

**PROJECT NARRATIVE &
NITROGEN LOADING CALCULATIONS**

**Proposed Horse Stable
230 Church Street
Harwich, Massachusetts**

February 16, 2023

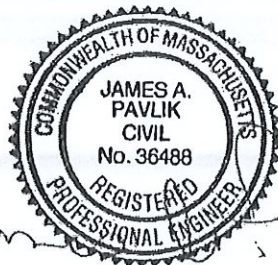
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Prepared for:
KEVIN & TARA TOMANY
89 SKYFIELDS DRIVE
GROTON, MA 01450

Prepared by:

Outback
Engineering
Incorporated

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Middleboro, MA 02346
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James A. Pavlik
2-16-23

*Project Narrative & Nitrogen Loading Calculations
Proposed Horse Stable
230 Church Street
Harwich, Massachusetts*

This narrative has been prepared to accompany a site plan for a proposed 2- horse barn and paddock for Kevin and Tara Tomany at 230 Church Street (see “Proposed Stable Site Plan” dated February 16, 2023). The site is in the town’s Residential-Rural Estate zoning district, and is located in a Zone II groundwater protection area. This lot contains 69,884 S.F. with an existing 4-bedroom, single-family home and detached garage. There are lawn/landscaped areas toward the front of the site, and wooded areas at the rear of the property.

A proposed barn will shelter 2 horses with a fenced paddock area at the rear of the property as shown on the site plan. Horse manure disposal shall be managed by placing it into a covered dumpster for weekly off-site disposal by a waste management company to be contracted by the homeowners. The horse stall and outdoor stable area shall be cleaned of manure on a daily basis, by shoveling the manure into a wheelbarrow and then transferring it to the dumpster.

A nitrogen loading worksheet was prepared (see attached) based on parameters found in the Cape Cod Commission Water Resources Technical Bulletin (Appendix A), and to satisfy Section 325-51.C of the Town of Harwich bylaws. To achieve the town’s maximum allowed nitrogen concentration of 5 mg/L for the site, nitrogen load from the horse manure was estimated to be reduced by 90% based on good housekeeping practices described above. The calculation also shows that the fertilized lawn area of the site is proposed to be reduced to 6,000 S.F., and that new gravel driveways (treated as impervious area) are to be added to access the barn, dumpster and existing garage.

The nitrogen loading calculations show that the proposed stable for 2 horses and other site conditions as described above will result in a nitrogen loading rate of 4.99mg/L which meets the town standard. Please note that these calculations do not reflect the possibility that a future connection to the town’s sewer system may occur which would eliminate the onsite septic system and its wastewater flow, resulting in a much lower nitrogen load; see attached Sewer Service Area by Phase, showing the property is in Phase 2 (https://www.harwichwater.com/assets/Sewer_Service_Area_by_Phases_032916.pdf).

Stormwater runoff from the proposed barn and gravel driveways will be negligible because the site is gently sloping, and the paddock and lawn areas provide a large permeable surface that allows infiltration.

Nitrogen Loading Calculations per Cape Cod Commission
Kevin & Tara Tomany
 230 Church Street
 Harwich, MA 02645
 2-Horse Stable Plan OE-3954
 February 16, 2023

Parameters: 4
 Bedrooms: 90
 Manure % Removal: 69884 S.F.
 Lot Area: 3289 S.F.
 Roofed Area: 3718 S.F.
 Driveway Area*: 6000 S.F.
 Fertilized Lawn Area: 2
 Horse(s): 2.5
 people/household: 2.5
 *Gravel driveways are treated as impervious area

Waste Water: Title 5
 440 gpd
 3.785 L/d
 1665.4 L/d
 x
 1665.4 L/d
 1665.4 L/d
 35 mg/L
 58289 mg/d
 Natural Area: 56877 S.F.
 1.5 ft/yr
 28.32 L/cu.ft.
 x 0.00274 (1 yr/365 d)
 6620 L/d

