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January 26, 2021

Northborough Conservation Commission
Northborough Town Hall
63 Main Street
Northborough, MA 01532

RE: Regulatory Discussion
0 Hudson Street, Northborough, MA

Dear Northborough Conservation Commission:

Norse Environmental Services, Inc. is pleased to submit this Regulatory Discussion on behalf of the applicant, Circle Assets, LLC for the proposed project at 0 Hudson Street, Northborough, MA (Assessors Map: 53, Lots: 19, 20, 21).

1.0 Existing Conditions

The site of the proposed project is located on Hudson Street, between house numbers 84 and 106. The site consists of two lots, Lot 1 (adjacent to house number 84) and Lot 2 (adjacent to house number 106), totaling 2.19 acres. These lots were created from redividing three lots that had been created prior to 1996.

Overall, the site is largely undeveloped. A gravel parking area, in the northern corner of Lot 1, is a result of abutter encroachment, and has been present for several decades. In addition, a town sewer line runs through the north-west corner of Lot 1.

The site contains Bordering Vegetated Wetlands (BVW), Bordering Land Subject to Flooding (BLSF), Bank, and Riverfront Area (RA). Historically, the site consisted of fields, with a ditch running west to east diagonally across the entire site. This ditch is still present within the BVW, beginning on Lot 2 and draining to the southeast of Lot 1 where it borders the Assabet River. From Hudson Street, a 12" – diameter concrete masonry pipe discharges onto Lot 2 and has caused erosion that transports sediment towards the BVW. The BVW Buffer Zone (the Buffer Zone) to the north of the BVW is dominated by invasive Japanese knotweed (*Fallopia japonica*). Japanese knotweed dominates from the BVW boundary up to the road shoulder and gravel parking area (**Photos 1-4**), including significant portions of the inner and outer Riverfront Area. **Table 1** provides the square footage of Riverfront Area on each lot and the square footage of disturbed area within the Riverfront Area. **Table 2** provides specific area calculations for the existing conditions, the proposed conditions, and the proposed net change of area.

Table 1: Total Riverfront Area and Disturbed Areas within Riverfront Area

	Lot 1	Lot 2	Total
Riverfront Area on Site	35,470 SF	37,118 SF	72,588 SF
Disturbed or Altered Area within Riverfront Area on Site	2,860 SF	0 SF	2,860 SF

Table 2: Total Site Comparison

	Existing		Proposed		Net Change	
	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2
Land Under Water Bodies	4,283	4,351	4,283	4,351	-	-
BVW	11,902	10,793	11,902	11,073	-	280
Natural Buffer	3,712	31,452	20,564	30,976	16,852	(476)
Invasive Species	19,101	5,024	-	-	(19,101)	(5,024)
Developed area (gravel, building, lawn, driveway)	2,860	-	5,109	5,220	2,249	5,220
Total Area (Jurisdictional)	41,858	51,620	41,858	51,620	-	-
	-	-	-	-	-	-
Outside Jurisdiction (Developed)	1,032	-	1,032	-	-	-

*Red is net decrease of area.



Photo 1: Japanese knotweed dominates the Buffer Zone and Riverfront Area (inner and outer) beyond the gravel parking area on Lot 1 (8/18/19).



Photo 2: BVW flag A15, looking west along the wetland line. Note the Japanese knotweed to the right of the photo, between the BVW and Hudson Street (8/18/19).

