

PROJECT NO **48930.02**
LOCATION 1555 & 1575 Iyannough Road, Hyannis, MA
CALC BY Brian G. Yergatian, P.E.
DATE 5/17/17



NITROGEN LOADING CALCULATIONS

APPLICATION/USE: Commercial

EXISTING

PROPOSED - TITLE V

LOT SIZE:	201,487	s.f.
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LOT SIZE:	201,487	s.f.
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IMPERVIOUS SURFACES:		
<i>Roof Area</i>	9,477	s.f.
<i>Paved Area</i>	41,488	s.f.

IMPERVIOUS SURFACES:		
<i>Roof Area</i>	13,248	s.f.
<i>Paved Area</i>	47,578	s.f.

NATURAL AREA:	150,522	s.f.
<i>lawn</i>	34,054	s.f.

NATURAL AREA:	140,661	s.f.
<i>lawn</i>	27,953	s.f.

TITLE V FLOW:		
<i>Existing</i>	1,370	gpd

TITLE V FLOW:		
<i>Proposed</i>	1,897	gpd

RECHARGE

18 in/yr	1.5 ft/yr	Natural Areas
40 in/yr	3.3 ft/yr	Off Impervious Surfaces

EXISTING

WASTEWATER

$$\boxed{1,370} \text{ gpd} \times 3.785 \text{ L/gal.} = \boxed{5,185} \text{ L/d} \times 35 \text{ mg/L} = \boxed{181,491} \text{ mg/d}$$

IMPERVIOUS SURFACES:

Roof

$$\boxed{9,477} \text{ ft}^2 \times 40 \text{ in/yr} \times 1 \text{ ft/12 in} \times 28.32 \text{ L/ft}^3 \times 1 \text{ yr/365 d} = \boxed{2,451} \text{ L/d}$$

$$2,451 \text{ mg/d} \times 0.75 \text{ mg/L} = \boxed{1,838} \text{ mg/d}$$

Paved

$$\boxed{41,488} \text{ ft}^2 \times 40 \text{ in/yr} \times 1 \text{ ft/12 in} \times 28.32 \text{ L/ft}^3 \times 1 \text{ yr/365 d} = \boxed{10,730} \text{ L/d}$$

$$10,730 \text{ mg/d} \times 1.5 \text{ mg/L} = \boxed{16,095} \text{ mg/d}$$

LAWN

$$\boxed{34,054} \text{ ft}^2 \times 3 \text{ lbs/1,000 ft}^2\text{yr} \times 1 \text{ yr/365 d} \times 454,000 \text{ mg/lb} \times 0.25 = \boxed{31,768} \text{ mg/d}$$

NATURAL

$$\boxed{150,522} \text{ ft}^2 \times 1.5 \text{ ft/yr} \times 28.32 \text{ L/ft}^3 \times 1 \text{ yr/365 d} = \boxed{17,518} \text{ L/d}$$

181,491	+	1,838	+	16,095	+	31,768	=	6.4 ppm
5,185	+	2,451	+	10,730	+	17,518		

PROPOSED - TITLE V

WASTEWATER

$$\boxed{1,897} \text{ gpd} \times 3.785 \text{ L/gal.} = \boxed{7,180} \text{ L/d} \times 35 \text{ mg/L} = \boxed{251,305} \text{ mg/d}$$

IMPERVIOUS SURFACES:

Roof

$$\boxed{13,248} \text{ s.f.} \times 40 \text{ in/yr} \times 1 \text{ ft/12 in} \times 28.32 \text{ L/ft}^3 \times 1 \text{ yr/365 d} = \boxed{3,426} \text{ L/d}$$

$$3,426 \text{ mg/d} \times 0.75 \text{ mg/L} = \boxed{2,570} \text{ mg/d}$$

Paved

$$\boxed{41,488} \text{ s.f.} \times 40 \text{ in/yr} \times 1 \text{ ft/12 in} \times 28.32 \text{ L/ft}^3 \times 1 \text{ yr/365 d} = \boxed{10,730} \text{ L/d}$$

$$10,730 \text{ mg/d} \times 1.5 \text{ mg/L} = \boxed{16,095} \text{ mg/d}$$

LAWN

$$\boxed{27,953} \text{ s.f.} \times 3 \text{ lbs/1,000 ft}^2\text{yr} \times 1 \text{ yr/365 d} \times 454,000 \text{ mg/lb} \times 0.25 = \boxed{26,077} \text{ mg/d}$$