Actual
 1665.4 L/d
 0.3125
 520.4 L/d
 x
 520.4 L/d
 520.4 L/d
 35 mg/L
 18215 mg/d

Actual: 3.19
 Title 5: 6.80
 Average: 4.99

Impervious: Roof
 3289 S.F.
 40 in/yr
 0.083333 (1 ft/ 12 in)
 28.32 L/cu.ft.
 x 0.00274 (1 yr/365 d)
 851 L/d
 851 L/d
 0.75 mg/L
 638.0 mg/d

Lawn Area: 6000 S.F.
 0.003 lb/sf/yr
 0.00274 (1 yr/365 d)
 454000 mg/lb
 0.25 percent
 5597 mg/d

Pavement/Driveways
 3718 S.F.
 40 in/yr
 0.083333 (1 ft/ 12 in)
 28.32 L/cu.ft.
 x 0.00274 (1 yr/365 d)
 962 L/d
 1.5 mg/L
 1442 mg/d

Horses: 2 Horse(s)
 13333 mg/horse
 0.1 (portion remaining)
 2666.6

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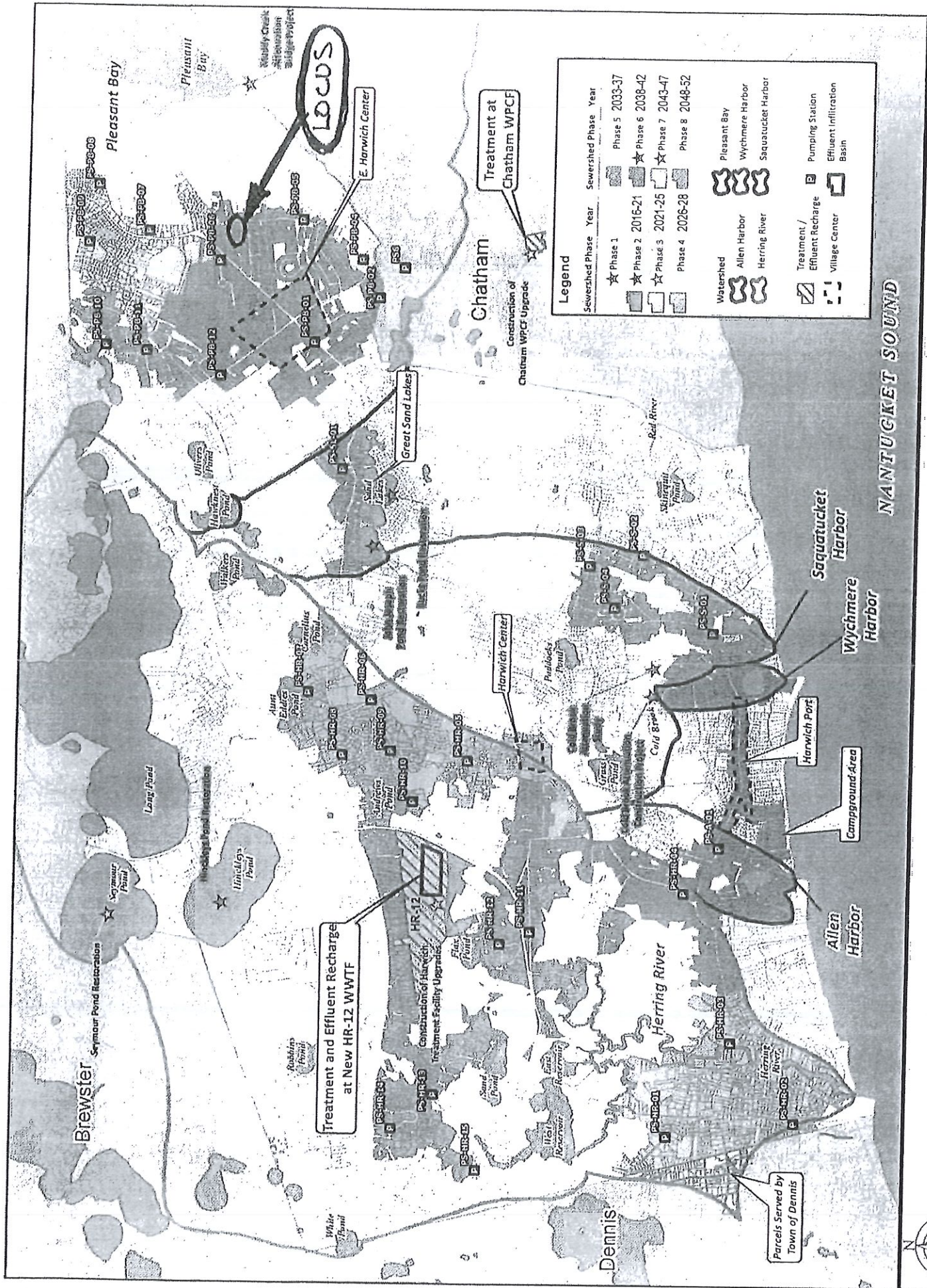