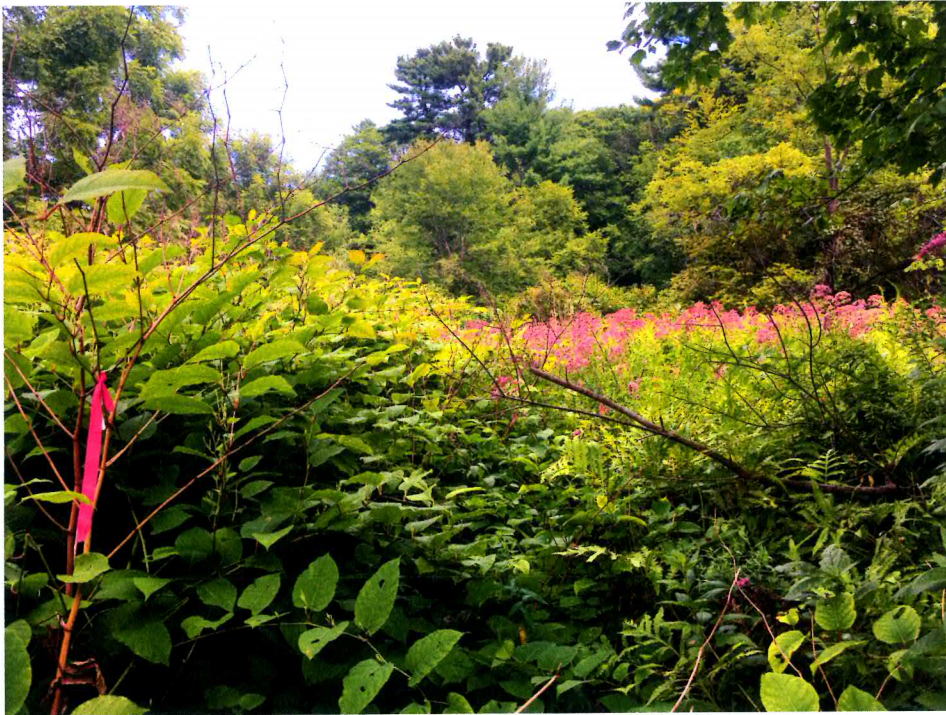


Photo 3: BVW flag A15, looking east along the wetland line. BVW is seen on the right side of the photo and Japanese knotweed to the left, dominating the landscape between the BVW and the edge of the site (8/18/19).



Photo 4: Japanese knotweed dominates the edge of the site along Hudson Street (8/18/19).

2.0 Site History

In March of 2010 a Superseding Order of Conditions (SOC), DEP File #247-0953 was issued by the MassDEP Central Regional Office (CERO) for the construction of a duplex home which involved 1,930 square feet (SF) of BVW filling, 4,751 SF of BLSF impacts and 6,730 SF of RA impacts. In December of 2010 an Order of Conditions (OOC) was issued by the Northborough Conservation Commission under the Northborough Wetlands Protection Bylaw for the same project with the same impacts.

3.0 Proposed Project

Lot 1:

The applicant is proposing a duplex home on Lot 1. This duplex will be constructed within the outer Riverfront Area and Buffer Zone. The structure will be built on the footprint of the degraded gravel parking area and within the vegetated patch of Japanese knotweed. The proposed duplex will result in 4,735 SF of permanent alteration to Lot 1. Riverfront Area restoration is proposed for 16,560 SF of Lot 1. At the moment, Lot 1 has Japanese knotweed growing from the edge of the gravel area to the edge of the BVW. Natural Riverfront Area will be restored by removing the Japanese knotweed through an invasive species management plan (see attached report). See **Table 3** for figures on the existing and proposed Riverfront Area.

Additionally, the proposed grading will provide compensatory storage for all BLSF alteration (see site plans for cut/fill calculations). See **Table 4** for figures on existing and proposed BLSF.

Lot 2:

The applicant is proposing an additional duplex home on Lot 2. This duplex will be constructed outside of Riverfront Area with the exception of a small portion of retaining wall and a wetland replication area. The duplex will require filling 520 SF of BVW to minimize impacts to the Riverfront Area. This impact will be mitigated with the creation of an 800 SF wetland replication area (within the outer Riverfront Area). An alternatives analysis has been attached to show that other locations for a similar unit would be within the outer riparian zone, which is an alternative allowable under 10.58(4).

Although the proposal results in minor BVW impacts, the net impact to cumulative resource areas is greatly reduced by the proposed location. The BVW impact amounts to 520 SF, while a larger replication area of 800 SF is proposed. On Lot 2, the proposed duplex will result in 110 SF of permanent alteration to Riverfront Area, yet Riverfront Area restoration is proposed for 1,700 SF. Natural Riverfront Area will be restored by removing Japanese knotweed through an invasive species management plan (see attached). See **Table 3** for figures on the existing and proposed Riverfront Area details.

The grading proposed will provide compensatory storage for all BLSF alteration (see site plans for cut/fill calculations). The applicant also proposes to install rip-rap below the stormwater pipe that discharges onto the lot to stop erosion of soil, which is currently occurring during rainstorms. See **Table 4** for figures on existing and proposed BLSF.