NATURAL

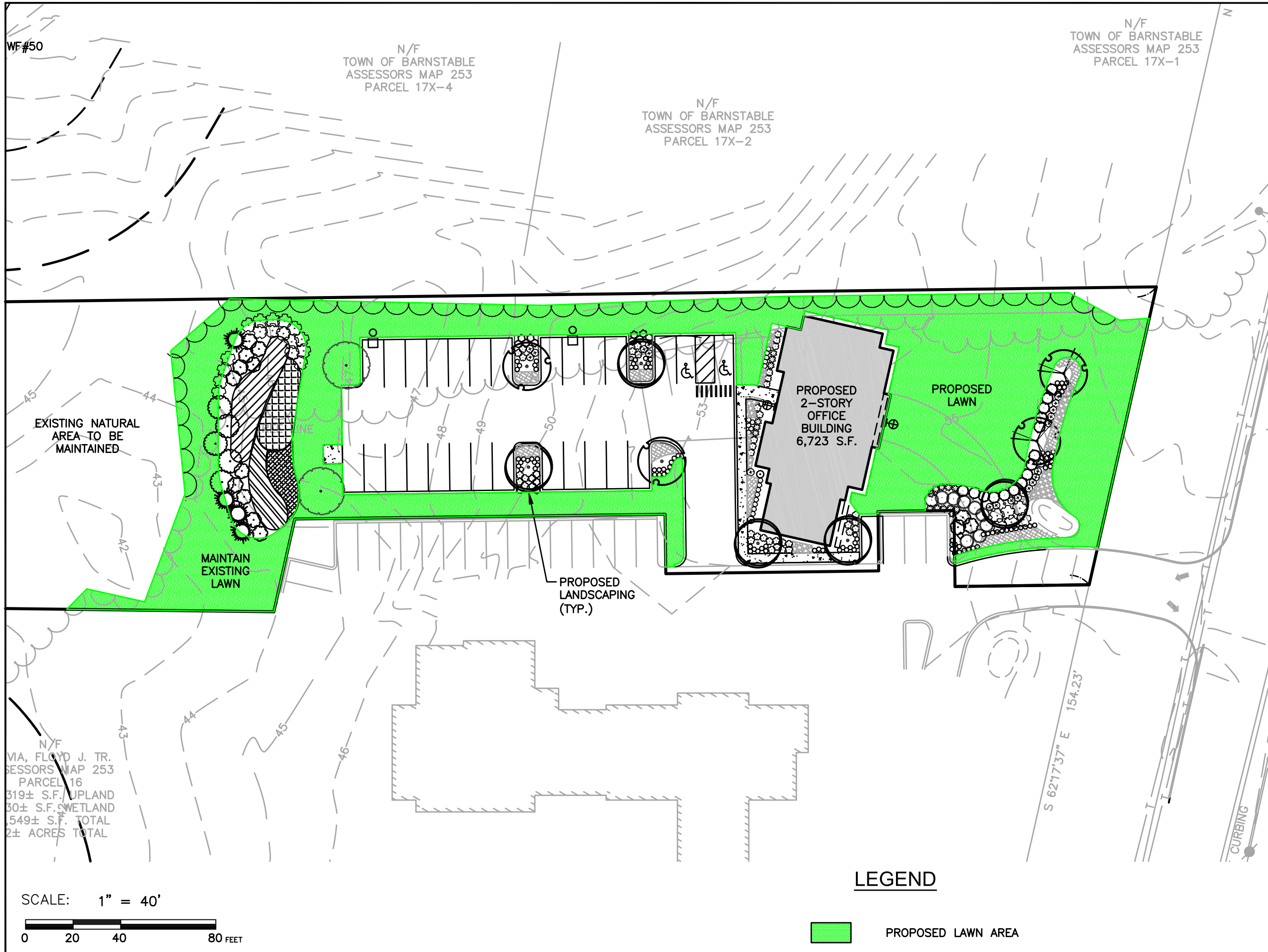
$$\boxed{140,661} \text{ s.f.} \times 1.5 \text{ ft/yr} \times 28.32 \text{ L/ft}^3 \times 1 \text{ yr/365 d} = \boxed{16,371} \text{ L/d}$$

251,305	+	2,570	+	16,095	+	26,077	=	7.9 ppm
7,180	+	3,426	+	10,730	+	16,371		

With Alternative Treatment? NO

Nitrogen Reduction: 0 %

Proposed Nitrogen Loading: **7.9 ppm**



COMMERCIAL REDEVELOPMENT

1575 IYANNOUGH ROAD

HYANNIS
MASSACHUSETTS
(BARNSTABLE COUNTY)

PROPOSED NITROGEN LOADING

FEBRUARY 3, 2017

PREPARED FOR:
SILVIA & SILVIA LLC
1284A MAIN STREET
OSTERVILLE, MA 02655

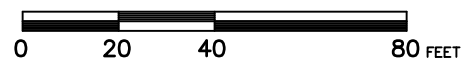
BSC GROUP
349 Main Street - Route 28
West Yarmouth, Massachusetts
02673
508 778 8919