Figure ES-8
Recommended Phasing Plan

1 inch = 4,000 feet



Sewer Service Area by Phase



NANTUCKET SOUND



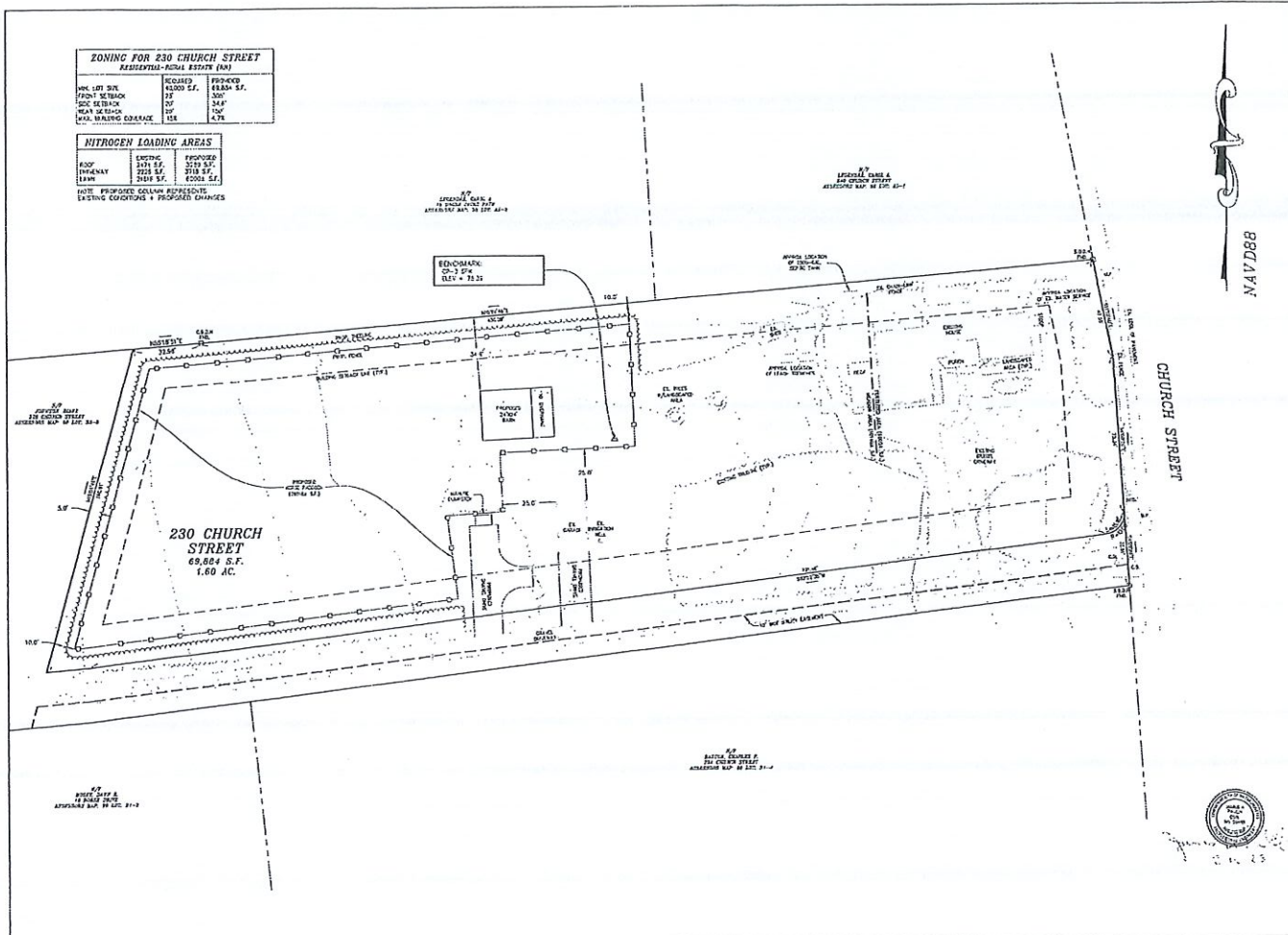
ZONING FOR 230 CHURCH STREET
RESIDENTIAL-NEIGHBORHOOD RESIDENT (R2N)