Table 3: Riverfront Area Comparison

	Existing		Proposed		Net Change	
	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2
Riverfront Area - Inner Riparian Zone	18,824	17,650	18,824	17,650	-	-
Natural Buffer	3,712	13,335	9,393	13,055	5,681	(280)
BVW	9,431	4,315	9,431	4,595	-	280
Invasive Species	5,681	-	-	-	(5,681)	-
Riverfront Area - Outer Riparian Zone	16,646	19,468	16,646	19,468	-	-
Natural Buffer	524	11,582	9,440	13,057	8,916	1,475
BVW	2,471	6,186	2,471	6,186	-	-
Invasive Species	10,791	1,700	-	-	(10,791)	(1,700)
Developed area (gravel, building, lawn, driveway)	2,860	-	4,735	225	1,875	225
Total Riverfront	35,470	37,118	35,470	37,118	-	-

*Red is net decrease of area.

Table 4: BLSF Comparison

	Existing		Proposed		Net Change	
	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2
BLSF Total	16,563	31,684	16,533	30,202	(30)	(1,482)
Natural Buffer	565	28,149	16,533	30,202	15,968	2,053
Invasive Species	15,998	3,535	-	-	(15,998)	(3,535)

*Red is net decrease of area.

3.1 General Summary of the Overall Proposed Project:

The project proposes two duplex buildings in the outer Riverfront Area, impacts to the BVW and BLSF, and mitigation in the form of BVW replication and BLSF compensatory storage elsewhere on site. The project proposes to exterminate Japanese knotweed from the property and restore the BVW Buffer Zone to a natural meadow space. Work is proposed within the inner riparian zone for compensatory flood storage mitigation and the removal of invasive species. The project will result in a 100% natural Riverfront Area, extending 135 linear feet from the river bank to the proposed duplexes. At the moment, only 20 linear feet of natural Riverfront Area exists.

4.0 Regulatory Compliance for Proposed Impacts to Resource Areas:

This redevelopment project falls under the jurisdiction of the Wetlands Protection Act (the WPA) and the Northborough Wetlands Protection Bylaw (the Bylaw) and is subject to their respective regulations. Under the WPA, the project must comply with the performance standards set forth in 310 CMR 10.57 for Bordering Vegetated Wetlands (BVW), 310 CMR 10.57 for Bordering Land Subject to Flooding (BLSF) and 310 CMR 10.58 for Riverfront Area. Under the Bylaw, the project must comply with sections 4.1.1 for Wetland Replication, 4.2.3 for 15’ No Disturb & 30’ No structure Buffer Zones to BVW, and 4.3.3 for Riverfront Area. The following discussion will describe the proposed impacts to resource areas and how the proposed project will comply with the aforementioned regulations.

4.1 BVW Impacts and Regulatory Compliance

The project proposes a small wetland impact (520 SF) to minimize greater disturbance in the Buffer Zone and Riverfront area on the site. 520 SF of degraded BVW will be impacted to construct the duplex on Lot 2. This BVW will be replicated within an invasive dominated buffer zone, directly adjacent to the wetland impact area. The proposed project will also restore a natural buffer zone around the replication area. The goal will be to produce and enlarge a higher quality BVW from what will be altered. Refer to the *Alternative Site Plan of 0 Hudson Street* which demonstrates a regulatory compliance plan that avoids BVW. This plan would require significant inner Riverfront Area impacts. There is less overall impact to resource areas by proposing the development closer to Hudson Street than it is to propose the development deeper into the Riverfront Area.

Compliance Under the WPA

The impacts to BVW are subject to the performance standards set forth in 310 CMR 10.55(4)(b). The following discussion will describe the projects compliance with each aspect of this regulation.

310 CMR 10.55(4)(b):

“Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:

The proposed wetland impact will allow for a significantly smaller project that is restricted from greater expansion and encroachment within the Buffer Zone and Riverfront.

- 1. The surface of the replacement area to be created (“the replacement area”) shall be equal to that of the area that will be lost (“the lost area”);*

This project proposes 1.5:1 wetland replication. 520 square feet of BVW fill and 800 square feet of replicated BVW is proposed.

Tthe ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;

The proposed wetland replication is directly adjacent to the area that is lost and will be graded to the same elevation (elev. 249)

- 2. The overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;*

The proposed wetland replication is directly adjacent to the area that is lost and will maintain same overall horizontal configuration.

