND STATUS REPORTS:

The wetland scientist will provide direction to the site contractor. All final field adjustments in replication area grading will be under the direction of the wetland scientist. Once grading within the areas is complete, and planting has been completed the areas will be monitored for two complete growing seasons and status reports will be submitted to the Haverhill Conservation Commission. The reports will document existing conditions and plant survivability to ensure compliance with applicable standards. The replication area will be monitored for two complete growing season and reports will be provided by the property owner to the HCC describing shrub and herbaceous plant survivability and vitality, and other species development. The goal of the mitigation areas is to establish 75% or greater cover of a wetland species community so that over the long term development, the area generally mimics the surrounding wetland areas.

Invasive Species:

Invasive species will be controlled where encountered during replication area construction. It should be noted, and understood, that invasive species observed on this site such as glossy buckthorn asiatic bittersweet, and tatarian honeysuckle are unfortunately often prevalent within the adjacent, nearby larger associated wetland areas and over great portions of the upland areas on the site. Although care will be taken to avoid cross contamination between the upland areas on the site and replication area it should be anticipated that in similar fashion to the adjacent wetland, the replication area will likely contain some invasives as part of the overall plant community over time. Planting of a shrub community, and seeding of wetland and conservation mixes are proposed to get native species developed quickly in the areas so that a more diverse habitat is established.

Wetland Replication Construction Schedule:

1. Establish control of the areas in the field (Responsibility - survey/ engineering);

2. Establish erosion control along the approved limit of work, between the areas and the adjacent wetland (Responsibility - survey / contractor),

3. Commence excavation of areas; field-adjust grading as necessary to ensure proper wetland hydrology / flood storage volumes are achieved (Responsibility - wetland scientist / contractor),

4. Plant specified trees, shrubs, and herbaceous material. Seed specified Wetland / Pollinator seed mix into Replication area. Seed upland Buffer Zone areas with a Conservation / Wildflower pollinator mix, and mulch as needed with *straw* to prevent erosion. **Place wildlife habitat features previously set aside where encountered within the approved work area such as hollow logs, rotting logs, rocks and branches into the replication area** (Responsibility - wetland scientist / contractor)**,**

5. Water planted shrubs during extended dry periods as needed to ensure survival (Responsibility - contractor),

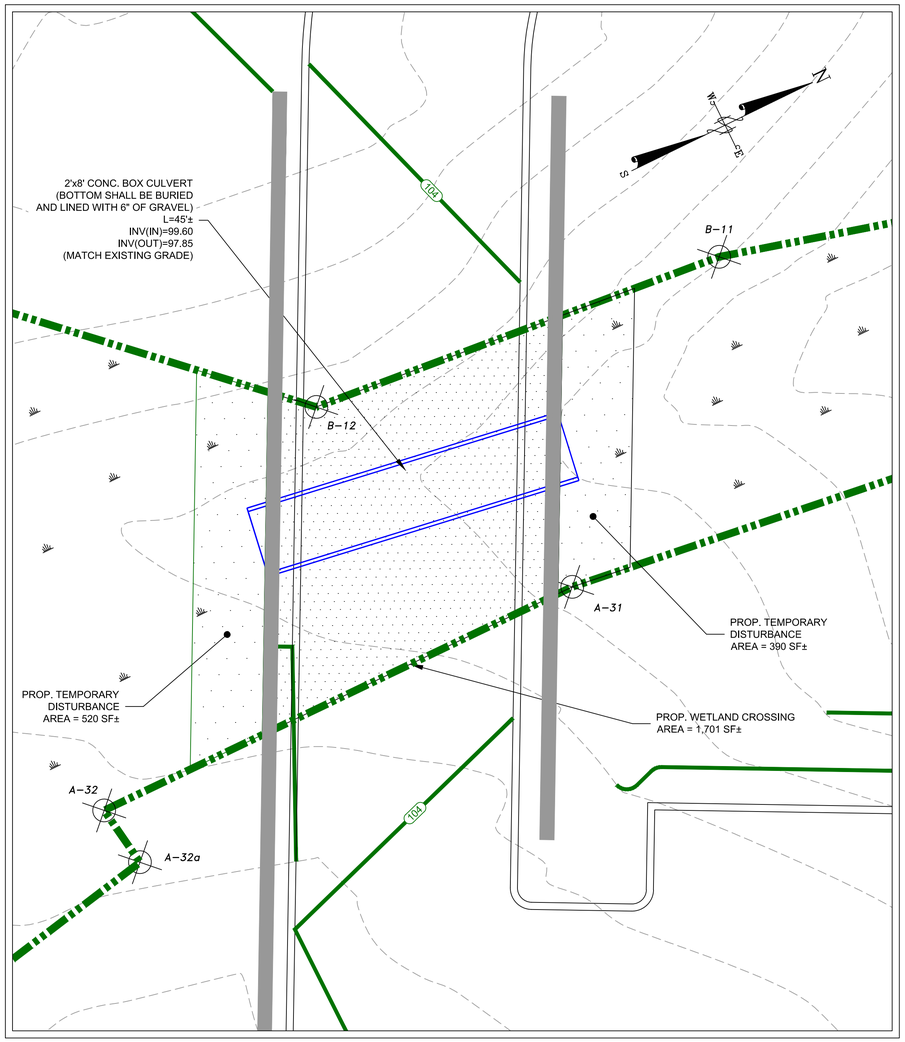
6. Monitor areas, and provide status reports to the HCC as directed and according to the prescribed post construction monitoring and reporting protocols consistent with the *Massachusetts Inland Wetland Replication Guidelines*. (Responsibility-wetland Scientist),