MAX LOT SIZE	ACROSS ST.	FRONT YARD
FRONT YARD	30'	30'
SIDE YARD	5'	5'
REAR YARD	5'	5'
MAX. BUILDING COVERAGE	35%	4.7%

NITROGEN LOADING AREAS

LOAD	EXISTING	PROPOSED
INDUSTRIAL	100 LB/AC	100 LB/AC
RESIDENTIAL	10 LB/AC	10 LB/AC

NOTE: PROPOSED COLUMN REPRESENTS EXISTING CONDITIONS + PROPOSED CHANGES



- GENERAL NOTES**
1. FOR DEED INFORMATION, SEE DEED BOOK: 111, PAGE 25, AS TO THE PROPERTY'S CURRENT STATUS.
 2. THE PLAN REPRESENTS THE PLAN BOOK: 111, PAGE 25, AS TO THE PROPERTY'S CURRENT STATUS.
 3. THE PROPOSED BUILDING FOOTPRINT IS THE RESULT OF A PROFESSIONAL ENGINEER'S DESIGN, INC. ON APRIL 14, 2011. ELEVATIONS ARE BASED ON BENCH MARK DATA.
 4. THE SITE IS NOT LOCATED WITHIN A ZONE A DRAINAGE BASIN PROTECTION AREA. THE SITE IS LOCATED WITHIN A ZONE A DRAINAGE BASIN PROTECTION AREA.
 5. ALL EXISTING UTILITY INFORMATION IS FROM FIELD SURVEY PROVIDED BY BARNWICH ENGINEERING, INC. AND SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE DEPTH OF ALL UTILITIES LOCATED AND MARKED HEREON.

REVISIONS

NO.	DATE	DESCRIPTION

OWNER/APPLICANT
KIM & TARA EDWARDS
1000 W. 10TH ST.
ORLAND, MA 01932

PROPOSED STABLE SITE PLAN
230 CHURCH STREET
HARNWICH MASSACHUSETTS

Outback Engineering
Incorporated
165 EAST CHURCH STREET
MIDDLEBOROUGH, MA 01946
TEL: (508) 944-1521
www.outback-eng.com

DATE: FEBRUARY 18, 2012
SCALE: 1"=40' (SEE SHEET 2 OF 2)
SHEET NO. 1 OF 2

OR-3954

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