- 3. The replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;*

The proposed wetland replication is along existing BVW of the wetland system and will maintain an unrestricted hydraulic connection.

- 4. The replacement area shall be located within the same general area of the waterbody or reach of the waterway as the lost area;*

The proposed wetland replication is in the same reach of the wetlands of the lost area.

5. *At least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and*

The proposed wetland replication area will be monitored for two years to monitor the percent coverage of the vegetation. See the *Wetland Replication, Compensatory Storage, and Invasive Species Management Plans*, dated 1/26/21, for more details.

6. *The replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00. In the exercise of this discretion, the issuing authority shall consider the magnitude of the alteration, and the significance of the project site to the interests identified in M.G.L. c. 131, Sec. 40, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, area provided to contribute to the protection of the interests identified in M.G.L. c. 131, Sec. 40.*

The proposed wetland replication area has been chosen to meet the General Performance Standards. See the *Wetland Replication, Compensatory Storage, and Invasive Species Management Plans*, dated 1/26//19, for more details.

Compliance Under the Bylaw

The impacts to BVW are subject to the regulations and performance standards set forth in section 4.1 & 4.1.1 of the Bylaw. The following discussion will describe the projects compliance with each aspect of these regulations.

4.1 Activities within Areas Subject to Protection under the Wetlands Bylaw:

The general performance standards for Banks, Land Under Water Bodies, Bordering Land Subject to Flooding, Isolated Land Subject to Flooding and Riverfront Area shall be as stated in 310 CMR 10.00 as amended. The general performance standards for Bordering Vegetated Wetland (BVW) shall be as stated in 310 CMR 10.55 as amended except where an alteration of BVW is proposed. The Commission will consider projects requiring the permanent alteration of up to three thousand five hundred (3,500) square feet of BVW as permitted by 310 CMR 10.55(4)(b) as amended only if the applicant demonstrates:

- 1) *no practical alternative is available;*

No alternative is practicable to reduce net resource impacts as shown in the alternative analysis section of this report (see **5.0 Alternative Analysis**). The proposed BVW impact equates to 520 SF, which is less than 3,500 SF.

2) project scope and design minimize the amount of resource area destroyed;

The project scope has been reduced to minimize impacts to the net resource areas on the property.

3) in the judgment of the Commission such work will not lead to degradation of additional BVW; and

The project has been designed to prevent further expansion of development activities on the site by surrounding the homes with retaining walls.

4) replication area is provided in a ratio of 1.5:1 for the BVW destroyed.

The proposed replication area slightly exceeds a ratio of 1.5:1 for the BVW destroyed.

4.1.1 Performance Standards for Wetland Replication:

Where a replication of BVW is proposed, the applicant shall submit complete replication plans and a replication report with the Application for Permit. In addition, the following requirements shall apply:

a. The replication plan and report shall include, at a minimum, topography, location and size of BVW to be altered, the location and size of the replication area, a description of the BVW to be altered, and a description and detailed methodology of the replication work;

The proposed replication plan discusses existing BVW to be impacted.

b. The replication area shall be completed before the project is completed;

The proposed replication plan discusses the timeframe for the replication area being constructed in the same season as the wetland impact occurs.

c. A wetlands specialist with at least two years experience in wetlands replication shall supervise the replication work;

The proposed replication plan requires a wetland scientist with 2 years experience in wetland replication work.

d. Written reports shall be submitted by the applicant at the end of each growing season stating the condition of erosion controls and documenting the condition of growth of the replicated area;

The proposed replication plan requires a wetland scientist to prepare a report at the end of each growing season.

e. An as built report and an as built plan of the replication area, both certified by the wetlands specialist, shall be submitted and shall provide the date the BVW was excavated, the soil depth data of such BVW, the dates of planting and, if applicable, replanting of replication areas along with the percentage of cover of individual species; and

The proposed replication plan requires an as-built plan to be reviewed by the monitoring wetland scientist and an engineer or surveyor.

f. No certificate of compliance shall be issued for the Permit authorizing the replication work until all conditions of this section have been complied with and at least two full growing seasons have elapsed since the replication work began. At its discretion, the Commission may issue a certificate of compliance prior to the completion of two (2) full growing seasons upon receipt of a bond or other security in an amount and upon such terms as are acceptable to the Commission.