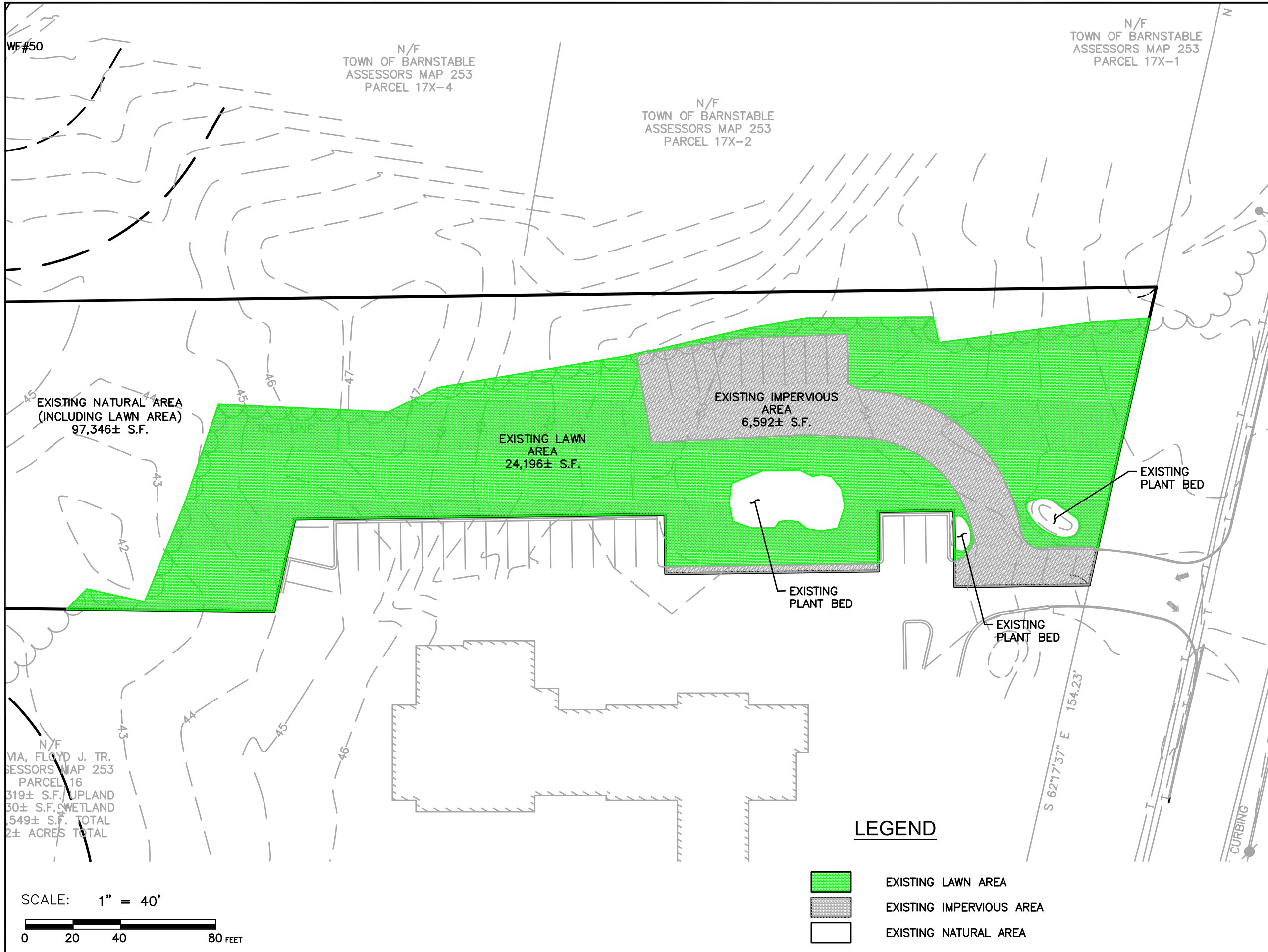
Job No.: 48930.02 Date: 2/3/2017
Scale: 1" = 40' Revised: 5/17/17
Dwg No.: _____
File: 4893002-NIT.dwg

LEGEND

 PROPOSED LAWN AREA

SCALE: 1" = 40'





COMMERCIAL REDEVELOPMENT

1575 IYANNOUGH ROAD

HYANNIS MASSACHUSETTS (BARNSTABLE COUNTY)

EXISTING NITROGEN LOADING

FEBRUARY 3, 2017

PREPARED FOR:
SILVIA & SILVIA LLC
 1284A MAIN STREET
 OSTERVILLE, MA 02655

BSC GROUP
 349 Main Street - Route 28
 West Yarmouth, Massachusetts
 02673
 508 778 8919

Job No.: **48930.02** Date: **2/3/2017**
 Scale: **1" = 40'** Revised: **5/17/17**
 Dwg No.: _____
 File: **4893002-NIT.dwg**

LEGEND

- EXISTING LAWN AREA
- EXISTING IMPERVIOUS AREA
- EXISTING NATURAL AREA

SCALE: 1" = 40'