7. Once areas have revegetated and side slopes are stabilized, remove erosion control (at the discretion of the HCC and / or its acting agent) (Responsibility - contractor).

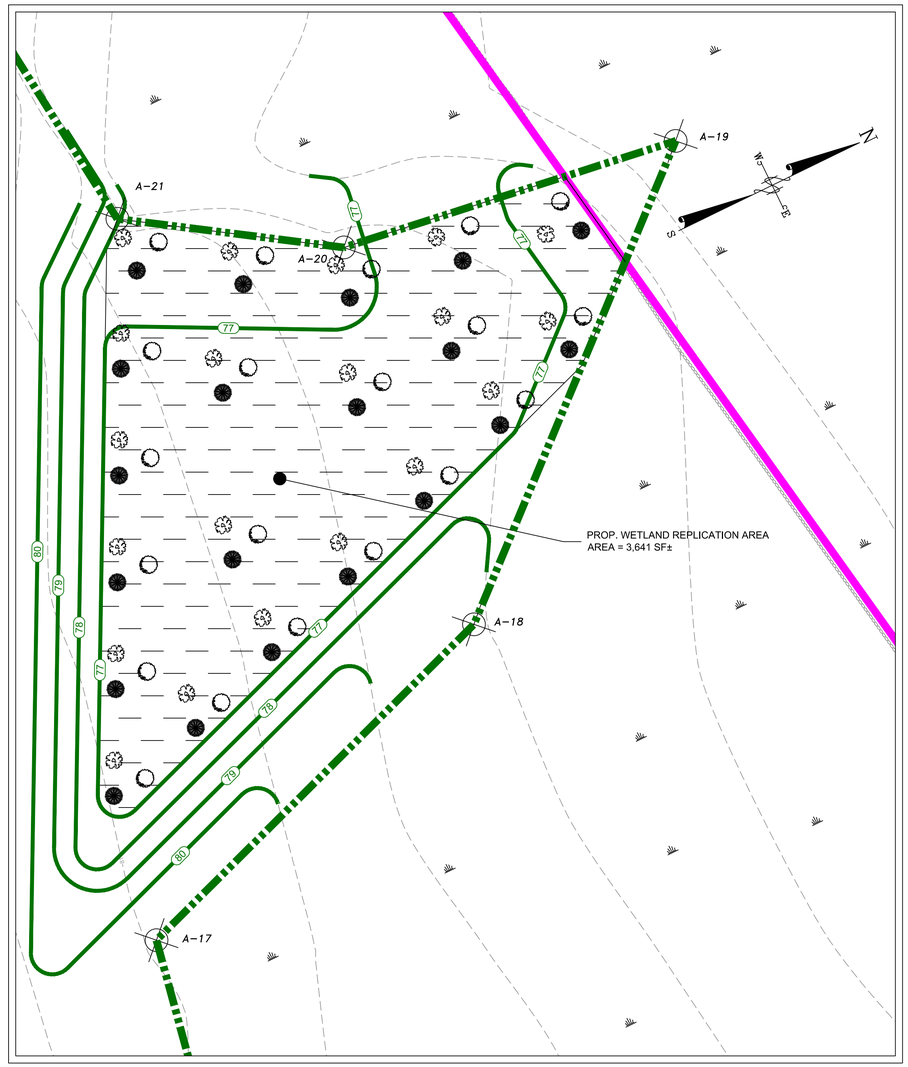
LEGEND:

SYMBOLS AND ABBREVIATIONS SHOWN ON THIS PLAN

CONTOUR	—100—
PROPOSED CONTOUR	100
INVERT ELEVATION	INV=100.00
BITUMINOUS	BIT.
CONCRETE	CONC.
EXISTING	EX.
PROPOSED	PROP.
SQUARE FEET	SF



PROPOSED WETLAND IMPACT AREA
SCALE: 1" = 10'



PROPOSED WETLAND REPLICATION AREA
SCALE: 1" = 10'

WETLAND REPLICATION PLANTING SCHEDULE*

QUANTITY	COMMON NAME	SYMBOL	BOTANICAL NAME	LAYER	SIZE*	LOCATION
20	SILKY DOGWOOD		CORNUS AMOMUM	SHRUB	2–3' TALL	10' CENTERS THROUGHOUT RESTORATION AREA
20	CHOKEBERRY		ARONIA SP.	SHRUB	2–3' TALL	
20	SPECKLED ALDER		ALNUS INCANA	SHRUB	2–3' TALL	
15 LB	EROSION CONTROL/ RESTORATION MIX	N/A	N/A	HERB	SEED	SEED ENTIRE AREA INCLUDING SIDE SLOPES WITH TOTAL OF 3.0 LBS SEED MIX/1,000 SF

*BASED ON WETLAND REPLICATION PLAN PREPARED BY SEEKAMP ENVIRONMENTAL CONSULTING, INC

GENERAL NOTES:

1. SUBJECT PROPERTY LOCATED ON HAVERHILL ASSESSORS PARCEL 585–431–22A (LOT A).
2. SUBJECT PROPERTY LOCATED IN ZONING DISTRICT BP – BUSINESS PARK.
3. DELINEATED WETLAND LINES ORIGINALLY FLAGGED BY MERIDIAN ASSOCIATES IN NOVEMBER OF 2017, AND LOCATED BY AN ON–THE–GROUND FIELD SURVEY CONDUCTED BY DANA F. PERKINS, INC. IN FEBRUARY OF 2018.
4. WETLAND FLAGS REESTABLISHED IN THE FIELD THROUGH AN ON–THE–GROUND FIELD SURVEY CONDUCTED BY DANA F. PERKINS, INC., FIELD VERIFIED AND REVISED BY SEEKAMP ENVIRONMENTAL CONSULTING, AND LOCATED BY AN ON–THE–GROUND FIELD SURVEY CONDUCTED BY DANA F. PERKINS, INC. IN JANUARY OF 2025.
5. EXISTING TOPOGRAPHY SHOWN HEREON IS THE RESULT OF AN ON–THE–GROUND FIELD SURVEY CONDUCTED BY DANA F. PERKINS, INC. IN FEBRUARY OF 2018, UPDATED IN AUGUST OF 2021, AND UPDATED IN JANUARY OF 2025.
6. PROPERTY LINES SHOWN HEREON TAKEN FROM AVAILABLE PLANS OF RECORD AND SHOWN AS "LOT A" ON A SUBDIVISION PLAN PROVIDED BY MERIDIAN ASSOCIATES TITLED, "1050 HILLDALE AVENUE, PLAN OF LAND, LOCATED IN HAVERHILL, MASSACHUSETTS" DATED FEBRUARY 8, 2018.

DATE	BY	REVISION

10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

COMMONWEALTH OF MASSACHUSETTS
ANDREW M. POWERS
CIVIL
No. 50539
REGISTERED
PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER

WETLANDS REPLICATION PLAN
INDUSTRIAL OUTDOOR STORAGE YARD
1400 HILLDALE AVENUE
HAVERHILL, MASSACHUSETTS

SCALE: 1" = 10' | DATE: MAY 12, 2025 | JOB NO. 51856D | SHEET 1 OF 1

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RECORD OWNER:

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