The applicant is aware that a COC is required once 2-years of monitoring work has been successfully completed.

4.2 Bordering Land Subject to Flooding Impacts and Regulatory Compliance

The proposed project will impact Bordering Land Subject to Flooding (BLSF) to allow for the construction of the duplexes on Lots 1 and 2. The total impact to BLSF is 21,470 SF. The project proposes grading that will provide full compensatory storage within the flood plain to replicate existing floodplain. See the site plans for cut and fill calculations. A total increase of 1,579 cubic feet of BLSF storage will be added.

Compliance Under the WPA

The impacts to BLSF are subject to the performance standards set forth in 310 CMR 10.57(4)(a). The following discussion will describe the projects compliance with each aspect of this regulation.

310 CMR 10.57(4)(a) - General Performance Standards for Bordering Land Subject to Flooding:

1. Compensatory storages shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows.

Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body. Further, with respect to waterways,

such compensatory volume shall be provided within the same reach of the river, stream or creek.

The proposed project proposes to provide full compensatory storage for all flood storage volume lost from re-grading at each increment horizontal within BLSF. The project grading proposes an increase of 1,579 cubic feet of flood storage over current conditions. This is a benefit to flooding on the Assabet River. On sheet 2 of 3 in the site plans, a BLSF & Compensatory Flood Storage Calculations table shows that for each elevation increment, the project results in an increase in flood plain storage volume.

2. Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.

The proposed cut grading is in directly adjacent areas as the proposed fill, with no restrictions to flood waters flooding the areas of compensatory storage.

3. Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.

The proposed project will disturb 21,470 SF of BLSF, of which 16,560 SF is dense Japanese Knotweed. This results in only 4,910 SF of 100% non-invasive BLSF impact. The other areas of BLSF have several invasive honeysuckle shrubs. A detailed wildlife habitat evaluation under 310 CMR 10.60 was conducted by a qualified wildlife biologist. See attached wildlife habitat evaluation. An Appendix B Wildlife Evaluation was completed, and no significant wildlife habitat or features were found, mainly due to the proposed BLSF and BVW impact areas consisting mainly of invasive species and sparse vegetation. No mapped rare wildlife habitat is mapped on the property.

4.3 Riverfront Area Impacts and Regulatory Compliance

The proposed project will impact Riverfront Area in the outer riparian zone for the construction of two duplexes. Mitigation for BVW and BLSF impacts will be performed within the inner and outer riparian zone. Invasive species removal will occur in the inner and outer riparian zone to increase and enhance the natural riverfront area present on the property.

The following table (5) outlines the existing conditions of the Riverfront Area on site. This includes degraded gravel areas and also areas of extensive invasive species degradation.

Table 5: Existing Conditions within Riverfront

	Existing	
	Lot 1	Lot 2
Riverfront Area - Inner Riparian Zone	18,824	17,650
Natural Buffer	3,712	13,335
BVW	9,431	4,315
Invasive Species	5,681	-
Riverfront Area - Outer Riparian Zone	16,646	19,468
Natural Buffer	524	11,582
BVW	2,471	6,186
Invasive Species	10,791	1,700
Developed area (gravel, building, lawn, driveway)	2,860	-
Total Riverfront	35,470	37,118

Compliance Under the WPA

The impacts to Riverfront Area are subject to the performance standards set forth in 310 CMR 10.58. The following discussion will describe the alternative analysis for the project and the projects compliance with 310 CMR 10.58.

Alternative Analysis

The proposed project has considered other alternative locations for the proposed duplexes. The proposed construction of two duplex units and restoring the Riverfront Area to natural conditions will increase wildlife habitat opportunity and enhance the natural resource areas on the property. The proposed project is the best alternative, providing more benefits than potentially constructing 3 single family homes on each of the 3 lots that had existed prior to 1996, or proposing the duplex for Lot 2 within the inner riparian zone of the Riverfront Area in an attempt to avoid minor BVW impact. Below, these alternatives will be described in detail to demonstrate how the proposed project is indeed the best alternative in terms of overall impact to resource areas, especially Riverfront Area.

Alternative 1: 3 Single Family Homes

This alternative would propose the development of the 3 original lots (pre-1996) as single-family homes with 5,000 SF of disturbance within riverfront for each lot. This would result in 15,000 SF of permanent riverfront disturbance. In addition, this alternative would require a filing as a limited project due to a lack of area to compensate for flood storage filling or would require the house to be placed on pilings. This alternative was therefore abandoned as a similar economic value could be achieved with only developing two lots as currently proposed.

Alternative 2: Previously Approved Project

This alternative would construct the previously approved project under Mass DEP #247-0953 and would result in the taking of one buildable lot and result in 1,930 SF of wetland impacts and 4,751 SF of degraded surfaces for a single duplex. 2,200 SF of riverfront area would also be impacted. When comparing the previously approved project to the currently proposed project, the proposed project results in significantly more natural Riverfront Area and cumulatively protects more resource area than the previously approved plan. This is a net benefit to the BVW, BLSF and Riverfront Area. **Table 6** and **Table 7** compare the previously approved project to the current proposed project. This alternative proposal did not consider all of the additional lots for development, nor did it include any riverfront restoration work to remove invasive species. As this alternative results in more wetland impacts, this alternative was abandoned.

Table 6: Riverfront Area Comparison with 2010 Project

	Existing	Proposed		Net Change
	Lot 1	Lot 1	2010 Project	
Riverfront Area - Inner Riparian Zone	18,824	18,824	18,824	-
Natural Buffer	3,712	9,393	3,712	5,681
BVW	9,431	9,431	9,431	-
Invasive Species	5,681	-	5,681	(5,681)
Riverfront Area - Outer Riparian Zone	16,646	16,646	16,646	-
Natural Buffer	524	9,440	3,712	5,728
BVW	2,471	2,471	2,471	-
Invasive Species	10,791	-	5,712	(5,712)
Developed area (gravel, building, lawn, driveway)	2,860	4,735	4,751	(16)
Total Riverfront	35,470	35,470	35,470	-

*Red is net decrease of area.

Table 7: BLSF Comparison with 2010 Project

	Existing	Proposed		Net Change
	Lot 1	Lot 1	2010 Project	
BLSF Total	16,563	16,533	16,563	(30)
Natural Buffer	565	16,533	5,170	11,363
Invasive Species	15,998	-	11,393	(11,393)

*Red is net decrease of area.

Alternative 3: 2 Duplex Units, Lot 2 duplex all in riverfront

This alternative would construct two duplex units but place the Lot 2 duplex in the middle of the lot. This would require 4,000 SF of Riverfront disturbance for Lot 2 alone. See **Figure 1**. This alternative was therefore abandoned. This alternative would avoid BVW alterations and would maintain work out of the inner riparian zone. This alternative would likely satisfy Riverfront Area standards but was not selected in order to preserve Riverfront Area.

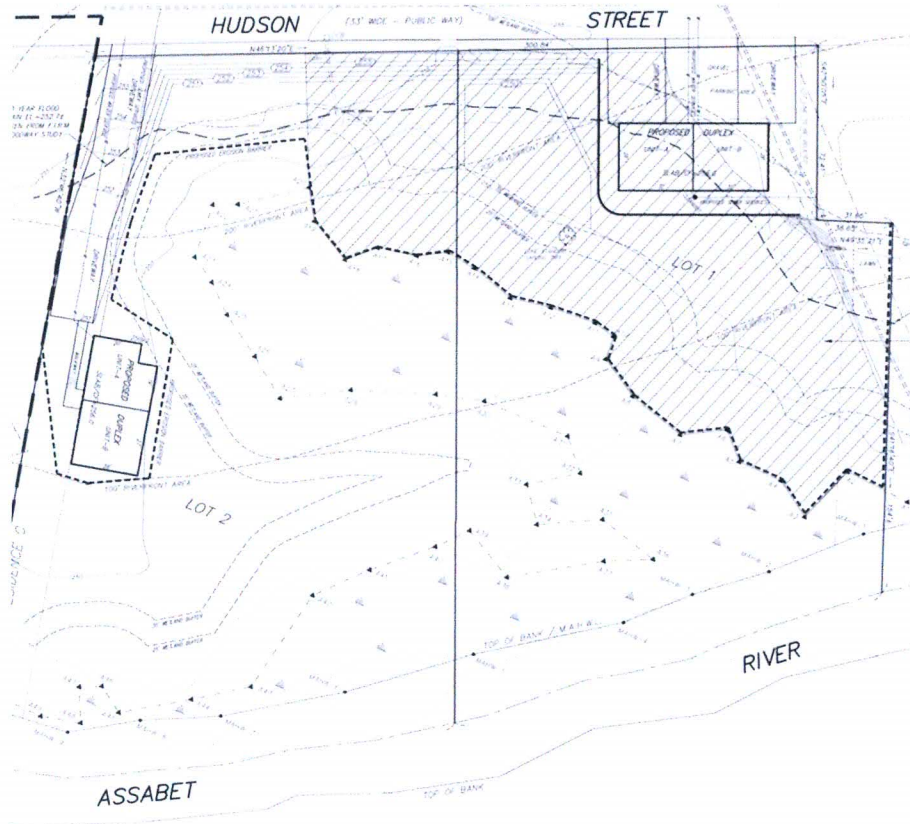


Figure 1: Alternative 2-duplex site plan

Alternative 4: 2 Duplex Units, Lot 2 duplex outside riverfront (Current proposed project)

This alternative would construct two duplex units but place the Lot 2 duplex outside the riverfront area. This alternative minimizes impacts to riverfront area, provides for significant riverfront and BLSF restoration and allows for reasonable economic value for the 3 lots that have existed prior to 1996. **Table 8** outlines the proposed conditions by area.

Table 8: Riverfront Area – Proposed Conditions

	Existing		Proposed		Net Change	
	Lot 1	Lot 2	Lot 1	Lot 2	Lot 1	Lot 2
Riverfront Area - Inner Riparian Zone	18,824	17,650	18,824	17,650	-	-
Natural Buffer	3,712	13,335	9,393	13,055	5,681	(280)
BVW	9,431	4,315	9,431	4,595	-	280
Invasive Species	5,681	-	-	-	(5,681)	-
Riverfront Area - Outer Riparian Zone	16,646	19,468	16,646	19,468	-	-
Natural Buffer	524	11,582	9,440	13,057	8,916	1,475
BVW	2,471	6,186	2,471	6,186	-	-
Invasive Species	10,791	1,700	-	-	(10,791)	(1,700)
Developed area (gravel, building, lawn, driveway)	2,860	-	4,735	225	1,875	225
Total Riverfront	35,470	37,118	35,470	37,118	-	-

*Red is net decrease of area.

As the site is previously developed it is to be reviewed under the redevelopment standards 310 CMR 10.58(5).

(5) Redevelopment Within Previously Developed Riverfront Areas; Restoration and Mitigation. Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas. A previously developed riverfront area contains areas degraded prior to August 7, 1996 by impervious surfaces from existing structures or pavement, absence of topsoil, junkyards, or abandoned dumping grounds. Work to redevelop previously developed riverfront areas shall conform to the following criteria:

(a) At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.

The proposed project increases natural riverfront area and depth by restoring a degraded area with 100% invasive species with natural riverfront meadow space. This includes restoration within the inner riparian zone.

(b) Stormwater management is provided according to standards established by the Department.

The project is for two duplex units which do not require stormwater management under the Departments standards.

(c) Within 200 foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25 foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

No work within 100 feet of the river is proposed except for restoration and mitigation work for invasive species and compensatory storage. Restoration work will result in an increase from 20 feet to 135 feet of natural riverfront depth on the property.

(d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).

The project has placed structures as far from the river as possible as allowable under zoning setbacks.

(e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

The project proposes work under 310 CMR 10.58(5)(f) and (g).

(f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include:

- 1. removal of all debris, but retaining any trees or other mature vegetation;*
- 2. grading to a topography which reduces runoff and increases infiltration;*
- 3. coverage by topsoil at a depth consistent with natural conditions at the site; and*
- 4. seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site;*

The project is using existing degraded areas on Lot 1 (2,860 SF). Additional restoration within invasive species would fall under 310 CMR 10.58(5)(f)(2), but this work is presented under 310 CMR 10.58(5)(g) to show that mitigation far exceeds standards.

(g) When an applicant proposes mitigation either on-site or in the riverfront areas within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary.

The project proposes to restore 10,791 SF (Lot 1) and 1,700 SF (Lot 2) of invasive species area within the Riverfront to natural riverfront.

Compliance Under the Bylaw

The proposed impacts to Riverfront Area are subject to section 4.3.3 *Riverfront Area General Performance Standards* of the Northborough Wetlands Protection Bylaw Regulations.

4.3.3 General Performance Standards. No foundation, building, road, sidewalk, or other permanent structure shall be placed within the resource area except as allowed by 310 CMR 10.58. Furthermore, no grading, filling, excavation, removal of vegetation, or other construction activity shall be allowed within 200 feet of the annual mean high water level of any river. Notwithstanding the above, the Commission may allow work within the resource area provided the applicant demonstrates that the work will not be detrimental to the resource area. Furthermore the presumption of wetland resource alteration from fertilizers, pesticides, and de-icing chemicals may be overcome by providing qualified technical data to the Commission indicating that the chemical products will not alter the resource area or adjacent waters.

As shown above, the project meets the work permitted under 310 CMR 10.58. The proposed work has reduced impacts to the maximum extent possible and has also sought to provide extensive mitigation to restore riverfront with the net result of more natural riverfront than existing conditions.

4.4 Impacts to the 25' No Disturb & 35' No Structure Buffer Zones to BVW and Regulatory Compliance Under the Bylaw

The proposed project will impact the 25' No Disturb & 35' No structure Buffer Zones to BVW for the construction of a duplex building on Lot 2. Mitigation for BVW and BLSF impacts will be performed within these Buffer Zones. Invasive species removal will occur in these Buffer Zones to enhance the resource areas.

No foundation, building, road, sidewalk, or other permanent structure shall be placed within thirty five (35) feet of any resource area. Furthermore, no grading, filling, excavation, removal of vegetation or other construction activity shall be allowed within twenty five (25) feet of said resource areas. Notwithstanding the above, the Commission may allow work closer to resource areas if needed: (a) to provide access to an area where an alteration of resource areas has been allowed; (b) if the work qualifies as a

limited project (310 CMR 10.53 (3) as amended); or (c) for storm water outlet structures. In other projects the Commission may allow work closer to a resource area if the applicant demonstrates:

(1) alternatives have been considered and in the judgment of the Commission no practical alternative is available;

As shown above, the alternatives would require the loss of a buildable lot or result in more Buffer Zone, BLSF and Riverfront impacts. The proposed impacts have been reduced to the maximum extent practicable for the net resource area. The proposed work and structures will result in a permanent demarcation of activities on the lots and allow for the preservation of the remaining areas on the property.

(2) project scope and design minimize work in close proximity to resource areas;

As shown above, the alternatives would require either the loss of a buildable lot or more Buffer Zone and Riverfront Area impacts. The proposed impacts have been reduced to the maximum extent practicable.

(3) site conditions (including but not limited to slope, soil type and hydrology) will allow prevention of wetland damage from such work; and

As shown above, the alternatives would require the loss of a buildable lot or more Buffer Zone and Riverfront Area impacts. The proposed impacts have been reduced to the maximum extent practicable. Wetland impacts have been minimized to the maximum extent practicable.

(4) such work will not lead to encroachment on the resource area after completion of the project. For projects involving steep slopes, highly erodible soils, extensive disturbed areas, or hydrologic conditions likely to promote significant erosion, the Commission may require a wider undisturbed buffer to ensure protection of wetland resource areas. Furthermore, the presumption of wetland resource alteration from fertilizers and pesticides may be overcome by providing qualified technical data to the Commission indicating that the chemical products will not alter wetland resource areas.

The proposed project has reduced work in the 25-foot No Disturb Buffer and 35-foot No Structure Buffer wherever possible. The project is the smallest net impact to Buffer Zone, BVW, Riverfront Area and BLSF of each aforementioned alternative.

Conclusion

The project has been designed to minimize resource area impacts and satisfy the regulations and performance standards of the WPA and Northborough Wetlands Protection Bylaw, while providing important mitigation within multiple resource areas. Existing conditions involve the extensive growth of invasive species within wetland resource areas. After the proposed construction and mitigation take place, the entire site will see an increase in BVW square footage, an increase in BLSF flood storage, an increase in natural buffer zone square footage,

improved stormwater management, 120 feet of natural undisturbed Riverfront Area, and the eradication of an extensive mass of invasive species. Altogether, this project will result in the expansion and substantial improvement of the wetland resource areas on site.

Please feel free to contact us if you have any questions.



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